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

In the Matter of	)	
	)	
Improving Public Safety Communications in the 800 MHz Band	)	
	)	WT Docket No. 02-55
Consolidating the 900 MHz Industrial/ Land Transportation and Business Pool Channels	)	

COMMENTS OF NEXTEL COMMUNICATIONS, INC.

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SUMMARY

The Consensus Plan coalition, which represents over 90 percent of the Land Mobile Radio licensees affected by CMRS – public safety interference, has presented an effective, comprehensive and achievable solution to this critical problem. The Consensus Plan addresses the interference problem at its source by separating the interleaved 800 MHz spectrum allocation and associated incompatible network architectures, while making it possible for manufacturers to produce more robust and interference-resistant public safety equipment and networks. The Consensus Plan offers a practical, cost-efficient and proactive approach that will help prevent loss of life or future tragedy resulting from interference-compromised public safety communications. The Plan provides additional spectrum for public safety communications, including enhanced interoperability, at one of the most important junctures in our Nation's history.

The Commission must act quickly to adopt the Consensus Plan. Delay will send the wrong signal to the public safety community and continue to create unacceptable regulatory uncertainty for both operators in the 800 MHz band and for businesses, large and small, that rely upon wireless communications. Delay only benefits those few remaining opponents that want to avoid the hard work necessary to resolve this problem or that desire to perpetuate a perceived spectrum advantage over Nextel.

One counter-proposal – the so-called "700 MHz Plan" has such obvious deficiencies that the public safety community has already expressed near-unanimous opposition to it. The 700 MHz Plan would require rapid ground-breaking legislation, an accelerated relocation of incumbent channels 60 – 69 television broadcasters by a definite date and resolution of a host of other regulatory obstacles. *Even if all of these legislative*

and regulatory hurdles could be overcome in the short-term, a most unlikely outcome, the extraordinary expense and effort necessary to relocate all public safety entities to a new spectrum band – requiring all new equipment – is a waste of the nation's resources and would offer no relief to the worsening CMRS – public safety interference problem in the foreseeable future.

Others believe that case-by-case interference mitigation is a workable solution. It is not. It is a reactive stopgap measure. Case-by-case mitigation is an inefficient method of resolving interference as it does not correct its underlying causes – the interleaved allocation of spectrum for technically incompatible high-site and low-site 800 MHz systems – and could thereby lead to an *avoidable* tragedy. Just as important, it diverts resources from both the public safety community and commercial operators and perpetuates spectrum inefficiencies that cannot be sustained over the long term. This is not acceptable to the public safety community, it is not acceptable to Nextel and it should not be acceptable to the Commission.

Still others cling to the notion that the Consensus Plan, once implemented, will not work. The signatories to the Consensus Plan, including the seven major national public safety organizations, disagree. Realigning the 800 MHz band will substantially mitigate CMRS-public safety interference *across the 800 MHz band* as well as for remaining incumbent 800 MHz private wireless systems and high-site commercial SMR providers, which for the most part will be able to remain on their current channels.

To those that oppose Nextel receiving replacement spectrum at 1.9 GHz, Nextel reminds them that the Consensus Plan is a comprehensive integrated proposal in which Nextel's 700, 800 and 900 MHz spectrum holdings must be included to correct the causes

of CMRS – public safety interference. Nextel must receive replacement spectrum and be made whole if it is to relocate a substantial portion of its operations to make possible 800 MHz realignment. Moreover, only Nextel has pledged to contribute $500 million to public safety relocation, and only Nextel has agreed to bear its own considerable costs of relocating its nationwide network without reimbursement, while maintaining service to more than 10 million customers. Cellular licensees, both previously and just recently, have reaped increased spectrum flexibility and spectrum value as the result of regulatory changes when such changes are found to be in the public interest. Their contention that Nextel must realize no benefit from the resolution of CMRS – public safety interference cannot be reconciled with this precedent. The cellular opponents should not cloud the resolution of interference to critical public safety communications with anti-competitive rhetoric.

In any case, continuing cellular opposition to the Consensus Plan is at best disingenuous given the increasing frequency in which cellular transmission are being identified as contributors to CMRS – public safety interference. The Consensus Plan virtually eliminates cellular contributions to such interference without requiring any cellular licensee to relocate. Cellular's ongoing opposition cannot be masked as anything but anti-competitive obfuscation at the expense of public safety first-responders.

In conclusion, *the Consensus Plan meets all of the Commission's goals for improving public safety communications with the least disruption of the Commission's existing 800 MHz licensing plan.* By realigning the 800 MHz band, manufacturers of public safety equipment will be in a position to make future changes necessary to prevent similar problems from occurring. Many incumbent 800 MHz licensees will not be

impacted at all by realignment, while for those that are, the impact can be minimized. The experience of Land Mobile Radio licensees in relocating incumbent SMR operators provides a blueprint for and confidence that public safety systems can be relocated under the Consensus Plan without disruption. For all of these reasons, the Commission must act without delay and adopt the Consensus Plan.

TABLE OF CONTENTS

I. THE CONSENSUS PLAN WILL MEET ALL OF THE COMMISSION'S GOALS FOR IMPROVING PUBLIC SAFETY COMMUNICATIONS AT 800 MHZ 3

A. THE CONSENSUS PLAN REPRESENTS A LONG-TERM SOLUTION TO CMRS – PUBLIC SAFETY INTERFERENCE 4

B. THE CONSENSUS PLAN WILL MINIMIZE DISRUPTION TO INCUMBENTS 6

1. The Consensus Plan minimizes relocation costs for utilities and other private radio systems 6

2. The Consensus Plan can accommodate Southern LINC's commercial SMR system 7

3. The Consensus Plan would not disrupt public safety communications 9

C. THE CONSENSUS PLAN WOULD PROVIDE ADDITIONAL 800 MHZ SPECTRUM FOR CRITICAL PUBLIC SAFETY COMMUNICATIONS 11

D. THE CONSENSUS PLAN WOULD NOT HARM 2 GHZ MSS LICENSEES, UPCS INTERESTS, OR MDS OPERATORS 12

1. MSS Licensees and UPCS Interests Present No Reason Not to Reassign the 1910-1915/1990-1995 MHz Bands to Nextel 12

2. The Commission Should Reject the Proposed Use of the 1.9 GHz Band by MDS Interests 13

II. THE OPPOSITION TO THE CONSENSUS PLAN IS WITHOUT MERIT .. 15

A. RELOCATION OF PUBLIC SAFETY SYSTEMS TO THE 700 MHZ BAND IS NEITHER OPERATIONALLY PRACTICAL NOR POLITICALLY FEASIBLE 16

B. CASE-BY-CASE MITIGATION IS AN INHERENTLY REACTIVE APPROACH TO ADDRESSING CMRS – PUBLIC SAFETY INTERFERENCE 19

C. REALIGNMENT OF THE 800 MHZ BAND WILL SUBSTANTIALLY ELIMINATE CMRS – PUBLIC SAFETY INTERFERENCE 21

D. THE CONSENSUS PLAN PROVIDES AN EQUAL SPECTRUM EXCHANGE 24

III. CONCLUSION 27

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COMMENTS OF NEXTEL COMMUNICATIONS, INC.

Nextel Communications, Inc. ("Nextel") respectfully submits its Comments in support of the Private Wireless Coalition Consensus Plan (the "Consensus Plan") for realigning the 800 MHz Land Mobile Radio Band.[1] The Consensus Plan is the only proposal in this proceeding that can achieve the Federal Communications Commission's (the "Commission") goals of improving public safety communications at 800 MHz with minimal disruption to existing licensees, while making available additional near-term 800 MHz spectrum for public safety communications services.[2]

The Consensus Plan was first submitted to the Commission in the Joint Reply Comments by the leading public safety organizations, most of the private wireless

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[1] By Public Notices dated September 6, 2002 and September 17, 2002, the Commission invited comments on the Consensus Plan and other proposals under consideration herein. *See* Public Notice, "Wireless Telecommunications Bureau Seeks Comment on 'Consensus Plan' Filed in the 800 MHz Public Safety Interference Proceeding," DA 02-2202 (rel. Sep. 6, 2002); *see also* Public Notice, "Wireless Telecommunications Bureau Clarifies Scope of Comments Sought in 800 MHz Public Safety Proceeding (WT Docket 02-55)," DA 02-2306 (rel. Sep. 17, 2002).

