

**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)
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**Third Round of Reply Comments of
Pinnacle West Capital Corporation
To The Private Wireless Coalition “Consensus” Plan**

Pinnacle West Capital Corporation (“**Pinnacle West**”), on its own behalf and on behalf of its subsidiary, Arizona Public Service Company (“**APS**”), both Arizona corporations, hereby submits to the Federal Communications Commission (the “**FCC**” or the “**Commission**”) its reply comments to the Private Wireless Coalition “Consensus” Plan supplement submitted on December 24, 2002.¹ Specifically, these third round reply comments are in response to **DA 02-55** and supplement Pinnacle West’s Initial Comments submitted to the FCC on May 6, 2002, its reply comments submitted August 7, 2002, and its reply comments dated September 23, 2002. All of these comments reflect the perspective of a member of the Critical Infrastructure Industry (“**CII**”). Pinnacle West is an a FCC-licensee in the 800 MHz Band, and, accordingly, has a vital interest in this docket.²

Pinnacle West and APS are active members in the “Border Area coalition” group and support the Group’s position in these proceedings. Pinnacle West and APS are also active members of the UTC-sponsored forum that has addressed technical recommendations for improving public safety communications in the 800 MHz Band. Pinnacle West and APS actively support the recommendations of these groups and urges the Commission to give careful consideration to the “Border Area coalition” and UTC’s recommendations, many of which echo the points enumerated in Pinnacle West’s Comments.

¹ Published in the Federal Register on April 5, 2002, Vol. 67, No. 66, at page 16352.

² Pinnacle West is the parent company of Arizona Public Service Company, Arizona’s largest electric utility company. Pinnacle West holds the FCC licenses on behalf of Arizona Public Service Co.

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I. Comments on the Private Wireless Coalition “Consensus” Plan Supplement.³

One of our chief concerns with the “Consensus” Plan has been its treatment of the Mexican border zone issue. APS has a statewide 800-MHz-trunked voice system and a statewide 800 MHz mobile data system that is currently deployed at five sites that exist in the Mexican border area of Arizona. These sites will be significantly impacted in the event of a Mexican border plan re-alignment, as suggested by the “Consensus” Plan.

The following discussion centers on two areas of concern to us:

1. The Mexican border area-rebanding plan.
2. Technical interference mitigation before, during, and after rebanding.

In both of these areas, the flaws of the “Consensus” Plan are pointed out and a workable alternative is presented.

II The Mexican Border Area

Unaligned channels result in unsafe operational hurdles

Virtually no Motorola radio currently made can accommodate **different and multiple** band plans for the National Public Safety Planning Advisory Committee (“NPSPAC”) 12.5kHz channels and still allow a patrol car to seamlessly switch between base stations that use different plans. Thus with the “Consensus” Plan, a patrolman using a Motorola trunked radio system would have to manually switch the radio “personality” to the plan for the site in his current coverage area. As the need for manually switching could occur at a most inopportune time, this is an unacceptable situation.

At this time the NPSPAC channels do not have this problem anywhere in the country because they are aligned between the border zone and the regular plan. This type of problem has already been encountered with the Mexican border zone 25Khz channels due to the 12.5KHZ offset in the Mexican border area. It requires the mobile field personnel to

³ APS is limiting its comments in this Round to two areas of the Consensus Plan, even though it has significant concerns regarding other areas, including the:

- effectiveness of any rebanding
- plan implementation
- charter and make up of the RCC
- multi-year “freeze” of licensing activity by B/ILT
- lack of a guarantee that the process will be finished
- implementation order
- lack of designated B/ILT frequency pools
- use of a guard band
- cellular definition
- long term reallocation of B/ILT channels to Public Safety.

remember to switch “personalities” repeatedly as they move around the southern portion of the state. It has proven to be a serious problem, particularly in areas 70 miles from the border.

Discussions with Motorola in the past have indicated that solving this problem is a major effort and would involve firmware/software changes for all models of all 800 MHz radios and controllers in use for all versions of the firmware and software in use. Thus the initial cost of Motorola development and the cost to perform firmware/software and flash upgrades for all radios likely to be used in the border area needs to be included in the cost to implement this plan.

Conflicts Result from Unaligned Channel Allocations.

