BORDER AREA COALITION
TUCSON AND YUMA, ARIZONA BORDER AREA IMPACTS

Pinnacle West Capital Corporation ("**Pinnacle West**"), on its own behalf and on behalf of its subsidiary, Arizona Public Service Company ("APS"), submit the following discussion

The Mexican Border Area Conflicts Result from Unaligned Channel Allocations

To understand the problem with the "Consensus" plan the conflict from unaligned channels must be understood. The current 800 MHz band plan results in significant spectrum inefficiencies and conflicts in the Mexican border area due to: Nextel deployment, the offset channel plan, and channel allocations do not align with the rest of the country.

For instance, in Tucson, Arizona on the existing border plan, **77.6**% (66 of 85) of the Tucson Public Safety channels in the interleaved area have severe license overlaps and conflicts.

The condition of the 800 MHz band in Tucson, Arizona is a prime example of the effect of not aligning channel use plans in the border area with the rest of the country. It provides a forecast of what could happen to NPSPAC channels in the border area if they are moved to a location in the spectrum that is not lined up with the regular area.

Tucson is very close to the 70-mile border zone's edge. Tucson uses the Mexican border zone channel plan, which includes 85 Public Safety channels allocated in a mixed-use interleaved area from 811-821/856-866. The NPSPAC channels are shared with Mexico at 821-824/866-869. With the exception of the NPSPAC channels and a few chance matches, the channel allocation in the Mexican border zone does not align with the channel allocation in use 70 miles north of the border, thus Public Safety channels are co-channeled with other users.

All 85 channels allocated to Public Safety in the interleaved area are being used by Public safety. Seventy-nine (79) of the 85 channels are used in Tucson. The remaining six are used in the nearby communities of Nogales and Sierra Vista (less than 70 miles from Tucson). In Tucson, 66 of the 85 Public Safety channels in the border zone have blatant co-channel license conflicts with the regular plan user. All of the regular plan conflicts are created by Nextel. In many cases, the regular plan license is within 12 miles of the co-channel Mexican plan license. The conflicts range from 7 miles to 55 miles. Of the remaining 19 Public Safety Mexican plan channels without conflicts, all 19 are co-channeled with Public Safety channels on the regular channel plan. The NPSPAC channels are currently immune to these conflicts. These same type of conflicts are also present in the Business/Industrial and Land Transportation (B/ILT) pools.

Reference attachment 'D' for an example of this conflict. Reference the Pinnacle West submittal for a detail description of the methodology used and a full reporting of data.

This overlap condition is prevalent on both sides of the Mexican border zone boundary with the U.S. regular plan and is not limited to Public Safety. It extends to elements of Critical Infrastructure with the same compromising effect. For instance, APS owns and operates the Palo Verde Nuclear Generating Station (PVNGS), located approximately 50 miles west of Phoenix and 105 miles north of the Mexican border. It is the largest nuclear plant in the United States. In 2002, PVNGS produced a national-record 30.8 **billion** kilowatt-hours of electricity. Five of its regular plan frequencies (WPDA421) have been compromised by Nextel (WPBT894) licensing Mexican border frequencies just 35 miles south of the plant.

Theoretically, frequency coordination should not allow this condition to exist. However, the dissimilar unaligned plans, the self-coordination of some licensees, and the offset channel condition leads to license conflicts. Another big problem is the blocking of channels. One example is Nextel's site at 5200 E. Saint Andrew in Tucson. This site is just north of the 70-mile border zone limit. It has five call signs with 291 frequencies reserved on the regular plan. One hundred and sixty frequencies are in the 856-866 range. Although Nextel has only licensed Specialized Mobile Radio (SMR) channels and B/ILT channels in the regular plan, it effectively blocks and overlaps over 200 Public Safety, B/ILT, and competing SMR's frequencies on the Mexican border plan in the Tucson area.

Thus to avoid these problems the use allocation for each channel must match in the border area.