[2] *See Improving Public Safety Communications in the 800 MHz Band, Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels*, Notice of Proposed Rulemaking, 17 FCC Rcd 4873 (2002) ("*NPRM*").

organizations and Nextel.[3] *The Consensus Plan has the support of associations and organizations including or representing more than 90 percent of all affected licensees in the 800 MHz Land Mobile Radio band.*[4] Thus, the Consensus Plan represents a broad

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[3] The Consensus Plan was submitted in the August 7, 2002, Joint Reply Comments of Aeronautical Radio, Inc. ("ARINC"), the American Mobile Telecommunications Association ("AMTA"), the American Petroleum Institute ("API"), the Association of American Railroads ("AAR"), the Association of Public Safety Communications Officials-International, Inc. ("APCO"), the Forest Industries Telecommunications ("FIT"), the Industrial Telecommunications Association, Inc. ("ITA"), the International Association of Chiefs of Police ("IACP"), the International Association of Fire Chiefs, Inc. ("IAFC") and International Municipal Signal Association ("IMSA"), the Major Cities Chiefs Association ("MCC"), the Major County Sheriffs' Association ("MCSA"), the National Sheriffs' Association ("NSA"), Nextel, the Personal Communications Industry Association ("PCIA"), and the Taxicab, Limousine and Paratransit Association ("TLPA") ("Reply Comments of the Joint Commenters"). Since the filing of these Reply Comments, the National Stone, Sand and Gravel Association has also endorsed the Consensus Plan. It was also described in the Reply Comments of Nextel Communications (Aug. 7, 2002) ("Nextel Reply"). (Except where otherwise indicated, all Comments and Reply Comments cited herein were filed in WT Docket No. 02-55).

[4] Over 90 percent of all affected Land Mobile Radio licensees support the Consensus Plan based on the following calculations. Nextel's running average of 19.0 MHz of spectrum (in the non-Border Markets), combined with the public safety community's approximately 10 MHz, account for 80 percent of the 36 MHz of spectrum in the Land Mobile Radio band. The remaining spectrum, collectively licensed or allocated to other Specialized Mobile Radio ("SMR") operators, and/or Business and Industrial/Land Transportation ("B/ILT") entities, accounts for approximately 7 MHz. Based on the representation of the private wireless associations listed above, a *conservative* inclusion of just half (3.5 MHz) of this remaining spectrum would increase the representation of interests in the Consensus Plan to 90 percent of the affected licensees in the Land Mobile Radio Band. This calculation is easily justified given that the largest member associations of these licensees, *i.e.*, ITA and PCIA, are signatories to the Consensus Plan.

An even higher figure can be derived using the Commission's own spectrum assessment in the 800 MHz Land Mobile Radio Report to Congress in July 2002. In the Commission's top five-listed cities, Nextel and public safety's combined spectrum position was 83 percent of the identified Land Mobile Radio band spectrum and up to 92 percent when including just *half* of the identified B/ILT/SMR spectrum. Even in Atlanta, where Southern LINC has significant 800 MHz spectrum, Nextel's and public safety's spectrum alone accounts for 77 percent of the affected 36 MHz Land Mobile Radio band spectrum.

array of support from all categories of 800 MHz Land Mobile Radio licensees and a remarkable accomplishment given the highly fragmented and diverse views of the Consensus Plan signatories in the earlier phases of this proceeding.

Opponents of the Consensus Plan continue to float infeasible, impractical, or ineffective counter-proposals to the Consensus Plan. They continue to direct baseless attacks at its comprehensive realignment of the 800 MHz Land Mobile Radio Band, designed to correct the fundamental spectrum allocation conflicts that permit interference among commercial licensees and public safety communications systems ("CMRS – public safety interference"). The Commission should ignore these self-interested and anti-competitive tactics – designed only to delay urgently needed action – and should move aggressively to adopt and implement the Consensus Plan.

I. THE CONSENSUS PLAN WILL MEET ALL OF THE COMMISSION'S GOALS FOR IMPROVING PUBLIC SAFETY COMMUNICATIONS AT 800 MHz

As described in the Commission's *NPRM*, the Commission's primary objective in this proceeding is to further the nation's Homeland Security mission by improving the spectrum environment for public safety operations in the 800 MHz band. To do so, the Commission intends to remedy interference to 800 MHz public safety systems consistent with minimum disruption to existing licensees and assurance of sufficient spectrum for critical public safety communications.[5] As explained in the Consensus Plan and in Nextel's Reply Comments, the Consensus Plan provides the Commission with a clear path for achieving each of these goals.[6]

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[5] *NPRM* ¶2.

[6] In its Comments and Reply Comments, Nextel has identified two other key policy goals in this proceeding: (i) licensees relocated from the 800 MHz band must receive

A. The Consensus Plan Represents a Long-term Solution to CMRS – Public Safety Interference

Implementing the Consensus Plan would substantially reduce interference to 800 MHz public safety systems, as well as the remaining high-site incumbent licensees in the 800 MHz band. The Consensus Plan would do so by addressing the root cause of CMRS – public safety interference: the interleaved nature of the incompatible public safety and commercial wireless allocations in the Land Mobile Radio Band. The Consensus Plan would create a 20 MHz block for non-cellularized (high-site, high-power) operations at 806-816/851-861 MHz and an adjacent 16 MHz block for cellularized (low-site, low-power) system architecture at 816-824/861-869 MHz.[7]

This spectrum restructuring would have important implications for the future design of public safety radio receivers. Until now, the interleaving of non-cellularized and cellularized architectures across the entire 806–824/851–869 MHz bands and the adjacent cellular bands has prevented manufacturers from designing public safety receivers that will "hear" only public safety transmissions and filter out other systems' signals within this spectrum. As a result of these design constraints, public safety receivers "respond to" not only the desired transmissions from public safety communicators, but any strong B/ILT, SMR, CMRS (Nextel, Southern LINC, and

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suitable replacement spectrum on a "kHz-for-kHz" basis, and (ii) any realignment proposal must permit timely implementation. *See* Nextel Reply at 19-20. The Consensus Plan would achieve both of these goals. The Consensus Plan and associated licensee relocations could be implemented completely within 36 to 48 months of a Report and Order in this proceeding.

[7] Nextel Reply at 3.

cellular) transmissions as well.[8]

Even such opponents of 800 MHz realignment as Cingular Wireless LLC ("Cingular") and ALLTEL Communications, Inc. ("ALLTEL") recognize the significant role played by these radios' wide front ends in CMRS – public safety interference, yet they are blind to the long-term solution.[9] By consolidating non-cellularized systems into the 806-816/851-861 MHz bands, the Consensus Plan would enable manufacturers to develop public safety radios that no longer have to "listen" or respond to the whole Land Mobile Radio band. With much narrower front-end filters, public safety receivers would enjoy tighter roll-off and a greatly reduced probability of IM interference. In this way, the Consensus Plan would provide public safety operators with additional long-term protection from such interference.[10]

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[8] Typical public safety receivers today respond to strong undesired signals on channels well into the cellular A-band allocation at 869–881.5 MHz.

[9] *See* Joint Comments of Cingular and ALLTEL at 4, 6 (stating that "[a]s with receiver overload, the wide front end design of the public safety radios, combined with limitations of the low noise amplifier, are responsible for the generation of the undesired intermodulation products."). *Accord* Reply Comments of ALLTEL, AT&T Wireless, Cingular, Coupe Communications, First Cellular, Nokia, Southern LINC, and United States Cellular at 2-3.

[10] In its reply comments, Motorola submits an alternative 800 MHz realignment plan. *See* Reply Comments of Motorola at 9-14. While it similarly proposes to separate non-cellularized and cellularized facilities into separate band segments, the amount of spectrum designated for these different systems would not be uniform across all markets. Specifically, Motorola would create a "transition" band in the vicinity of 814-816/859-861 MHz, with the amount of spectrum available to cellularized systems, public safety systems, and private radio systems variable in a given market depending on the amount currently licensed to each category in the particular market in question. *See* Reply Comments of Motorola at 12. Because of this approach, Motorola's proposal would do less than the Consensus Plan to reduce the incidence of IM interference. Equipment manufacturers would still be required to design public safety receivers to operate in all markets, including those with the widest non-cellularized bands, and, as a result, manufacturers could not narrow these radios' front-end filters to the greatest extent possible as they could under the Consensus Plan.