It is well known the existing 800 MHz-band plan has significant conflicts. The band plan and the equipment in use by Public Safety and Critical Infrastructure Industries were designed for high-site/wide-area coverage. The introduction of low-site/high-power equipment destroyed the integrity of the current band plan. The current 800 MHz band plan results in significant spectrum inefficiencies and conflicts in the Mexican border area due to Nextel deployment, because 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 MHz. The NPSPAC channels are shared with Mexico at 821-824/866-869 MHz. 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-channelled with other users.

The Tucson - Nogales corridor is the gateway to Mexico in Arizona. The Nogales port of entry is the one of the top five busiest port of entries from the U.S. to Mexico. Over 3.5 billion pounds of produce flow through this port every year. Radio communications are vital to management of this sizable impact.

In Arizona, Public Safety’s 800 MHz licensees include the City of Tucson, Pima County, the Pascua Yaqui Tribe, the University of Arizona, Tucson Airport, Kitt Peak National Observatory, and the State of Arizona. All of these are using the 85 channels allocated to Public Safety in the interleaved area. Seventy-nine 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 include 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.

This conflict can be verified by doing a license search for all 800 MHz licenses within 70 miles of the center of Tucson (coordinates 32-12-30,110-56-32). Following the search, sort by frequency, being sure to account for the 12.5 kHz offset in the Mexican area, as these channels overlap the regular channels and are considered co-channel by FCC rules (90.621 b(7)). One regular channel can conflict with two Mexican channels and vice versa. For the Public Safety channels choose the Public Safety site closest to the center of Tucson. Analyze the distance between the Public Safety site and the other co-channels users for each of the Public Safety frequencies. A conflict is indicated if the site is within 55 miles of the Public Safety user. Results show that most channels have multiple license conflicts – often less than 20 miles between dissimilar users. Even if Nextel is not using these licensed channels or not currently causing interference, this prevents the deployment and expansion of systems to use the spectrum as intended.

This condition is prevalent on both sides of the Mexican border zone boundary with the U.S. regular plan. This effect is not centered on 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 plans, the self-coordinated immunity 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.

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 "Appendix A" 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 nearly 100% of band users to relocate from their current licensed positions in the Band and may even force users north of the border zone from their 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.

As evident by looking at the above table, in both cases Public Safety ends up with less spectrum than it started with. In Tucson, B/ILT, high-site SMR, and CII have no viable spectrum. 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 “Appendix A” 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) that 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.

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Channel Comparison of the Existing, “Consensus”, and Alternative Plans for Tucson and Yuma Arizona							
	Existing actual use		“Consensus” Plan		Alternative Plan		Comments
	Existing Tucson	Existing Yuma	Tucson	Yuma	Tucson new allocation	Yuma new allocation	
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
NPSPAC	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.

(*) Per "Appendix A" Tucson case study with “Consensus” Plan.

(**) Per “Appendix B” Tucson case study with treaty renegotiations.

See Appendix B for more details.

III 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 CMRS operators.

It is well known the existing 800 MHz Band has significant conflicts. The band plan and equipment used by Public Safety and CII were designed for high-site/wide-area coverage. The introduction of low-site/high-power equipment has destroyed the integrity of the band plan. In order to restore the band integrity, some technical specification changes are required.

As several commenters have identified, high site and low site systems cannot co-exist anywhere in the passband of the high-site subscriber unit receivers without interference potential from the low site transmitters. This is the crux of the problem. Nextel's implementation cannot be undone; Public Safety and CII equipment cannot be made to tolerate strong on-the-street signals.

Ideally, completely separated spectrum for high-site and low-site technologies would provide full protection for Public Safety and CII. However, as several of the commenters have pointed out, rebanding as it is now presented will not solve all or even most of the problem. To remove the interference potential with low site transmitters in the band, Public Safety and CII receivers must be replaced with receivers that do not include any of the low-site bandwidth in their front end bandpass filters. Even if this were possible, it would still be necessary to stop transmitter side-band noise that would continue to fall in the receiver front-end passband. This transmitter noise must be stopped at the source for frequencies removed from the transmitter carrier.

The "Consensus" Plan does not include radio replacement as part of the cost associated with the plan, but that does not matter as Motorola has stated that sharp edge pre-selector front ends are not viable for handheld receivers. Thus to make rebanding a complete solution, Nextel (and other low-site 800 MHz Band implementers) would have to leave the 800 MHz Band entirely, the NPSPAC frequencies should move to the lower part of the 800 band, Motorola would have to narrow the receiver bandpass on all its 800 MHz products, and the FCC would reallocate 861-869 MHz to a completely different use (such as high-site MAS radio, satellite down link, or ???) which would be compatible with high-site wide-area use.

