

public safety operators and other non-cellular systems in the non-cellular block. While Southern LINC, like all other incumbents, would have to relocate out of the new NPSPAC spectrum at 806-809/851-854 MHz, once relocated, it would have the flexibility to convert any high-site systems to cellularized operations in the non-cellularized spectrum without having to seek a waiver. Thus, the only impact of realignment on Southern LINC would be relocating its channels in the new NPSPAC band (channels 1-120) to replacement channels in the 809-816/854-861 MHz block (channels 121-400) -- like any other incumbent -- and Southern LINC would be eligible to receive reimbursement for relocating these channels.<sup>80</sup>

Southern LINC would be required to notify all affected licensees before implementing new cellularized, low-site operations and engage in pre-coordination to prevent interference to

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block; *i.e.*, that it 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* Consensus Parties Comments on Consensus Plan, at 4-5; Consensus Parties Reply Comments at n. 41. This can primarily be demonstrated by the applicant agreeing to be bound by the interference protection criteria discussed in Appendix F. In essence, the Consensus Parties concur with Southern LINC having a *de facto* blanket waiver for low-power, cellular-type deployment within its existing service area and its existing channel assignments (once it relocates from channels 1-120), as detailed further below.

<sup>80</sup> The Consensus Parties recommend that Southern's existing assignments in channels 1-120 be relocated to the Guard Band in the non-cellular block as close as possible to channel 401 – the first cellular block channel – to provide maximum separation between Southern's potentially low-site base stations and the public safety channels. Relocating existing Southern assignments in the 121-400 block to the upper portion of the block may also be beneficial in reducing potential interference with public safety licensees; accordingly, the RCC will coordinate with Southern to evaluate the benefits of these additional channel relocations on a market-by-market basis. In addition, the record herein is not definitive as to whether the principle of relocation being spectrum neutral to each relocated licensee requires that Southern receive contiguous replacement channels. Accordingly, the Consensus Parties recommend that the RCC have the flexibility to identify relocation channels for Southern consistent with the overall objectives of the realignment process.

non-cellular licensees.” Southern LINC would be responsible for resolving immediately any harmful interference to non-cellular systems that may occur as the result of such operations. Since Southern LINC has claimed that it will have no adverse impact on neighboring licensees, accepting such conditions should not be problematic.<sup>82</sup> With this approach, the Commission would ensure that Southern LINC will retain full capacity and functionality under the Consensus Plan consistent with its stated position in this proceeding.<sup>83</sup>

## VIII. CONCLUSION

With these Supplemental Comments, the Consensus Parties now fill in the remaining blanks in the Consensus Plan, and address virtually all of the outstanding issues raised by the Commission in the *NPRM* and by other parties during the course of this proceeding. The broadly-supported Consensus Plan - enjoying the support of over 90 percent of the Land Mobile

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<sup>81</sup> Given the serious threat that interference presents to life-safety communications, any waiver applicant must demonstrate conclusively that its cellular-type deployment will not recreate interference problems for public safety communications systems, including pre-construction coordination with public safety frequency coordinators and licensees in the affected area. A waiver recipient would have a strict obligation to eliminate interference to public safety incumbents should it occur.

<sup>82</sup> See Southern’s September 23, 2002 Comments at page 12 (“[T]he Commission . . . should allow Southern and other licensees to remain in their current spectrum homes. . . Southern’s entire system must be grandfathered such that it can continue to utilize, develop, and grow its cellularized system.

<sup>83</sup> Southern LINC September 23, 2002 Comments on Consensus Plan, at 12. The Consensus Parties believe that Southern LINC’s situation *vis-à-vis* realignment present unique circumstances. Southern is the second largest iDEN operator in the nation with a combination of high-site and low-site architecture appropriate to a largely rural service area containing a limited number of highly urbanized areas where low-site, low-power cellular-type are warranted. Southern’s smaller regional service area, and the population/service demand characteristics thereof, present a substantially lower probability of multiple instances of CMRS – public safety interference than is presented by a nationwide iDEN cellular-type network. Accordingly, Southern should be able to effectively limit and manage interference through pre-coordination in its service area. This approach resolves Southern’s concerns expressed in this proceeding without undercutting the purpose of the overall realignment.