B. The Consensus Plan Will Minimize Disruption to Incumbents

1. The Consensus Plan minimizes relocation costs for utilities and other private radio systems

Compared to Nextel's White Paper proposal to realign the 800 MHz band, the Consensus Plan would greatly reduce relocation costs for utilities and other private radio systems. Unlike Nextel's original proposal, the Consensus Plan would permit B/ILT and high-site SMR operators at 809-814/854-859 MHz to remain on their licensed 800 MHz licensed spectrum and not be relocated outside the 800 MHz band. The same should be true for many licensees currently located in what will become the 814-816/859-861 MHz guard band for "campus-type" systems or other interference-resistant B/ILT and non-cellularized SMR systems.[11]

A number of the utilities that complained in their replies about the supposedly unfair burden of 800 MHz realignment had either not yet reviewed the Consensus Plan or failed to understand it. For example, in its reply comments, Alliant Energy ("Alliant") claims that "all of the proposed plans [would] create unnecessary interruption of service and heavy expense."[12] Carolina Power & Light Company ("Carolina Power") and TXU Business Services ("TXU") state that Nextel's $500 million commitment would be insufficient to cover the costs of relocation for public safety and "critical infrastructure"

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[11] Private wireless systems relocated from the 806-809/851-854 MHz band that will become the new National Public Safety Planning Advisory Committee ("NPSPAC") channels will be relocated to replacement spectrum in (i) the 814-816/859-861 MHz Guard Band, or (ii) greenspace in the 809-814/854-859 MHz band. Alternatively, these incumbents may elect to relocate to vacated Nextel spectrum in the 900 MHz band and receive a out-of-band voluntary relocation premium of a 50 kHz channel in exchange for every 800 MHz 25 kHz channel.

[12] Comments of Alliant Energy at 2.

licensees at 800 MHz.[13] Finally, Delmarva Power & Light Company ("Delmarva") and Atlantic City Electric Company ("Atlantic") suggest that their relocation costs would be exorbitant, with necessary system modifications costing millions.[14]

Now that these utilities have had an opportunity to examine the Consensus Plan in detail, it should be apparent that it remedies their concerns. In contrast to Nextel's White Paper, the Consensus Plan does not relocate 809–814/854–859 MHz incumbents and these channels remain interleaved among compatible B/ILT, high-site SMR and public safety licensees. An analysis of the Commission's licensee database indicates that *none of these utilities would have to relocate to new spectrum or retune a single channel on their systems under the Consensus Plan.* The same holds true for numerous other utilities, private wireless licensees and SMR providers. The Consensus Plan minimizes the dislocations to non-cellular incumbents – one of the Commission's primary objectives herein – while still achieving the Commission's ultimate objective of improving public safety communications at 800 MHz by correcting the CMRS – public safety interference problem and providing additional spectrum for public safety communications systems.

2. The Consensus Plan can accommodate Southern LINC's commercial SMR system

In its reply comments, Southern LINC continues to support the operationally impractical and politically infeasible 700 MHz Plan in combination with case-by-case mitigation,[15] and expresses concern that 800 MHz realignment would fail to

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[13] Reply Comments of Carolina Power & Light Company and TXU Business Services at 5 (Carolina Power).

[14] Reply Comments of Delmarva Power & Light Company and Atlantic City Electric Company at 37 (Delmarva and Atlantic).

[15] Reply Comments of Southern LINC at 6-24.

accommodate its mixed high-site and low-site SMR system.[16] Southern LINC seeks to have its cake and eat it too. It seeks to remain at its current licensed frequencies throughout the 800 MHz band, and to be free to convert its high-site facilities to higher capacity low-site operations on an as-needed basis; *i.e.,* it would "contaminate" the non-cellular band regardless of the increased potential for interference it may cause to public safety communications. Southern LINC's reply urges the Commission not to adopt a spectrum realignment plan that would cause it or other incumbent licensees to "lose spectrum, capacity, or functionality,"[17] or that would "'freeze' licensees into certain artificial system configurations" that would be "unworkable."[18]

Nextel believes that, as part of the Consensus Plan, the Commission can address Southern LINC's stated concerns. Specifically, the Commission should "grandfather" Southern LINC's licensed systems operating in the Consensus Plan's non-cellularized spectrum at 809-816/854-861 MHz and cellularized spectrum at 816-824/861-869 MHz,[19] thereby permitting Southern LINC to operate on a low-site, cellular basis within 25 miles from the center point of Atlanta or Birmingham, the two largest cities in Southern's operational territory.[20] Thus, for licensed facilities within those 25-mile radii, Southern LINC would be exempt from Consensus Plan waiver procedures applicable to

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16 *Id.* at 28-32.

17 *Id.* at 28.

18 *Id.* at 30, 36.

19 Like all other incumbents, Southern LINC would have to relocate all facilities from the 806-809/851-854 MHz bands, to which NPSPAC systems will be relocated.

20 Unless Southern LINC can demonstrate otherwise, due to the rural nature of its service territory, it is unlikely it would need to expand its system on a cellularized basis outside the radii of these two cities, except in the rarest of circumstances.

all other entities wishing to maintain or deploy cellularized low-site, low-power systems in non-cellularized spectrum.[21] Under this policy, Southern LINC should, however, be required to notify potentially affected public safety systems before expanding or modifying its systems to cellularized, low-site operations. It would also be responsible for resolving any harmful interference to non-cellular systems. This proposed solution appears to address Southern LINC's biggest concern – that it not be required to relocate from its current channels or otherwise modify its current operations. It also addresses Southern LINC's concern that there would not be sufficient spectrum for both it and Nextel to operate in the cellularized SMR band between 861-869 MHz in Atlanta and Birmingham, by essentially expanding the cellular band in those limited geographic areas.

3. The Consensus Plan would not disrupt public safety communications

The Consensus Plan is supported by the seven leading national public safety organizations: APCO, IACP, IAFC and IMSA, MCC, MCSA, and NSA. The Plan explicitly states that the "Commission should adopt rules implementing the revised band plan to provide that any mandated relocation of NPSPAC (or other public safety) systems will be without disruption to critical public safety radio communications operations.

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[21] To obtain a waiver, a licensee in the non-cellularized band would have to demonstrate that its proposed cellularized system would not cause interference to public safety operators and other non-cellular systems in the 800 MHz band, and that these operations would otherwise be in the public interest. *See* Nextel Reply at 5. Although some parties express concern that the Consensus Plan would make it difficult for public safety operators to utilize new technologies that use cellular-type architectures (*see, e.g.,* Reply Comments of Public Safety Improvement Coalition at 6), the waiver process would permit cellular systems in the public safety block of the realigned 800 MHz band to deploy such facilities, provided such systems do not cause interference to high-site, high-power public safety operations. Reply Comments of Joint Commenters at 10 n.41.

Public safety licensees must be allowed to approve any relocation plan impacting their licensed system to ensure continuous operation, equivalent functionality, coverage, and reliability."[22] As explained in Nextel's Reply Comments, Nextel gained substantial experience in incumbent relocation following the Commission's 1995 order establishing geographic licensing in the upper 200 SMR channels.[23] The Consensus Plan can be implemented just as successfully and in a manner that ensures that public safety systems around the country remain fully operable.

In addition, under the Consensus Plan, no public safety licensee would be required to relocate unless funding were available and committed for the eligible relocation costs of that licensee and all other public safety licensees in the affected NPSPAC region. Funding for public safety relocation should come not only from Nextel's voluntary commitment of $500 million, but also from other CMRS providers.[24] In its Reply Comments, Nextel pointed out (as did the Consensus Plan coalition) that public safety interference results from the operation of cellular systems. Accordingly, Nextel asked that other CMRS providers be required to provide any funding necessary beyond Nextel's contribution.[25] It is a matter of fundamental equity that any commercial operator contributing to CMRS – public safety interference in the 800 MHz band should be responsible for its proportionate share of the cost correcting such interference through 800 MHz realignment as set forth in the Consensus Plan.

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22 Reply Comments of the Joint Commenters at 15.