Realistically, 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 InterModulation (IM) interference zone from over a mile to a less than a 1/3 of a mile around the site, an 89% improvement in the surface area that is susceptible to 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 $116\log(f_{\text{delta}}/6.1)$ specification for adjacent channel dB reduction and for frequencies more than 25kHz from the low site channel adjust the existing cap found in existing emissions sections 90.210 and 90.691 and 90.669 to $90 + 10\text{Log}_{10}(P)$ decibels⁴. or 105 decibels (where $P=10$)

See "Appendix C" for suggested rule changes and a discussion of these technical standards.

Conclusion

In conclusion, Pinnacle West must emphasize the need for a sound policy for the border zone area that actually improves the condition of Public Safety and Critical Infrastructure Industry communications. Also Pinnacle West firmly believes that it is essential for the integrity of the 800 MHz spectrum to apply technical limits on low sites to more efficiently use the 800 MHz spectrum and to best serve the public interest.

Thank you for this opportunity to present our views on this topic of compelling national importance. Any questions on our submittal should be directed to Mr. Webster, 800Mhz Project Manger, at (602) 371-5962, joseph.webster@pinnaclewest.com, who serves a point-of-contact for the Company on matters of telecommunications on this issue.

Respectfully submitted as of this 10th day of February, 2003.

PINNACLE WEST CAPITAL CORPORATION

BY: _____s/Denny Brown_____
Denny Brown, Vice President & CIO

⁴ Alternatively the 700 band specification of $76+10\log(P)$ would be the absolute minimum for side band attenuation which could work for one transmitter.

Appendix A -Tucson area and Yuma case studies:

Plan goals:

Attempt to implement the “Consensus” Plan.

- 1) Reduce Public Safety interference.
- 2) Do not displace users.

Assumptions:

The “Consensus” Plan is unclear as to:

- Public Safety use of Mexican allocations that are interleaved within the U.S. NPSPAC channels are not addressed. This is a significant flaw, as this requires that all 3 MHz must move down.
- There is a question about the NPSPAC 12.5 KHz channel allocations. Can these be legally used in the spectrum that is allocated to 25 kHz channels by treaty? It is likely that a treaty would have to be re-negotiated in any case.
- The NPSPAC coordination process will have to completely redone if the concept of just moving NPSPAC down a certain number of channels was not maintained.

With these concerns in mind, it is assumed that the intention is to move the entire 3 MHz of NPSPAC areas down to 856-859 MHz and reserve it for NPSPAC use.

Similarly it cannot be taken for granted that Nextel will be allowed to use 25 kHz channels in the former NPSPAC areas as 866-869 MHz, which is allocated to 12.5 kHz channels by treaty. It is assumed that the 866-869 MHz area will be used with 25kHz channels.

The method used to determine current allocation is as follows:

- 1) Search for all licenses within 70 miles of downtown Tucson.
- 2) Temporarily remove all Nextel regular plan licensees because of blatant and overwhelming license conflicts in Tucson with Nextel. See “Appendix D”.
- 3) Sort remaining Tucson licensees by frequency and distance to center of town.
- 4) Allocate the type of license based on the nearest user. (Without Nextel, there were virtually no conflicts.)
- 5) Apply the regular plan licensees that overlap in to the border zone.

The following actual use allocation results for the 400 channels in the Tucson Mexican border area for frequencies 856-869.

Existing Channel Use in the Tucson Mexican Border Zone Plan.		
Public Safety	93	Public Safety used some GEN category channels in addition to their 85 Public Safety.
ILT /CII	45	
B	40	
HI-SMR	12	
Nextel	110	

Mexican	100	
NPSPAC	120	3 MHz worth of 25 kHz equivalents *
	520	See "Appendix D" and "Appendix E" for study program output.

* Although 1/2 of NPSPAC is allocated to Mexico, FCC rules let Public Safety use all channels on U.S. soil. In addition, to use 12.5 kHz channels would require a treaty re-negotiation, so all three MHz must move.

Apply the “Consensus” Plan.