Tucson, AZ and Yuma, AZ Case Study Results

Pinnacle West has performed a case study of Tucson, Arizona and Yuma, Arizona, in an attempt to reband the 800 MHz users according to the "Consensus" Plan. See the Pinnacle West filing for details. After a thorough review of the results, the "Consensus" Plan, and the "Consensus" Plan supplement, Pinnacle West has determined that in the Mexican border area for Tucson and Yuma, the "Consensus" Plan will not work because:

1) The results are counter to the Notice of Proposed Rule Making (NPRM) objective of reducing Public Safety interference.

2) The plan cannot be implemented without displacing a whole class of users out of the 800 MHz band.

3) The plan forces nearly100% of band users to relocate from their current licensed positions in the Band due to conflicts with regular plan channel allocations.

Channel Allocation using the "Consensus" Plan.						
	Existing Tucson Actual use	**Tucson – "Consensus" Plan**		**Existing Yuma actual use**	**Yuma - "Consensus" Plan**	
NPSPAC*	120	856-859	120	120	856-859	120
Public Safety	93	859-861	**80**	82	859-861	**80**
ILT/CII	45	---	**0**	30	861-866	30
B	40	---	**0**	13	861-866	13
HI-SMR	12	---	**0**	117	861-866	**57**
Nextel	110	861-869	**220**	58	866-869	**120**
Mexican	100	861-866	100	100	861-866	100
Totals	520		520	520		520

- Number of channels is referenced to 25khz.

The allocations in the above table are based on actual use in the Tucson and Yuma areas. The allocations are determined from the all licenses within 70 miles of the center of town including licensees on the regular plan. See Pinnacle West filing for details on the method used and detail report of results.

As evident by looking at the above table, in both cases Public Safety ends up with less spectrums then it started with. In Tucson, B/ILT, high-site SMR, and CII have no viable spectrum or Nextel gives up spectrum north of the 70 mile border zone. In Tucson, Nextel ends up **doubling its spectrum**. In Yuma, Nextel's **competing high-site SMRs lose half of their spectrum**. Again, Nextel more than double the spectrum it started with.

It was a stated objective of the "Consensus" plan that in the reallocation no users would be displaced.

Thus, Pinnacle West believes the "Consensus" Plan for the Mexican border area is unworkable and counter to the goals of improving Public Safety communications. See Pinnacle West filing for details.

Alternative Mexican Border Plan

Pinnacle West submits an alternate plan for the Mexican border area, based on the "Consensus" Plan, but with a requirement of Mexican treaty re-negotiation. It consists of the following:

1) Renegotiate the Mexican treaty:
   - Do a one-for-one frequency spectrum swap for the three MHz at 806-809/851-854 with the three MHz at 821-824/866-869. Include with this swap all treaties/waivers

that were obtained for use of the Mexican allocation in the existing 821-824/866-869 range.

- Do away with the offset channel requirement.

2) Re-allocate the 851-866 range of channel assignments to align with the regular plan channels.

3) During the time it takes to renegotiate the treaty, apply technical corrections to minimize Public Safety and CII interference.

4) Provide more spectrum for Public Safety by reallocating 40 SMR channels in the regular plan interleaved area to Public Safety. The "Consensus" plan shifts SMR channels (Nextel) to Public Safety in the regular plan interleaved area. In the border area, with a total rebanding and the lack of Nextel channels in the 856-861 MHz range this concept does not directly apply. Pinnacle West proposes to reallocate 40 SMR channels in the interleaved area to Public Safety. The 5x8 block of channels (221-228, 261-268, 301-308, 341-348, and 381-388) connects two Public Safety blocks and would give Public Safety 14 contiguous channels in five blocks, an efficient and beneficial allocation. The "lower 80" auction #36 sold 80 nationwide 800 MHz channels for $29 Million. If ½ of these can be bought back and reallocated to Public Safety it will go a long way to providing the additional spectrum Public Safety requires -- without displacing Critical Infrastructure users

This plan retains the same quantity of Mexican/U.S. of spectrum. Because of very little use of the 800 MHz Band in Mexico -- with the exception of Nextel -- Pinnacle West believes that this treaty change can be obtained in a relatively short time frame.