23 Nextel Reply at 33.

24 Reply Comments of the Joint Commenters at 19-21.

25 Nextel Reply at 30-31; Reply Comments of the Joint Commenters at 21.

C. The Consensus Plan Would Provide Additional 800 MHz Spectrum for Critical Public Safety Communications

The Consensus Plan would provide additional, urgently needed spectrum for public safety communications, and it would do so in the near term. Following the Consensus Plan realignment, the remaining Nextel-vacated spectrum in the non-cellularized block at 809-814/854-859 MHz would be exclusively available to public safety applicants for five years. In addition, Nextel would clear additional 800 MHz spectrum for public safety services by contributing its 900 MHz SMR channels for B/ILT and traditional SMR use and providing a 2:1 spectrum incentive for 800 MHz licensees to relocate voluntarily to the 900 MHz band. This would provide spectrum for new private licensees as well. Nextel would also contribute its near-nationwide 4 MHz Guard Band licenses in the 700 MHz band for public safety use.[26] Finally, the Consensus Plan calls for ongoing efforts to establish a definite date for clearing UHF broadcasters from public safety spectrum in the 700 MHz band, and also for exploring the future allocation to public safety of additional 700 MHz spectrum.

The additional 800 MHz spectrum could be used *immediately* to expand public safety system capacity nationwide, and to foster interoperability among public safety communications systems within and across administrative, political, and geographic boundaries. Public safety operators would benefit greatly by receiving additional 800

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[26] Even though operations in the 700 MHz Guard Band frequencies would be subject to certain technical constraints, a variety of public safety needs can still be met with this spectrum. Public safety applications such as security details at federal and state courthouses, university campuses, shopping malls, and airports could be deployed on a low-power basis to ensure that they would be "good neighbors" to adjacent mission critical public safety and commercial operations. In addition, because such uses could be limited to in-building, campus environments, they should be more resistant to interference from possible adjacent commercial cellular operations.

MHz spectrum, since (i) the propagation characteristics of the 800 MHz band are well-suited for the wide-area coverage requirements of public safety systems, and (ii) a substantial number of public safety operators already operate in the 800 MHz band throughout the country, resulting in even greater economies of scale in the design and production of new equipment for these public safety systems.[27]

D. The Consensus Plan Would Not Harm 2 GHz MSS Licensees, UPCS Interests, or MDS Operators

1. MSS Licensees and UPCS Interests Present No Reason Not to Reassign the 1910-1915/1990-1995 MHz Bands to Nextel

In their Reply Comments, Boeing and NEC America repeat earlier objections to Nextel's and the Commission's proposed replacement spectrum in the 2 GHz Mobile Satellite Service ("MSS") band (1990-1995 MHz) and Unlicensed Personal Communications Service ("UPCS") band (1910-1915 MHz). These objections to the Consensus Plan are meritless. The reassignment to Nextel of the 1990-1995 MHz band would not harm the development or economic viability of 2 GHz MSS systems. This redesignation would affect only *expansion frequencies* in this band. No existing licensee would lose any spectrum.

Nor does NEC America's Reply present any new or legitimate reason not to redesignate the 1910-1915 MHz band to Nextel. The Consensus Plan's proposed reassignment would leave intact the isochronous allocation at 1920-1930 MHz, and the 1915-1920 MHz portion of the little-used asynchronous UPCS band could still be

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[27] As noted in Nextel's Comments, a number of state governments, including Florida, Michigan, Ohio and Pennsylvania, are already investing hundreds of millions of dollars to deploy new systems in the 800 MHz band. Nextel Comments at 7.

reallocated to isochronous UPCS. Nextel's operations at 1910-1915 MHz would cause no harmful interference either to surrounding broadband PCS systems or to UPCS devices transmitting at 1915-1930 MHz. Finally, if the 1910-1915 MHz band is reassigned to Nextel, Nextel would reimburse UTAM for all reasonable expenditures related to relocating prior incumbents from this 5 MHz band segment.

2. The Commission Should Reject the Proposed Use of the 1.9 GHz Band by MDS Interests

On August 29, 2002, the Wireless Communications Association International ("WCA") and several Multipoint Distribution Service ("MDS") operators (collectively, "WCA *et al.*") filed a joint *ex parte* letter opposing the Consensus Plan's proposed reassignment of the 1910-1915/1990-1995 MHz band to Nextel.[28] In this filing, WCA *et al.* reiterate their July 11 proposal (the "MDS Proposal") that the current MDS allocation at 2150-2162 MHz be moved to paired spectrum bands at 1910-1916/1990-1996 MHz.[29] Under the MDS Proposal, in order to avoid interference to adjacent broadband PCS systems, 2.1 GHz MDS licensees proposed to operate under the technical rules applied to lower-power broadband PCS operators.

NTIA's recent action on 3G spectrum allocation issues obviates the need to

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[28] *See* Letter from BellSouth Corporation, Nucentrix Broadband Networks, Inc., Sprint Corporation, WorldCom, Inc., and the Wireless Communications Association International, Inc. to the Honorable Michael Powell, ET Docket No. 00-258, IB Docket No. 01-185, ET Docket No. 95-18, WT Docket No. 02-55 (Aug. 29, 2002) ("WCA Letter").

[29] *See* "A Compromise Solution for Relocating MDS from 2150-2162 MHz," BellSouth Corporation, Nucentrix Broadband Networks, Inc., Sprint Corporation, WorldCom, Inc., and the Wireless Communications Association International, Inc., ET Docket No. 00-258, IB Docket No. 01-185, ET Docket No. 95-18 (Jul. 11, 2002).

relocate 2.1 GHz MDS licensees to the 1910-1916/1990-1996 MHz bands.[30] With NTIA's recommendation that only 45 MHz of spectrum in the 2.1 GHz band be reallocated to 3G, the Commission's 3G reallocation will in all likelihood be limited to 2110-2155 MHz. While WCA *et al.* claim that this allocation is "not a foregone conclusion,"[31] there is no momentum towards any other outcome for 3G allocation. The best solution available to the Commission is to maintain MDS Channel 2 at its current location and to "flip" MDS Channel 1 to the other side of Channel 2, to 2162-2168 MHz, maintaining a 12 MHz block of contiguous spectrum for MDS licensees.

Contrary to WCA *et al.*'s conclusory assertions, a 5 MHz guard band between these MDS channels and the new 3G allocation at 2110-2155 MHz is not necessary. Just as MDS operators under their July proposal would operate PCS-like systems at 1910-1916 MHz immediately adjacent to 3G PCS services, MDS licensees could operate PCS-like systems at 2156-2168 MHz, thereby avoiding interference to adjacent 3G services at the edge of the 2155 MHz band. WCA *et al.* fail to explain why such PCS-like services are possible at 1910-1916, but not possible at 2156-2168 MHz. Clearly, in light of the MDS Proposal, it cannot be that such operations conflict with their formerly broadband-

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30 *See* "An Assessment of the Viability of Accommodating Advanced Mobile Wireless (3G) Systems in the 1710-1770 MHz and 2110-2170 MHz Bands," National Telecommunications and Information Administration (July 22, 2002), *available at:* <http://www.ntia.doc.gov>. The self-serving nature of the MDS Proposal is evidenced by the fact that the proposed shift of MDS Channels 1 and 2 to the 1.9 GHz band has absolutely no support outside the diminutive MDS industry. Only the joint filers of the July 11 proposal – WCA, BellSouth, Nucentrix Broadband Networks, Sprint, and WorldCom – support this relocation. In stark contrast, the Consensus Plan enjoys broad support from the public safety and private radio communities, including associations and organizations that represent more than 90% of the licensees affected by the 800 MHz band interference issues.

31 WCA Letter at 8.

focused business plans.[32]

While reallocating spectrum to make room for 3G does not require relocating MDS to the 1910-1916/1990-1996 MHz band, resolving existing public safety communications problems does require reassignment of the 1910-1915/1990-1995 MHz bands to Nextel. While WCA *et al.* ostensibly concede that the resolution of public safety interference holds a high value,[33] they dismissively reject the Consensus Plan, the best and only practical solution to solving this urgent public safety problem. The Commission should dismiss the notion that public safety communications, particularly at this critical time for Homeland Security, should be accorded anything but the highest priority. In the *NPRM*, the Commission correctly acknowledged the importance of addressing these pressing public safety problems, and the Consensus Plan provides a comprehensive means for doing so.