The “Consensus” plan assumes:

- There is no change to the Mexican treaty.
- Public Safety is relocated to a low position in the Band and Nextel to a high position.
- The new Nextel plan is in place for the regular area.
- Some Nextel SMR channels are reallocated to Public Safety

Using the “Consensus” Plan formula with the existing actual channel use, the following channel allocation for Tucson is obtained:

Tucson Application of “Consensus” Plan.				
	Existing use		“Consensus” Allocation	
NPSPAC	120	856-859	120 channels - NPSPAC range	Co-channel with B/ILT/Hi-SMR users on regular plan
PS	93	859-861	80 PS channels	Not enough channel space to fit all Public Safety in the band – thus Public Safety loses 13 channels. 0 guard band at 861 interference from co-channel Nextel 861-866 operation in regular area
ILT /CII	45	861-866	45 ILT/CII channels **	Interleaved, alternating with Mexican channels. **Blocked by Nextel on regular plan.
B	40	861-866	40 B channels **	Interleaved, alternating with Mexican channels. **Blocked by Nextel on regular plan.
Hi-SMR	12	861-866	15 Hi SMR channels **	Interleaved, alternating with Mexican channels. **Blocked by Nextel on regular plan.
Mexican	100	861-866	100 Mexican channels	Alternating with U.S. channels
Nextel	110	866-869	120 channels	Nextel in existing NSPAC
	520		520 channels	

Application of the “Consensus” plan doesn’t work.

Because 861-866 MHz is unusable anywhere near the 70-mile border edge, this plan effectively wipes out B/ILT/CII/Hi-SMR in Tucson. Otherwise, Nextel curtails its operation on 861-866 MHz channels in and around Tucson including its channels north of 70-mile border zone. If Public Safety has the Tucson spectrum 856-861 MHz reserved on the border plan and Nextel has 861-866 MHz reserved on the regular plan, it leaves no place for B/ILT/CII and high-site SMR; therefore, the “Consensus” Plan solution will not work as presented.

If the “Consensus” Plan is to work, it will have to be modified. Without a Mexican treaty change, any modification would have to occur north of the border zone. One alternative modification would require a 70-mile bubble around Tucson in which use of the border zone plan would be required. This would require a graduated bubble plan. In the graduated bubble plan, all Radio Frequency (RF) into Tucson is on the border zone plan. However, the regular plan can be used as distances increase to the north with reduced power close to Tucson and gradual increase in power as distances increase to the north from Tucson. Better frequency coordination will be required; the practice of licensing more frequencies than could possibly be used would have to be curtailed. In addition, the plan would have to curtail any use by Nextel of the alternating Mexican frequencies on U.S. soil or low site SMR in the 861-866 MHz range. However, this modification makes an already convoluted band plan even more convoluted and cannot be realistically implemented.

In addition, Public Safety NPSPAC customers of Motorola SmartZone™ and SmartNet™ trunking technology will find that their systems cannot deal with the new “Consensus” NPSPAC band plans. Even with the planned Motorola radio modifications to move the NPSAPC band as per the rebanding plan, the concept that a patrol car could be using both the regular plan and border plan NPSPAC channels at essentially the same time is a not a trivial upgrade to the Trunking systems currently deployed and will require significant infrastructure upgrades or total system replacement to accommodate. These cost should be included in the projected and committed cost to transition to any band plan with dissimilar allocations for the NPSPAC channels.

Considering that in the Tucson area only Nextel can use channels in the 861-866 MHz range, because of their regular plan licenses, the “Consensus” Plan for Tucson looks like this:

	Existing	Band	“Consensus”
NPSPAC	120	856-859	120
PS	93	859-861	80
ILT / CII	45	---	0
B	40	---	0
HI-SMR	12	---	0
Nextel	110	861-869	220
Mexican	100	861-866	100
Totals	520		520

Considerations Against the Tucson “Consensus” Plan

- B/ILT, CII and high-site SMR are forced out of the band. APS requires a statewide radio system for its operations; thus, it would be forced to obtain a total system replacement estimated at over \$50 million.
- The “Consensus” Plan makes an already convoluted band plan even more convoluted.
- Public Safety NPSPAC channels do not align with regular plan NPSPAC channels