Channel Comparison of the Existing, "Consensus", and Alternative Plans for Tucson and Yuma Arizona							
	Existing actual use		**"Consensus" Plan**		**PNW Alternative Plan**		
	Existing Tucson	Existing Yuma	Tucson	Yuma	Tucson new allocation	Yuma new allocation	Comments
Public Safety	93	82	80	80	100	100	
ILT / CII	45	30	0	30	45	30	
B	40	13	0	13	40	30	
HI-SMR	12	117	0	57	15	100	
Nextel	110	58	220	120	100	40	
Mexican	100	100	100	100	100	100	Alternating channels 861-866
NSPAC	120	120	120	120	120	120	3 Meg worth of 25 kHz equivalents – includes Mexican portion
Totals	520	520	520	520	520	520	See "Appendix A" and "Appendix B" for study results.

The following is the allocation with the revised plan by spectrum:

Band	**Plan**	**Comment**	**Transition comments**
851-854	New NPSPAC, ½ U.S., ½ Mexican	Was Mexican	Existing NPSPAC plan moves down. Already Clear.
854-856	Mexican – Allocate channels for secondary use to match regular plan.	Stays Mexican	If channels licensed on secondary basis must follow regular channel plan use allocation.
856-861	U.S. – reallocate channels to match regular plan.	Stays U.S.	Almost all users must change. However, no hurry. Nextel can swap with users in 861-866 range to move their operations to the top.
861-866	100 U.S. channels Proportionally allocate these channels to Nextel or high-site SMR.	100 Mexican channels stay alternating with U.S. channels	Depending on the number of U.S. channels Nextel uses in each border area, some of these 100 channels may contain high-site SMR users. Nextel uses some of the Mexican Frequencies in this range, they can continue to do so except those adjacent to any high-site SMR.
866-869	Goes to Mexico	Was half U.S. NPSPAC channels	Nextel has successfully worked with Mexico to use Mexican frequencies.

The new NPSPAC Band is already clear in the Mexican border area, so once the treaty is renegotiated the ”Consensus” reband plan moves ahead several steps. Thus, the time spent renegotiate the treaty can potentially be made up.

Thus, for the Mexican border area the regular channel plan can be applied once the treaty is renegotiated. An assumption is made that the regular interleaved area channel allocation will essentially be the same as it is now with the exception that 40 current SMR channels will be allocated to Public Safety.

This plan actually will improve Public safety communications.

Technical interference mitigation before, during and after rebanding

It may involve considerable time and effort to re-negotiate a treaty with Mexico. During this time, Pinnacle West proposes some technical mitigation to minimize interference from low-site SMRs.

From a technical perspective, there are some actions that can be taken to help relieve the problem during the interim transition period. These technical solutions should be implemented immediately:

1) Define a maximum low-site ERP in the range of 10 Watts (10dB reduction) to reduce the Public Safety and CII interference zone around a low site. A reduction of 10db significantly reduces the receiver overload potential and reduces the IM interference zone from over a mile to a less then a 1/3 of a mile around the site, an 89% improvement in the surface area that is susceptible to IM interference.

2) Defining a sharper drop-off of the side band emissions at all low sites in the 800 band to reduce the composite on-the-street signal strength of all side-band emissions at a site. Use the $116\log(f_{delta}/6.1)$ specification for adjacent channel dB reduction and for frequencies more then 25kHz from the low site adjust the existing cap found in existing emissions sections 90.210 and 90.691 and 90.669 to 90 + 10Log10 (P) decibels or 105 decibels. (where P=10)

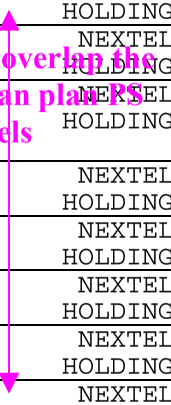
Accordingly, both a lower ERP and a tighter emission standard need to be implemented to obtain some interference relief with Pinnacle West's current interleaved band plan.