II. THE OPPOSITION TO THE CONSENSUS PLAN IS WITHOUT MERIT

Notwithstanding the extraordinary and broad support of Land Mobile Radio licensees for the Consensus Plan, some parties in their reply comments (or in later *ex parte* filings) claim that the Consensus Plan, or 800 MHz realignment more generally, is not the appropriate solution to the serious problems affecting public safety

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[32] From a technical perspective, Nextel believes that MDS operators should be able to operate PCS-like, Time Division Duplexing systems at 2156-2168 MHz without causing interference to 3G services at 2110-2155 MHz. If necessary, MDS Channel 1 could likely be relocated to an alternative spectrum band, such as the 2385-2400 MHz band. Relocation to 2162-2168 MHz, however, would maintain MDS licensees' existing spectrum posture, preserving a 12 MHz block of contiguous spectrum in the 2.1 GHz band.

[33] WCA Letter at 6.

communications.[34] As discussed fully below, these objections have no merit. The Commission should reject them and move quickly to adopt and implement the Consensus Plan.

A. Relocation of Public Safety Systems to the 700 MHz Band is Neither Operationally Practical Nor Politically Feasible

In their reply comments, Cingular, ALLTEL, Southern LINC, and a number of other parties again insist that the best way to resolve CMRS – public safety interference is to relocate public safety systems to the 700 MHz band (the "700 MHz Plan").[35] As Nextel explained in its May 6 Comments and again in its August 7 Reply, this proposal is neither operationally practical nor politically feasible. The 700 MHz Plan's deficiencies are quite apparent to the public safety community, which is virtually unanimous in its opposition, and by now this reality should also be obvious both to the Commission and to the 700 MHz proponents. Accordingly, the Commission should summarily reject the largely anti-competitive, self-interested attempts of Nextel's competitors to delay effective action in this proceeding. These parties, particularly Nextel's cellular competitors, would sacrifice needed improvements to public safety communications for perceived competitive advantage. As Chairman Powell himself has stated with respect to

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[34] Some parties reviewed a draft of the Consensus Plan prior to its submission and addressed the Consensus Plan in their own reply comments.

[35] *See, e.g.*, Reply Comments of Southern LINC at 15-24; Joint Reply Comments of Cingular Wireless and ALLTEL Communications at 6-7; Reply Comments of Cinergy Corporation at 36-42.

the 700 MHz band, "[p]ublic safety entities should be no more enthused about being moved to this spectrum than are the commercial providers that urge they be put there."[36]

Continued broadcast operations in the 700 MHz band will preclude public safety use of this spectrum throughout most of the United States through the end of the digital television ("DTV") transition. At a minimum, this broadcast impediment will persist until the beginning of 2007, the conditional statutory deadline for the DTV transition. In recognition thereof, the Commission recently established a five-year phase-in schedule for the mandatory installation of over-the-air DTV tuners in most television sets.[37] For a substantial portion of affected TV sets, *the DTV tuner installation deadline is July 1, 2007*;[38] as a result, *it is unambiguously clear that the statutory DTV penetration threshold of 85 percent will not be met in any market prior to the 2007 DTV transition deadline and almost certainly much later.*[39]

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[36] *Auction of Licenses in the 747-762 and 777-792 MHz Bands (Auction No. 31)*, 17 FCC Rcd 10098 (2002), Separate Statement of Chairman Michael K. Powell at 6 ("*Powell Statement on Auction 31*").

[37] *Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television*, MM Docket No. 00-39, Second Report and Order and Second Memorandum Opinion and Order, FCC 02-230 (rel. Aug. 9, 2002) ("*DTV Tuner Order*").

[38] *DTV Tuner Order* ¶ 40. Following adoption of the *DTV Tuner Order*, the Consumer Electronics Association ("CEA") quickly made public its plan to file a court appeal to this decision seeking to overturn the July 1, 2007 deadline in favor of a *longer* period. *See* "CEA Will Appeal FCC DTV Order," *Tech Law Journal Daily E-Mail Alert* (Aug. 9, 2002), *available at:* <http://www.techlawjournal.com/alert/ 2002/08/09.asp>.

[39] The Commission's DTV receiver mandate stemmed largely from its serious concern that "the lack of DTV receiver capability is delaying the transition and may seriously impede the transition in the future." *DTV Tuner Order* ¶ 33. In any case, Chairman Powell and Commissioner Abernathy both emphasized in separate statements that the DTV receiver mandate is only one of *several steps* that the Commission must take in order to expedite the DTV transition. *See id.*, "Separate Statement of Chairman Michael K. Powell" (stating that "there are additional steps to take, such as the development of 'plug and play' sets for those cable subscribers who do not want to use a

Nor is there any hope whatsoever for legislative action that would clear the 700 MHz band prior to 2007. No matter how optimistic the 700 MHz Plan proponents may be about the prospect for such legislation, it is highly unlikely – given the competing interests affected by this issue – that Congress will advance the DTV transition quickly enough to address the immediate interference resolution needs of public safety at 800 MHz.[40] Accordingly, the nation's wait for an effective 700 MHz-based solution to the pressing public safety issues would be extraordinarily prolonged, if not indefinite; CMRS – public safety interference will only grow, further jeopardizing the lives and safety of America's emergency first-responders and the public they protect.

Even without these severe broadcast encumbrances, relocating all 800 MHz public safety systems to the 700 MHz band would impose an enormous price tag on public safety operators, who would have no choice but to spend unprecedented sums to acquire expensive new 700 MHz base station transmitting infrastructure and handsets. In sharp contrast, the vast majority of legacy 800 MHz public safety equipment can be retuned consistent with the Consensus Plan realignment at far less cost. Moreover, public safety systems around the nation have already invested significant resources and planning

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set-top box."); "Separate Statement of Commissioner Kathleen Q. Abernathy" (stating that the tuner phase-in plan "is one of many steps that must be taken[,]" including "copyright, 'plug and play' cable compatibility, and must-carry issues.").

[40] The House Energy and Commerce Committee is currently circulating a "Staff Discussion Draft" of legislation that would *inter alia* codify the Commission's recently adopted tuner requirements and set a deadline of 2007 for the DTV transition. If, as expected, this legislation is introduced later this month, it remains highly unlikely that it would pass the House and Senate and be sent to the President in the few remaining weeks of this Congress. *See Communications Daily*, Volume 22, No. 183, September 20, 2002 at pages 1-3. Further, and even more importantly, *even if the legislation were enacted in this Congress, it would set a 2007 deadline for the DTV transition, making possible actual public safety use of the 700 MHz spectrum years after that* – too late to address the existing and growing CMRS – public safety interference problems.

in the construction, operation and expansion of their 800 MHz systems, including numerous new metropolitan and state-wide networks. Prompt action on the Consensus Plan would enable many of these systems to be constructed in the first instance at their new 800 MHz assignments. In contrast, relocating them to 700 MHz would potentially waste the efforts and expenditures already made for these systems. For these reasons, among others, virtually all public safety commenters oppose the various 700 MHz proposals in this proceeding.

B. Case-by-Case Mitigation is an Inherently Reactive Approach to Addressing CMRS – Public Safety Interference

A number of reply commenters argue again that the Commission should rely heavily on case-by-case mitigation of CMRS – public safety interference, either as the exclusive means of dealing with such interference or in combination with the "long-term" 700 MHz Plan solution.[41] Numerous deficiencies, however, prevent case-by-case mitigation from providing an effective, long-term solution to CMRS – public safety interference in the 800 MHz band.

First, as explained in Nextel's reply comments, case-by-case mitigation is inherently reactive, responding only after-the-fact to actual instances of interference to police officers' and fire fighters' communications.[42] ***Under Cingular's and Southern***

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[41] *See, e.g.,* Reply Comments of Southern LINC at 6-15; Joint Reply Comments of Cingular Wireless and ALLTEL Communications at 7. The Commission should view with skepticism parties' characterization of case-by-case mitigation as a "short-term" complement to the long-term 700 MHz solution. Given how long it would likely take to implement the 700 MHz Plan, case-by-case mitigation would likely be the primary response to CMRS – public safety interference for an extended, indefinite period, and in this scenario could quite possibly become the exclusive, permanent means of addressing such interference.

[42] Nextel Reply at 58-59.

LINC's reactive approach, parties would typically learn of such interference only after it occurs, such as an incident that risks the lives of first-responders or the public they serve. This is not acceptable to the public safety community; it is not acceptable to Nextel and it should not be acceptable to the Commission.