Radio licensees affected by public safety interference - represents the only proposal that can achieve the Commission's 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. Accordingly, Consensus Parties respectfully request that the Commission expeditiously adopt the Consensus Plan for realigning the 800 MHz band as modified and enhanced herein.

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## **Appendix A**

### **800 MHz Realignment Cost Support**

# **800 MHz Realignment Cost Support**

## **Background**

An important element of the Consensus Plan for 800 MHz realignment is determining, to a reasonable certainty, the costs of retuning 800 MHz incumbent B/ILT, high-site SMR (“H-SMR”) and public safety licensees from their current channel assignments to their new 800 MHz assignments consistent with the Consensus Plan. This Appendix discusses the work undertaken and completed by the Consensus Parties to arrive at reliable retuning cost estimates for relocating: (1) B/ILT and H-SMR incumbents; and (2) NPSPAC, non-NPSPAC and combined NPSPAC/non-NPSPAC incumbent public safety licensees.

The Consensus Parties used a number of sources to carry out this cost assessment. First, the public safety organizations and Nextel have amassed a detailed understanding of the different design concepts, operational methodologies, and equipment attributes of various public safety communications systems in the course of numerous interference mitigation efforts over the past two years. Second, as the predominant EA licensee in the upper-200 *SMR* channels, Nextel has retuned nearly 1,000 incumbent 800 MHz licensees out of the upper-200 channels to alternate 800 MHz channel assignments. These retuned incumbents include commercial operators, public safety communications systems, private land mobile licensees, and communications systems licensed to and relied upon by major public utilities. Thus, Nextel has extensive experience in not only relocating 800 MHz licensees generally, but in successfully relocating licensees that cannot tolerate significant disruption or downtime. Third, Nextel and representatives of the public safety organizations visited **16** public safety systems throughout the country. These 16 systems were selected to provide a reasonably representative sample of different public safety operating environments and requirements, such as large metropolitan systems, smaller city systems, systems using only non-NPSPAC channels, NPSPAC-only channels, or a combination of both,<sup>1</sup> as well as systems that include current channel assignments in the new 800 MHz Guard Band that would, in all likelihood, choose to relocate out of the Guard Band.

## **Process**

With the assistance of the public safety organizations and private wireless organizations, Nextel took the following steps to estimate the cost of retuning 800 MHz incumbent private wireless and public safety communications systems:

- 1) Carried out a thorough review of the FCC’s 800 MHz licensing database to establish an accurate baseline count of all 800 MHz licensees.

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<sup>1</sup> While the 16 licensees represent a variety of different public safety operators, this sample is biased somewhat toward large, complex public safety communications systems. Reliance on this information likely results in an overstatement of the number of total mobile units that must be retuned as well as the proportion of the total public safety licensee universe involving large, metropolitan areas.

2) Supplemented the FCC's database with third-party public safety and private wireless licensing data sources.

3) Developed basic categories of the different types of B/ILT, H-SMR and public safety communications systems based on the FCC database and third-party information sources, as well as the experience of the Consensus Parties' in responding to CMRS – public safety interference complaints, and developed cost estimates for all activities necessary to successfully retune affected 800 MHz incumbents.

4) Tested and validated these categorizations and cost estimates for public safety licensees through field visits to and meetings with 16 representative public safety operators.

5) Tested, validated and refined its categorizations and cost estimates for private wireless and H-SMR licensees against Nextel's extensive experience in relocating these type of licensees out of the upper-200 SMR channels.

6) Further refined its public safety conclusions through public safety licensee responses to an APCO data collection survey designed to solicit additional information concerning system architectures, operating requirements and active mobile units counts on public safety communications systems.