Reference Pinnacle West filing of 2/10/03 for additional information.

Spreadsheet of 85 Public Safety channels in Tucson and the distances to conflicting licenses.

Data from summer 2002 FCC down load of all 800 licenses in Arizona and within 70 miles of AZ border.

Frequency_SrchLst	Distance miles	Frequency_InputTbl	LICENSEE	XMIT_ADDR	XMIT_CITY	CALLSIGN	XMIT_LAT	XMIT_LONG
856	19.43836	856.0125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPCZ779	322454	1104258
856	9.012672	856.0125	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
856.025	18.02716	856.0125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPCZ779	322454	1104258
856.025	6.637176	856.0125	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
856.025	0	856.025		250 W KING AVE	TUCSON	WPQB416	321627	1105833
856.025	0	856.025		250 W KING AVE	TUCSON	WPQB416	321627	1105833
856.025	5.946711	856.025		7600 N COBBLESTONE RD	TUCSON	WPQB416	322042	1105504
856.025	5.946711	856.025		7600 N COBBLESTONE RD	TUCSON	WPQB416	322042	1105504
856.025	0	856.025	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPQB416	321627	1105833
856.025	0	856.025	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPQB416	321627	1105833
856.025	33.73063	856.0375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
856.025	6.798407	856.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
856.025	62.63034	856.0375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAINS	WPCP496	325830	1113935
856.025	57.39775	856.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPOA279	324927	1114252
856.025	6.637176	856.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
856.025	57.39775	856.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
856.05	40.16957	856.0375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
856.05	11.60180	856.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
856.05	68.60663	856.0375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAINS	WPCP496	325830	1113935



Frequency_SrchLst	Distance miles	Frequency_InputTbl	LICENSEE	XMIT_ADDR	XMIT_CITY	CALLSIGN	XMIT_LAT	XMIT_LONG
856.05	62.81751	856.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPOA279	324927	1114252
856.05	11.38870	856.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
856.05	62.81751	856.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
856.05	3.823764	856.05		1649 W ANKLAM RD	TUCSON	WPQB416	321252	1110018
856.05	3.823764	856.05		1649 W ANKLAM RD	TUCSON	WPQB416	321252	1110018
856.05	0	856.05	TUCSON, CITY OF	4004 S PARK AVE	TUCSON	WPQB416	321035	1105727
856.05	0	856.05	TUCSON, CITY OF	4004 S PARK AVE	TUCSON	WPQB416	321035	1105727
856.05	11.60180	856.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E SAINT ANDREW DR	TUCSON	WNHE930	321955	1105254
856.05	11.38870	856.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
856.075	11.88030	856.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E SAINT ANDREW DR	TUCSON	WNHE930	321955	1105254
856.075	11.69288	856.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
856.075	53.40853	856.075	SANTA CRUZ COUNTY OF	ATOP MT BENEDICT	NOGALES	0000452041	312346	1105522
856.075	0	856.075	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	8181 E. IRVINGTON	TUCSON	0000618173	321000	1104926
856.075	53.40853	856.075	SANTA CRUZ COUNTY OF	ATOP MT BENEDICT	NOGALES	WPSN275	312346	1105522
856.075	18.23712	856.0875	NEXTEL LICENSE HOLDINGS 4 INC DBA NEXTEL COMMUNICA	18 MI NE	TUCSON	R498093	322454	1104258
856.075	18.23712	856.0875	NEXTEL LICENSE HOLDINGS 4, INC	18 MI NE	TUCSON	WPEA391	322454	1104258

For full table of all 85 Public safety channels - refer to Pinnacle west submittal of 2/10/03