Case-by-case mitigation fails to address the fundamental, root cause of CMRS – public safety interference: 800 MHz public safety and CMRS systems are operating incompatible wireless systems on interleaved, adjacent and mixed 800 MHz channels. Under a piecemeal case-by-case approach, public safety's first responders would become increasingly vulnerable to interference as CMRS and public safety systems continue to modify and expand their services. CMRS – public safety interference is the result, albeit inadvertent, of the Commission's spectrum allocation decisions over the past 30 years. Continued reliance on piecemeal, case-by-case interference mitigation would be an abdication of the Commission's statutory responsibility to solve this problem.

Finally, from a commercial operations perspective, case-by-case mitigation is unsustainable. Over time, this approach severely compromises the spectrum efficiency of both CMRS providers and public safety systems. Long-term reliance on case-by-case measures requires that significant amounts of 800 MHz spectrum lie fallow or be limited in their use, contrary to basic spectrum management principles. Such practices restrict licensees' use of advanced technologies that promote spectrum efficiency. In particular, continued reliance on case-by-case measures disrupts frequency reuse patterns and channel availability for all CMRS carriers, including Nextel, and in some cases requires frequency use restrictions that cannot be sustained over the long-term without

unacceptable losses in capacity, coverage, and service quality.[43] Overall, this muddled approach to resolving CMRS – public safety interference greatly impedes CMRS providers' efforts to manage their businesses, fails to address the fundamental causes of the problem and encourages a patchwork of inconsistent local regulations that threaten the seamless operation of commercial nationwide networks.

C. Realignment of the 800 MHz Band Will Substantially Eliminate CMRS – Public Safety Interference

The Consensus Plan's proposed realignment would by itself substantially reduce CMRS – public safety interference. As explained in detail in the Technical Statement of Leonard Cascioli in Nextel's Reply (the "Cascioli Reply Statement"), the Consensus Plan's proposed relocation of public safety licensees from the 821-824/866-869 MHz NPSPAC band to 806-809/851-854 MHz, and its proposed shift of cellularized SMR operators out of the interleaved spectrum at 806-816/851-861 MHz, would virtually eliminate the likelihood of intermodulation ("IM") interference, the most frequent cause of CMRS interference to public safety systems in the new-NPSPAC band.[44] As a Supplemental Technical Statement from Leonard Cascioli (the "Supplemental Cascioli Statement"), attached as Exhibit 1 to these comments, demonstrates, the Consensus Plan's proposed 800 MHz realignment will greatly reduce interference to the non-NPSPAC incumbents who will remain in the non-cellularized 800 MHz band as well.

First, with respect to Nextel's own operations, a preponderance of Nextel's

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[43] For example, case-by-case mitigation would also prevent cellular providers from implementing the dynamic channel allocation algorithms now being utilized to improve spectrum efficiency in response to changes in customer usage patterns.

[44] Nextel Reply, Cascioli Reply Statement at 1.

transmitters currently operate in the 861-866 MHz range, generating IM products that fall predominantly into spectrum at 856-871 MHz. *By relocating the current NPSPAC public safety operations from 866-869 MHz to the lowest portion of the 800 MHz band at 851-854 MHz, the Consensus Plan would reduce the probability of Nextel-only IM interference to the new NPSPAC public safety radio systems by 98 to 100 percent.*[45] In addition, moving Nextel's operations into the former NPSPAC spectrum at 821-824/866-869 MHz would enable Nextel to manage its frequency usage more effectively to minimize IM products falling on the remaining interleaved public safety and B/ILT/SMR channels in the 854–861 MHz range. *For locations where these high-site incumbent users are currently experiencing Nextel-only generated IM interference on the non-NPSPAC channels, the probability that interference will still exist after realignment will be reduced by as much as 90 percent between 854 – 859 MHz, and as much as 50 percent in the 856 – 861 MHz guard band, depending on which channels are being used.*[46]

The Consensus Plan realignment would have a similar effect on IM interference from cellular A-band operators transmitting at 824-835/869-880 MHz and cellular B-band carriers operating above 835/880 MHz.[47] Because the harmful IM products generated solely by cellular A-band and B-band operators would in most cases be sufficiently attenuated by the existing front-end characteristics of public safety receivers, public safety systems relocated from 821-824/866-869 MHz to 806-809/851-854 MHz would not receive interference ***at all*** from cellular-only operations – *a 100 percent*

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45 *See* Nextel Reply, Cascioli Reply Statement at page 3.

46 *See* Supplemental Cascioli Statement at page 3.

47 *See* Nextel Reply, Cascioli Reply Statement at page 4.

improvement for public safety NPSPAC channel users experiencing interference today from cellular operations.[48] After realignment, the IM products generated by each of the cellular carriers would fall almost exclusively in the new cellularized SMR band, with only a minimal possibility of cellular-only IM products falling in the non-NPSPAC band between 854-861 MHz.[49]

In addition, the Consensus Plan would dramatically decrease the probability of IM interference from combined Nextel and collocated cellular A-band/B-band transmissions. For locations where public safety users are currently experiencing combined Nextel – cellular A-band IM interference on NPSPAC channels, relocating these channels as provided in the Consensus Plan would reduce the probability of post-realignment IM interference to the new-NPSPAC band by *as much as 94 percent, depending on the specific channels being used*, thereby substantially reducing the number of public safety channels that could be affected by full-strength IM products.[50] In the non-NPSPAC band, *for locations where high-site incumbent users are currently experiencing combined Nextel – cellular A band IM interference on non-NPSPAC channels, the post-realignment probability of IM interference is reduced by as much as 65 percent in the 854 – 859 MHz band, depending on the specific channels being used.*[51]

Thus, while the Consensus Plan would not completely eliminate the possibility of CMRS – public safety IM interference, even under worst-case assumptions, it would

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48 *See* Nextel Reply, Cascioli Reply Statement at page 4.

49 *See* Supplemental Cascioli Statement at page 3.

50 *See* Nextel Reply, Cascioli Reply Statement at page 4.

51 *See* Supplemental Cascioli Statement at page 4.

reduce the likelihood of IM interference to a manageable level.[52] Placing cellularized operations in an 8 x 8 MHz contiguous block would reduce the maximum frequency span of these operations by almost half, thereby halving the span of IM products across the 800 MHz band. As the primary cellular-type operator in the 861-869 MHz block, Nextel would be better positioned to minimize IM "hits" outside the guard band block. And, as discussed further below, *the realignment would also set the stage for developing tighter front-end filters for public safety receivers, which could virtually eliminate this problem.* Nextel continues to support new public safety receiver standards, new public safety signal requirements, and more stringent out-of-band emissions standards for CMRS providers.

D. The Consensus Plan Provides an Equal Spectrum Exchange

Nextel has paid market prices for all of its spectrum, both at auction and in secondary market transactions; *in total, Nextel has spent more than $2 billion to acquire the spectrum it will contribute to realignment under the Consensus Plan.* Moreover, while its cellular competitors may denigrate Nextel's spectrum holdings, Nextel's current frequencies are in no way "inferior." Nextel has developed its spectrum-efficient iDEN® technology to take advantage of the specific non-contiguous characteristics of the 800 MHz Land Mobile Radio environment, and, utilizing this interleaved and non-adjacent 800 MHz spectrum, Nextel now provides a variety of voice and data services, including its enormously successful Direct Connect® service. Certainly, the interleaved nature of

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[52] Nextel is working with other Consensus Plan signatories to develop operational rules and guidelines to help parties resolve such interference. These parties intend to submit a copy of these procedures to the Commission once this process has been completed.

Nextel's spectrum is transparent and irrelevant to Nextel's ten million plus customers.

Indeed, absent the serious problems being addressed in this proceeding, Nextel would be focused entirely on developing, improving, and operating its iDEN® network on its current licensed frequencies. Nextel is now the fifth largest CMRS provider in the U.S., and in recent years has made further investments in its network that will double the interconnect voice capacity of its iDEN® system on its existing frequencies and allow for millions of additional customers.[53] There is nothing inadequate about Nextel's current spectrum.

Unfortunately, the CMRS – public safety interference problem in the 800 MHz Land Mobile Radio band is real and will only worsen over time, leaving Nextel and the public safety and private wireless communities with no choice but to identify a comprehensive, long-term solution to this critical problem. Like the public safety operators who must deal with interference daily, Nextel is a victim of these circumstances. Nextel developed its innovative, digital SMR network with the encouragement and approval of the Commission.[54] The full scope of this unanticipated interference problem became clear only in the past few years, after Nextel had made the investments necessary to become a national carrier. Now, having achieved commercial success with technology specifically suited to this interleaved spectrum environment,

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[53] Nextel is also aggressively moving forward with the deployment of iDEN® facilities using its non-contiguous holdings in the 900 MHz band, and this added spectrum capacity will be vital to maintaining Nextel's existing network capacity during the multi-step implementation of the Consensus Plan.