The information developed in this process may be the most complete and comprehensive compilation of information ever assembled concerning the universe of 800 MHz public safety licensees; it also provides a complete and accurate picture of the retuning required of B/ILT and H-SMR licensees to effectuate the Consensus Plan. The result is an estimate of the total number of incumbent licensees that must relocate within the 800 MHz band under the Consensus Plan and the steps necessary to relocate them. For example, Nextel has identified 316 licensees holding 660 call signs in channels 1-120 that must retune to clear that band for relocating current NPSPAC licensees. For public safety, 1,137 total incumbent NPSPAC and incumbent public safety 800 MHz licensees currently operating in the 800 MHz Guard band (859-861 MHz) will have to relocate under the Consensus Plan.

Based on this information, Nextel identified representative categories of public safety licensees and developed retuning cost estimates for incumbents in each category. The data that follows provides a cost range for specific retuning elements reflecting the actual experience of public safety licensees, as well as Nextel's experience in retuning upper-200 incumbent private wireless and H-SMRs licensees across the country. Some of the major cost items are as follows:

- 1) Labor to physically retune repeaters and mobile/portable radios.
- 2) Critical elements necessary to modify certain types of Motorola systems.

- 3) Additional or improved combiners<sup>2</sup> to allow for tighter channel spacing within a given system.
- 4) Replacement of radios that cannot be retuned.
- 5) Loaner equipment to allow for necessary system redundancy during some of the more complex retunes?

The Consensus Parties recognize that the retuning costs for any particular licensee may vary both above and below the cost range estimates contained herein for a variety of reasons; accordingly while these ranges establish neither a ceiling nor a floor on the costs eligible for reimbursement in a specific case, they reasonably reflect realistic cost requirements for the majority of incumbents retuning under the Consensus Plan! Nextel also accounted for the fact that Public Safety radio systems tend to be much more complex than the typical commercial or business analog two-way radio system Nextel retuned from the upper-200 SMR channels. *In any case, to assure that its funding commitment is adequate, Nextel used the high end of the cost range for each relocation activity or element in developing its total commitment for funding the retuning of both public safety and private wireless/H-SMR systems.*

In addition, from this information, and using the average number of active mobile units operating on incumbent systems, Nextel generated an average per system end-user radio (mobile unit) count for both public safety and B/ILT, H-SMR systems. Among the public safety licensees Nextel visited, the average number of users programmed onto a channel exceeded 150 units. In a commercial system, loading in excess of 100 users per channel is likely to create system congestion. Because of the 24-hour nature of public safety operations, however, all users are not on the system simultaneously – so more users can be accommodated. Additionally, many users are not primary users of the system – they can include units from neighboring jurisdictions

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<sup>2</sup> A combiner is a device that allows multiple frequencies to be transmitted from a single antenna. It is difficult for a combiner to keep channels that are close together (e.g. 853.0125 MHz and 853.0375 MHz) from operating without interfering with each other. One of the reasons that the FCC created interleaved spectrum in the first place was to allow for a licensee to operate on channels with at least 1 MHz separation from each other. Advances in technology allow newer-generation combiners to accept channels that are much closer together.

<sup>3</sup> Many operators initially assumed that in order to retune their system, a duplicate or redundant system (the most expensive solution) would have to be constructed. After further discussion, a number of operators believed that continuous, reliable communications can be maintained without constructing a parallel, interim duplicate system. Nextel has included in its costs an allowance for cases requiring duplicate interim construction; it believes, however, that this will not be necessary in a large number of retuning efforts.

<sup>4</sup> Because of cost efficiencies, we expect that for systems with a very large number of mobile and portable units, the per-radio retune cost, for example, will come in below the specified range.

(for joint operations) and from ancillary government departments (such as public works) who, on occasion, must have communications with public safety personnel.

To be conservative, Nextel used this loading level in calculating the number of mobile units on public safety systems that must be retuned under the Consensus Plan; we believe, however, that our total represents the high-end of reality. Most of the operators we interviewed were in more populous, urban environments. We know that operators in areas with a lower population density will have fewer users per channel. Nextel also assumed that all licensees are currently constructed and operating systems that would have to be physically retuned. In reality, a significant number of public safety licenses have not yet been constructed, or are in the process of being constructed; each of these represents an opportunity to initially construct on the licensee's post-realignment channels, thereby avoiding or minimizing the need to retune these systems at all. As a result, Nextel's estimate of the number of active mobile units that must be retuned is likely overstated, providing additional cushion in its retuning commitment.