[54] *See Amendment of Part 90, Subparts M and S, of the Commission's Rules,* Report and Order, 3 FCC Rcd 1838, ¶ 88 (1988), *aff'd.* 4 FCC Rcd 356 (1989); *Request of Fleet Call, Inc.*, Memorandum Opinion and Order, 6 FCC Rcd 1533 (1991) *recon. dismissed*, 6 FCC Rcd 6989 (1991).

Nextel may have to relocate to alternate frequencies inside and outside the 800 MHz band through significant effort and cost. The Consensus Plan requires Nextel to reconfigure its nationwide wireless communications network – entailing substantial equipment, engineering, and administrative changes – at its own cost and while maintaining its services to the public. At the same time, Nextel is the only wireless carrier committed to contributing $500 million toward the cost of relocating public safety systems.

Nextel's overriding priority in this proceeding is to resolve the growing problem of CMRS – public safety interference. The undeniable reality is that the Consensus Plan is the only practical, near-term approach to resolving this urgent public safety issue, and this Plan requires that Nextel receive replacement spectrum outside the 700, 800, and 900 MHz bands to make this solution possible. Relocating Nextel to alternative interleaved frequencies would simply recreate the 800 MHz interference problems in another spectrum band, an outcome that obviously makes no sense. In addition, the reassignment of contiguous spectrum to Nextel would be consistent with Commission efforts over the past several years to promote regulatory parity between cellularized SMR licensees and their cellular and PCS counterparts, as mandated by the Omnibus Budget Reconciliation Act of 1993.[55] The Commission now licenses SMR systems on a geographic area basis rather than on a site-specific basis, and the relocation of Nextel to contiguous spectrum blocks would similarly move the Commission closer to its goal of equal regulatory treatment for all CMRS providers.

The Commission has at various times amended its rules to give cellular licensees

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[55] Pub. L. No. 103-66, Title VI, § 6002(c), 107 Stat. 312 (1993), codified at 47 U.S.C. § 332(c).

greater flexibility in the type of technologies they may use, thereby increasing their operational capabilities and the types of services they can provide to customers. In fact, recent Commission action provides yet another example. Less than two months ago, the Commission adopted an order that, over a five-year transition period, will eliminate the requirement that cellular carriers provide analog service to their customers – a significant benefit to cellular providers.[56] As a result of this decision, cellular carriers will enjoy the "windfall" of lower costs, increased spectrum efficiency, and the freedom to use their spectrum formerly allotted to analog services to provide new, innovative digital products. As earlier decisions did, this order will enhance the value of the cellular spectrum. Contrary to the cellular opponents assertions herein, there is nothing wrong with legitimate and justified Commission regulatory actions that collaterally enhance the spectrum position of affected licensees.

III. CONCLUSION

After many months of consideration and the accumulation of a voluminous record in this proceeding, there is only one viable solution to the urgent and growing problems facing public safety communications in the United States: the Consensus Plan. Support for this plan is broad-based. The vast majority of public safety interests support the Plan, as well as many of the very entities that most strenuously opposed Nextel's White Paper proposal. ***There is no higher priority for the Commission than to adopt the Consensus Plan to address interference to the communications systems that support our Nation's first responders.*** The Commission should move beyond the remaining opponents' delay

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[56] *FCC Streamlines Part 22 of Its Rules, Eliminates Analog Service Requirement After Five-Year Transition Period*, News Release, WT Docket No. 01-108 (Aug. 8, 2002).

tactics and empty counter-proposals, and move expeditiously to further the nation's Homeland Security mission by adopting and implementing the Consensus Plan.

Respectfully submitted,

NEXTEL COMMUNICATIONS, INC.

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September 23, 2002

Appendix I
To Nextel Comments
In WT Docket No. 02-55

Supplemental Technical Statement
of Leonard M. Cascioli

SUPPLEMENTAL TECHNICAL STATEMENT OF LEONARD M. CASCIOLI
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Nextel Communications, Inc.

The Consensus Plan for Realigning the 800 MHz Land Mobile Radio Band Will Effectively Mitigate CMRS – Public Safety Interference

Introduction

This document is designed to show how the Consensus Plan for realigning the 800 MHz Land Mobile Radio Band provides significant reduction in out-of-band emissions (OOBE) interference and intermodulation (IM) based interference and sets the stage for further minimizing CMRS – public safety interference in the future in the 854 – 861 MHz band.

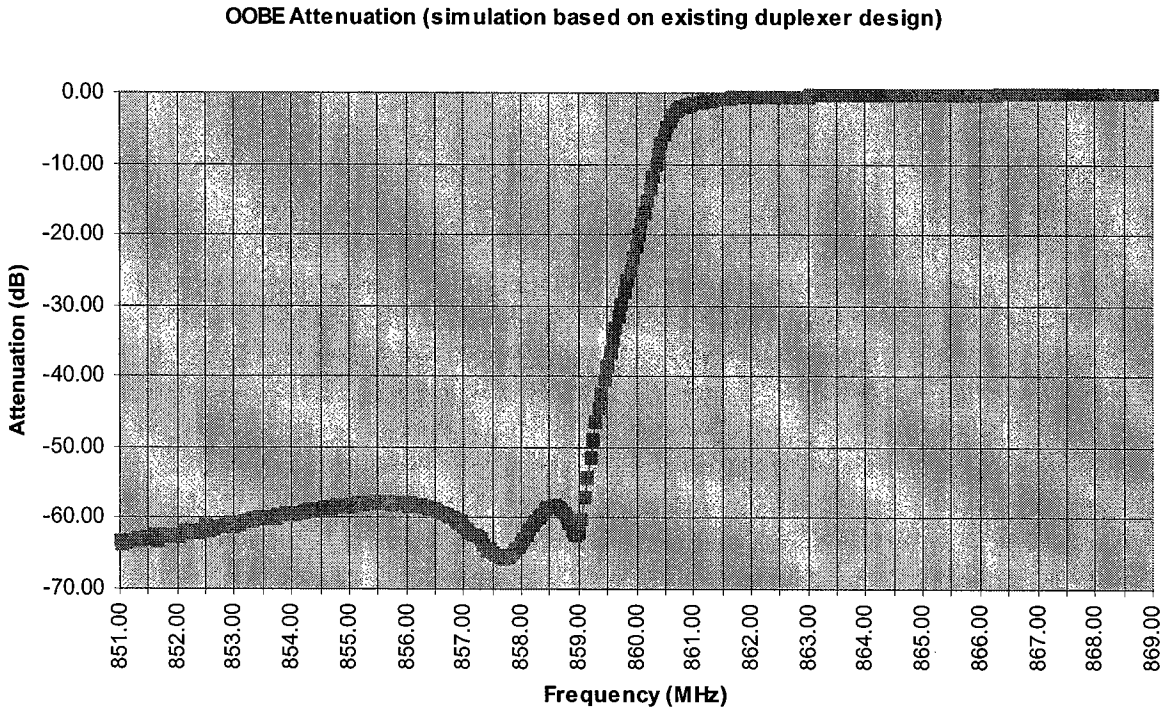
My previous Technical Statement, attached to Nextel's August 7, 2002 Reply Comments, described the significant reduction in IM and OOBE interference that will result from relocating current public safety NPSPAC systems to a new allocation. The Consensus Plan relocates public safety licensees that currently operate between the 821 - 824/866 - 869 MHz NPSPAC spectrum away from CMRS systems operating between 861-866 MHz and above 869 MHz to the lowest portion of the 800 MHz band (806 - 809/851 - 854 MHz) to a new replacement NPSPAC channels allocation (the "new-NPSPAC band"). The Consensus Plan also relocates low-power, low-site cellular operations from channels interleaved between incumbent public safety, Specialized Mobile Radio ("SMR") and Business and Industrial and Land Transportation ("B/ILT") channels in the lower portion of the 800 MHz band (851 - 861 MHz) (the "non-NPSPAC band") to an allocation above 861 MHz (the "cellularized SMR band"). Taken together, the Consensus Plan reallocation will substantially mitigate the 800 MHz CMRS – public safety interference problem in the non-NPSPAC band, as detailed further below. For even greater levels of interference elimination, improvements in SMR, B/ILT and public safety handsets and systems must occur.

The Consensus Plan Substantially Mitigates OOBE Interference in the non-NPSPAC band

The non-NPSPAC band is separated into two distinct sub-bands – a "guard band" between 859 - 861 MHz and an "incumbent" band between 854 - 859 MHz. This separation was created to account for the level of OOBE interference that can be expected in each of them. The Consensus Plan's realignment of low-power, low-site cellular operations to above 861 MHz to the cellularized SMR band will allow cellularized SMR providers, such as Nextel, to replace duplexers which currently must pass all 800 MHz channels between 851 - 866 MHz. These new duplexers, which are available today, will allow RF energy to roll-off immediately below 861 MHz and above 869 MHz, which will allow Nextel to extract maximum capacity out of the 8 MHz block of base-to-mobile spectrum it will operate within, post-realignment, while ensuring that wideband noise is effectively and thoroughly attenuated below the guard band (859 – 861 MHz) to levels that will eliminate OOBE as an interference source except in extreme situations. After realignment, however, the CMRS signal transmitting above

861 MHz will not be fully attenuated in the guard band. Thus, the Consensus Plan recommends that systems that are more tolerant of OOBE or noise, such as higher-power systems, campus systems, or systems used for non-life safety, non-mission critical communications services, be deployed in this spectrum range.

The following is a chart that demonstrates the reduction in OOBE after realignment and the implementation of the new duplexers, as noted above.



The Consensus Plan Substantially Mitigates IM Interference in the non-NPSPAC band

There are three main scenarios in which IM based interference to incumbent B/ILT, SMR and public safety systems (the "high-site incumbents") operating in the non-NPSPAC spectrum band (854 - 861 MHz) can occur today. These are from cellular only, Nextel only and combined Nextel - cellular transmitting locations.

There are no instances of cellular-only IM-related interference today to the non-NPSPAC band. Nextel's internal tests have shown that the bandpass filter in the first stage of the typical high-site incumbent receiver provides little attenuation to RF energy at frequencies immediately above 869 MHz. Nextel's tests indicate that the typical first-stage bandpass filter attenuates RF signals 3 dB at approximately 873.5 MHz, approximately 8 dB at 880 MHz, and approximately 12 dB at 884 MHz. <u>This aligns</u>

closely with results provided to Nextel by Motorola of 3 dB at 873 MHz and approximately 20-25 dB at 894 MHz. The relatively small amount of attenuation from 869 to 873 MHz means that strong signals from cellular-A transmitters in this frequency range can by themselves cause IM-related interference between 865–877 MHz. This span of potential IM-related interference area does not affect the non-NPSPAC area. Similarly, cellular transmissions above 873 MHz will not produce comparably strong IM products because the high-site incumbent's receiver front-end filter more effectively attenuates the contributing signals.

For an IM product to land on high-site incumbent operations in the non-NPSPAC band below 861 MHz it can be shown mathematically that for cellular A or cellular B-band base-to-mobile transmissions to directly produce IM-related interference to a high-site incumbent receiver, at least one of the cellular transmitters involved must be above 877 MHz. As discussed above, the attenuation characteristics of the typical high-site incumbent front-end receiver filter will so reduce the strength of an IM product created from a frequency greater then 877 MHz that the probability of the IM product causing real-world interference is minimal. Therefore, there should be no change in the level of IM related interference generated by cellular only situations in the non-NPSPAC band after realignment.

Realignment will also reduce the probability that a Nextel-only site by itself will cause IM interference to a high-site incumbent user in the non-NPSPAC bands. It can be shown mathematically that by limiting the span between the highest and lowest frequencies in use at a site, the spectral spread of IM products can be controlled as well. By removing the interleaving below 861 MHz, and creating a contiguous spectrum block for cellular, low-power operations from 861 – 869 MHz, the probability that a Nextel-only product will fall on a high-site incumbent non-NPSPAC frequency will be reduced by enabling Nextel to reduce the span of frequencies it deploys at a specific site from as much as 15 MHz today to no more than 8 MHz post-realignment.

The Consensus Plan would include a guard band at 814 – 816/859 – 861 MHz between the proposed non-cellular spectrum block and the cellular, low-site system channel block at 816 – 824/861 – 869 MHz. Operations in the cellular channel block will produce IM products in the guard band, though at a lesser rate then in this band currently; therefore, the guard band should be used by communications systems that can best tolerate some interference such as higher-power systems, campus systems, or systems used for non-life safety, non-mission critical communications services. ***For locations where high-site incumbent users are currently experiencing Nextel-only generated IM interference on non-NPSPAC channels, the probability that interference will still exist after realignment will be reduced by as much as 90% between 854 – 859 MHz and as much as 50% in the guard band (859 – 861 MHz), depending on which channels are being used.***

The Consensus Plan will also reduce the probability of co-located (or near co-located) Nextel and cellular base-to-mobile transmission producing IM products on the

non-NPSPAC channels. The Consensus Plan reduces the spectrum range over which **full-strength** IM products will fall. It accomplishes this by leveraging the high-site incumbent receiver front-end filter roll-off specifications referenced above; *i.e.,* IM products generated by various combinations of Nextel and cellular transmissions will be weaker the farther the cellular contributor moves above 869 MHz. In addition, relocating Nextel's operations above 861 MHz and into the 866 – 869 MHz channels (the current-NPSPAC spectrum), reduces the probability of a combined Nextel - cellular IM product falling on the non-NPSPAC spectrum (854 – 861 MHz) because it is less likely that the Nextel contributor will be sufficiently low in frequency to cause the resultant IM product to fall in the band.

In other words, although the Consensus Plan does not completely eliminate the possibility of CMRS – public safety IM interference in the non-NPSPAC band, even under the worst-case assumptions, it reduces the likelihood of IM interference to a level manageable through coordination among the affected operators. ***For locations where high-site incumbent users are currently experiencing combined Nextel – cellular A band IM interference on non-NPSPAC channels, the post-realignment probability of IM interference is reduced by as much as 65 percent in the 854 – 859 MHz band and as much as 25 percent in the guard band, depending on the specific channels being used.***

Motorola has recently stated publicly that the front-end filter specifications for its high-site incumbent receivers are actually far broader than the figures it previously provided Nextel, as referenced above. Nextel's own tests, Motorola's earlier e-mailed comments, and Nextel's field experience all indicated that the filter specifications set forth above are, in fact, correct. This is corroborated by the complete absence of any significant indication of B-band cellular carrier involvement in CMRS – voice system public safety interference to date, and the preponderance of cellular A-band carrier involved IM-interference using channels in the lower part of the cellular A-band allocation. If the high-site incumbent receiver filter performance was as broad as Motorola is now asserting, *i.e.,* (down only 3 dB at 885 MHz), there would be empirical evidence of B-band IM-interference involvement because cellular B-band signals would pass into the high-site incumbent receiver with little or no attenuation. On-off testing with cellular B-band carriers around the country, however, has provided no indication of cellular B-band involvement to date.

If Motorola's current assertions were correct, there should also be more extensive IM interference by cellular A-band carriers because cellular A-band signals would pass into a high-site incumbent receiver attenuated by only a fraction of a dB in most cases. Cellular A-band contributions to CMRS – public safety interference are substantial -- as much as 35 percent of the total CMRS – public safety interference incidents in at least one market and a contributor in at least 15 percent of the individual occurrences nationwide – but should be even more extensive under Motorola's current filter performance assertions.

Future Improvements

As noted above, the Consensus Plan sets the stage for further reducing the likelihood of CMRS – public safety interference at 800 MHz in the future by allowing equipment manufacturers to design front-end filters that cover a smaller range of spectrum. By beginning to roll off high-site incumbent receiver response even faster than the current filters perform (which should be possible due to the smaller band that must be passed), involvement by cellular-A carriers and Nextel transmitters in the upper part of the cellularized-SMR band (861-869 MHz) should be virtually eliminated. This improvement is only possible, however, upon completion of the 800 MHz realignment described herein, including the consolidation of non-cellular systems and cellular, low-site systems into separate contiguous channel blocks. Additionally, as high-site incumbents implement networks that are more robust they will be more immune to interference. This will also set the stage for additional handset improvements to minimize the potential for interference.