Based on all of the above, Nextel estimates that a total of **2.6** million mobile units must be retuned under the Consensus Plan. As discussed above, Nextel believes this is the high end of reality. Information recently submitted by public safety licensees indicates that the total number of public safety mobiles may be 2.1 million – an average of **136** mobiles units per public safety channel. Nextel continues to use the higher count to provide additional security that its commitment is adequate.'

Nextel estimates that **5%** of the Business/Industrial/SMR radios will have to be replaced during realignment and that approximately **1%** of the public safety radios will have to be replaced.<sup>6</sup>

The following pages provide the basic estimates and analysis that support Nextel's funding commitment.

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<sup>5</sup> Significantly, Motorola estimates that approximately 1.8 million mobile units are in use in incumbent 800 MHz public safety systems. Motorola's estimate is based on sales for the past 10 years adjusted to reflect market share. Motorola's estimate gives additional comfort that Nextel has not undercounted the number of mobile units that must be retuned.

<sup>6</sup> **Our** research has shown that public safety users tend to upgrade end-user radios more frequently than Business/Industrial/SMR operators. Because the public safety radios are newer, a lower percentage cannot be retuned and must be replaced. These are predominately older radios in **use** today on NPSPAC channels that cannot easily be retuned to operate in the new NPSPAC block, channels 1-120.

**Realignment Cost Summary for  
General Business (GB), Industrial Land Transportation  
(ILT) & Specialized Mobile Radio (SMR)**

Cost Estimate for Relocating Incumbent Licensees from  
Channel block 1-120 to Channel block 121-400

**Total Cost**

**\$129.6m**

## Cost Summary to Retune B/ILT, H-SMR incumbents from Channels 1-120 To Channels 121-400

### Total

Total Licensee		1058					
Total Call Signs		3102					
Total Frequencies		7460					
Total Sites by Licensee		31231					
Overall Assumptions:		All Channels are constructed and loaded					
		Assume EA winners have not constructed additional sites that would effect cost					
		Consulting Fees/Licensee (Eng., Legal, etc.)	Range		\$5000 to \$7500		
		Coordination Fees, per frequency			\$250		
		FCC Fees, per Call Sign			\$50		
<i>Summary of Cost by Category</i>							
		Conventional			\$8,019,700		
		SMR			\$18,010,500		
		YO/YB			\$71,850,000		
		Four Largest Utilities			\$21,547,150		
		Coordination Fees			\$1,865,000		
		FCC Fees			\$155,100		
		<b>Consulting Fees</b>			<b>\$7,935,000</b>		
		<b>Total to Retune</b>					

# Public Safety Realignment Cost Analysis

## **Public Safety Realignment Cost Summary**

<b>Public Safety (1-120) 851.0125-853.9875</b>	<b>\$ 54.4m</b>
<b>Public Safety (NPSPAC &amp; Guard Band)</b>	<b>\$644.2m</b>
NPSPAC – (866.0125-868.9875)	
Guard Band – (859.0125-860.9875)	
<b>Total Cost</b>	<b>\$698.6m</b>

# Public Safety System Categories

Public Safety Realignment from channels 1-120 (851.0125 – 853.9875),  
to channels 121-320 (854.0125 – 858.9875)

**“Conventional Systems”** are those that include only channels licensed for conventional use; they are not part of a trunked system.

**“Voice-Channel Retune Systems”** are those in which the control channels do not have to be retuned under the Consensus Plan for 800 MHz Realignment; only the voice channels must be retuned. These systems **do not** require all user radios to be reprogrammed.

**“Control-Channel Retune Systems”** as defined in this section, are those in which the control channels must be retuned. For these systems, relocation requires all user radios to be retuned.

**Public Safety 1-120 Cost Summary**  
**851.0125 – 853.9875**

Licensees:	203	61	52	316
Call Signs:	253	144	263	660
1-120 Freq's:	349	585	2082	3016
Discrete Sites by Licensee:	330	325	447	1102
				<b>Total</b>

	<u>Svstems</u>	<u>Systems</u>	<u>Svstems</u>	
Retune Repeaters & Other Site Work	\$990,000	\$1,462,500	\$8,940,000	\$11,392,500
Replace Repeaters	\$840,000	\$72,000	\$1,248,000	\$2,160,000
Replace Channel Elements	\$21,000	\$1,800	\$6,300	\$29,100
Replace Combiners	\$203,000	\$160,000	\$220,000	\$583,000
System Planning & Engineering	\$0	\$122,000	\$156,000	\$278,000
Replace Code Plugs	\$0	\$390,000	\$536,400	\$926,400
Duplicate Systems	\$0	\$0	\$20,000,000	\$20,000,000
Console Replacement	\$0	\$0	\$375,000	\$375,000

<b>1-120 System Retune Cost</b>	\$2,054,000	\$2,208,300	\$31,481,700	\$35,744,000
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<b>Radio Retune</b>	<u>Conventional</u>	<u>Voice-Channel</u>	<u>Control-Channel</u>	<u>Total</u>
	<u>Svstems</u>	<u>Systems</u>	<u>Svstems</u>	
Discrete Frequencies by Licensee	291	782	359	1,432
Radios/Freq (Range 136 to 167)	167	167	167	
Radios	48,597	130,594	59,953	239,144
Retunes/Radio	1	1	2	
Retunes	48,597	130,594	119,906	299,097
Cost/ Retune Range \$30 to \$50	\$30 to \$50	\$30 to \$50	\$30 to \$50	

<b>1-120 Radio Retune Cost</b>	\$2,429,850	\$6,529,700	\$5,995,300	\$14,954,850
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Replacement Radios cost captured in Guard Band & NPSPAC Model

<b>Other Retune Costs</b>	<u>Conventional</u>	<u>Voice-Channel</u>	<u>Control-Channel</u>	<u>Total</u>
	<u>Svstems</u>	<u>Systems</u>	<u>Svstems</u>	
Coordination Fees / Freq	\$190	\$190	\$190	
Frequencies	349	585	2082	
Coordination Fees	\$66,310	\$111,150	\$395,580	\$573,040
Consulting Fees / Licensee	\$5000 to \$10000	\$5000 to \$10000	\$5000 to \$10000	
Licensees	203	61	52	
Consulting Fees	\$2,030,000	\$610,000	\$520,000	\$3,160,000

<b>Other Retune Cost</b>	\$2,096,310	\$721,150	\$915,580	\$3,733,040
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<b>TOTAL \$ 1 - 120 Retune Costs</b>	\$6,580,160	\$9,459,150	\$38,392,580	\$131,890
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Public Safety System Categories for  
Public Safety moving NPSPAC (866.0125 – 868.9875)  
to channels 1-120 (851.0125 – 853.9875)

AND

Public Safety moving Guard Band (859.0125 – 860.9875)  
to channels 121-320 (854.0125 – 858.9875)

**Conventional & Mutual Aid** use frequencies licensed for use in conventional systems, not part of a trunked system.

**Single Site/Single Site with Back-up** is a trunked system with one primary site and possibly a back-up site

**Simulcast** is a single system with multiple sites using the same frequencies.

**MultiSite Systems** are systems that cover a wide geographical area and have independent frequency sets.

**Verv Large Systems** are generally State Wide Systems

## Public Safety Cost Summary for Relocating Public Safety Guard Band and NPSPAC Incumbents

Number of PS Licensees		
Gross Frequencies	52305	
Discrete Sites by Licensee	8295	
Summary of Cost		
Conventional & Mutual Aid		\$11,413,800
Single Site w/Backup		\$18,066,000
Simulcast		\$56,096,900
MultiSite Systems		\$28,992,050
Very Large Systems		\$170,420,000
Total for System Retune		\$284,988,750
Total Number of FSI (145% of Motorola Estimate) (167 radios per discrete frequency)	2,599,355	
Replacement Radios (1% @ \$3000 each)		\$77,980,650
Retune all Radios, 2x (\$50/Retune) *		\$259,935,500
Coordination Fees (\$190/freq)		\$9,937,950
Consulting Fees (\$10,000 per Licensee)		\$11,370,000
Total System, Retune, Coordination, FCC, Legal		\$644,212,850
<b>Grand Total to ReBand PS (Guard Band and NPSPAC)</b>		<b>\$644,212,850</b>
* The \$50 reprogramming fee is based upon information provided by public safety entities during discussions with the Consensus Parties.		

<b>Summary To retune Conventional Systems &amp; Mutual Aid</b>	
# of Systems	464
# of Licensees	261
# Of Gross Frequencies	597
# Of Conventional Sites	3
# of Mutual Aid Frequencies (repeaters)	2730
# of Mutual Aid Sites	1127
<b>Grand Total For Conventional Svstems &amp; Mutual Aid:</b>	<b>\$11,413,800</b>

<b>Summary To retune Single Site-SS w Backup</b>	
# of Systems	388
# of Backup Systems	108
# of Licensees	388
# Of Gross Frequencies	3160
# Of Sites	496
# of voting sites	194
<b>Grand Total For Single Site-SS w Backup</b>	<b>\$18,066,000</b>

<b>Summary To Retune Simulcast Systems</b>	
# of Systems	213
# of Remote Sites	1627
# of Licensees	213
# Of Gross Frequencies	15470
# Of Sites	1840
# of Voting sites (based on remote sites)	1627
<b>Grand Total For Simulcast Svstems</b>	<b>\$56,096,900</b>

<b>Summary To Retune Multi-Site Systems</b>	
# of Systems	1109
# of Licensees	207
# Of Gross Frequencies	7688
# Of Sites	1109
# of voting sites	887
<b>Grand Total For Multi-Site Svstems</b>	<b>\$28,992,050</b>

<b>Summary To Retune Very Large Systems</b>	
# of Systems	68
# of Licensees	68
# Of Gross Frequencies	22660
# Of Sites	3259
# of voting sites	2607
<b>Grand Total For Very Larae Svstems</b>	<b>\$170,420,000</b>

<b>Total Estimate To Retune Public Safety Licensees from NPSPAC &amp; Guard Band to the Lower 120 Channels</b>	<b>\$284,988,750</b>
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## Assumptions & Cost Figures

Conventional Systems & Mutual Aid	Range if Applicable
No voting system	
Mutual Aid	
Cost To Retune a Mutual Aid frequency (repeater)	\$1500-\$3000
Conventional Systems	
% of repeaters to be replaced	15%-20%
cost for site work per frequency (Includes engineering & design work)	\$1500-\$3000
Cost per new repeater	\$8000-\$12000
# of Console stations per Licensee	0
Cost to retune each Console Station	\$1000-\$2000
<b>Single Site or Single Site w/ backup</b>	
If Agency has 1 site, they do not have a backup system	
Agency will not do without their backup site during retuning	
cost for site work - per site (Includes engineering & design work)	\$9000-\$15000
# of times sites need to be retuned	1
% of sites utilizing voting sites	20%-50%
Cost to retune a voting site	\$3000-\$5000
Cost per new repeater	\$8000-\$12000
# of Console stations Per Licensee	8-10
Cost to retune each Console Station	\$1000-\$2000
<b>Multi System:</b>	
Each site is a discreet system	
No backup sites	
% of repeaters to be replaced	3%-5%
cost for site work (Includes engineering & design work)	\$9000-\$15000
# of times sites need to be retuned	1
% of sites utilizing voting sites	50%-80%
Cost to retune a voting site	\$3000-\$5000
Cost per new repeater	\$8000-\$12000
# of Console stations per licensee	8-10
Cost to retune each Console Station	\$1000-\$2000

**Simulcast:**

1 control site per licensee, all other sites are remote	
Each unit is in out of service for at least 1 shift per day.	
40% of systems will need a parallel system	
Purchase enough replacement equipment to cover 3 regions at a time	
Assume each region has 3 simulcast systems, this will cover the largest	
total number of systems	213
% needing a parallel system	20%-40%
cost 9 parallel systems	10,000,000-\$15,000,000
% of repeaters to be replaced	1%
cost for site work (Includes engineering & design work) Prime site	\$15,000-\$20,000
cost for site work (Includes engineering & design work) remote sites	\$10,000-\$15,000
# of times sites need to be retuned	1
Cost to reprogram each end unit	\$0
% of sites utilizing voting sites (based on remote sites)	20%-50%
Cost to retune a voting site	\$3000-\$5000
Cost per new repeater	\$8000-\$12000
Cost per new radio	\$0
# of consoles stations per Licensee	10-15
Cost to retune each Console Station	\$1000-\$2000

All radios are retunable	
Every system will need replacement system	
Purchase enough replacement equipment to cover 2 regions at a time	
each region has (on average)-1 very large systems	
Each Licensee has 1 system	
Because of different stages for different regions, some equipment can be used	
from the 1-120 retuning	
Radios per Site	0
Cost of Duplicate Systems ( 2 Systems)	25 000 000,00
Cost per frequency to retune	\$50,000-\$60,000
Cost To Retune backbone at each site (Includes delivery of Replacement system)	\$20,000-\$30,000
(Includes engineering & design work)	
% of sites utilizing voting sites	50%-80%
Cost to retune a voting site	\$3000-\$5000
# of Consoles stations for every 5 sites	10-15
Cost to retune each Console Station	\$1000-\$2000

**Information obtained from Public Safety Agencies  
during consultation visits**

## PUBLIC SAFETY TECHNICAL RETUNE MEETINGS

Agency	System Type	Channels	Channels	NPSPAC	Date
		1- 120	320 - 400		
Major West Coast Airport	3 Motorola Conventional	Yes	Yes		10/3-9 A
Arizona City System	Motorola 1 Site		Yes		10/8-9 A
Midwest County System	Motorola 18 Sites	Yes	Yes	Yes	10/11-1:30 P
Southern California County Sys	Motorola 7 Site Simulcast	Yes	Yes	Yes	10/3-8:30 A
Nevada City System	Motorola 3 Site Simulcast		Yes	Yes	10/10-8:30 A
Southwest Statewide System	Motorola 4 Site Simulcast		Yes		10/11-8:30 A
Southern California County Sys	Motorola Multi-Site	Yes (Border)	Yes (Border)	Yes	10/9-9 A
Eastern Seaboard City System	Motorola 2 Site Simulcast	Yes	Yes		10/3-10 A
Major Florida City System	Motorola w/ Backup Site	Yes	Yes		10/8-9 A
Western Florida County System	EDAC 2 Site	Yes	Yes		10/9-1:30 P
Florida County System	Motorola Multi-Site		Yes	Yes	10/10-11 A
East Coast City Transit System	Motorola 4 Site Simulcast		Yes		10/15-10 A
Eastern Seaboard City System	EDAC w/ Backup Site	Yes	Yes		10/9 Noon
NY State County System	Motorola 8 Site Simulcast		Yes	Yes	10/2-9 A
Mid Atlantic County System	Motorola 8 Site Simulcast		Yes		10/11-1:30 P
Midwest County System	EDAC 7 Site Simulcast			Yes	10/11-9 A

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**APPENDIX B**

**CROSS-REFERENCE OF 800 MHZ SPECTRUM RANGES  
AND  
CHANNEL NUMBERS**

## APPENDIX B

### Cross-Reference of 800 MHz Spectrum Ranges and Channel Numbers

<u>Name</u>	<u>800 MHz Spectrum</u>	<u>800 MHz Channels</u>
Current NPSPAC Block	821-824/866-869 MHz	601 - 720*
New NPSPAC Block (Also known as the General Category Pool)	806-809/851-854 MHz	1 - 120
Non-Cellular Block	806-816/851-861 MHz	1 - 400
Interleaved Channels	809-814/854-859 MHz	121 - 320
800MHz Guard Band	814-816/859-861 MHz	321 - 400
Cellular Block (Includes "Upper-200 SMR" Economic Area Licenses in Channels 401 - 600 )	816-824/861-869 MHz	401 - 720

\* Channel numbers in 25 MHz equivalent bandwidths