- Public Safety NPSPAC customers of Motorola SmartZone™ and SmartNet™ technology will be faced total replacement or Motorola will have to rewrite the infrastructure and subscriber unit software to accommodate two new NPSPAC band plans.
- There are no provisions for mutual aid to/from Mexico or Phoenix.
- The NPSPAC channels would require re-coordination. Even if the plan retains at 12.5 kHz channels, they will have to be re-coordinated due to B/ILT and high-site SMR channels just north of the 70-mile border zone edge.
- NPSPAC channels will now have co-channel conflicts/interference from non-Public Safety users on the regular plan.
- The “Consensus” Plan causes a loss of 13 Public Safety channels to avoid using channels above 861 MHz and being co-channeled with Nextel on the regular plan.
- Virtually 100 % of users must change frequencies or move out of the band.
- Nextel would have to relinquish 100 conflicting channels in the 861-866 MHz range in areas north of border zone for B/ILT and high-site SMR in border area.
- Any use of the alternating Mexican frequencies on U.S. soil by Nextel or low-site SMR in the 861-866 MHz range would have to be curtailed.
- The “Consensus” plan worsens the offset channel and channel coordination conflict situation.
- The “Consensus” plan moves the conflict of the border zone plans further north.

Considerations favoring the Tucson “Consensus” Plan

- Public Safety can use the Mexican NPSPAC channels without the Mexican ERP restriction; however, Public Safety will lose channels if forced to use 25 kHz channels, as the use of 12.5 KHz channels is not part of the Mexican treaty.
- Eighty (80) Public Safety channels that were suffering Nextel co-channel interference will now only be co-channeled with B/ILT and high-site SMR on the regular plan.
- Nextel will get the 866-869 MHz channels it desires.

YUMA

Yuma is on the Mexican border, and does not suffer the same co-channel interference and license conflicts as experienced in Tucson. In Yuma, there is a large established base of high-site SMR users primarily supporting the agricultural industry and other industries in that area. Nextel does not have a large number of frequencies in Yuma. One hundred percent of the 800 MHz spectrum is licensed and it is very difficult to obtain additional frequencies. Pinnacle West has been unsuccessfully trying to obtain one channel for its new Mobile data system in Yuma for two years.

In the Yuma area, the same analysis process was used with the exception that there was not the overwhelming license conflicts and overlaps found in the Tucson area. For this area, the closest license to the center of town was used to determine the class of user.

The following actual use for Yuma was obtained:

Existing Channel Use in the Yuma Mexican Border Zone Plan.		
PS	82	
ILT / CII	30	
B	13	
HI-SMR	117	
Nextel	58	Several of the Nextel channels were several miles out of Yuma proper but still inhibit Yuma area licensees.
Mexican	100	Alternating channels 861-866
NPSPAC	120	3 MHz worth of 25 kHz equivalents *
	520	See "Appendix D" and "Appendix D" for study program output.

Applying the “Consensus” Plan in Yuma allocations would result in:

Yuma Application of “Consensus” Plan.				
	Existing Use		“Consensus” Allocation Yuma	Comments
NPSPAC	120	856-859	120 channels - NPSPAC range	Co-channel with B/ILT/HI-SMR users on regular plan.
PS	82	859-861	80 Public Safety channels	Not enough channel space to fit all Public Safety in below 861 thus Public Safety loses 2.channels.
ILT /CII	30	861-866	30 ILT / CII channels	Interleaved, alternating with Mexican channels. All above 861.
B	13	861-866	13 B channels	Interleaved, alternating with Mexican channels. All above 861.
HI-SMR	117	861-866	57 High SMR channels	Interleaved, alternating with Mexican channels. All above 861.
Mexican	100	861-866	100 Mexican channels	Alternating with U.S. channels
Nextel	58	866-869	120 channels	Nextel in old existing NPSPAC
	520		520 channels	

By looking at the above table it should be noted that in the Yuma area, Public Safety loses two channels, high-site SMR loses 52 channels, and Nextel gains 62 channels.

Considerations Against the Yuma “Consensus” Plan

- Existing high-site SMR loses 52 channels.
- Public Safety NPSPAC channels do not align with regular area.
- There are no provisions for mutual aid to/from Mexico or Phoenix.
- The NPSPAC channels would require re-coordination if they go to 25 kHz.
- B/ILT and high-site SMR are all forced into 861-866 MHz (channels that they are not allocated in the regular plan.) This affects frequency reuse in large systems.
- The “Consensus” plan makes an already convoluted band plan even more convoluted.
- The plan causes a loss of two Public Safety channels to avoid using channels above 861 MHz.

- Almost 100 % of users must change frequencies.
- Nextel would have to stop using the 100 interleaving Mexican channels in 861-866 MHz on U.S. soil.
- The plan worsens the offset channel and channel coordination conflict situation.

Considerations Favoring the Yuma – “Consensus” Plan

- Public Safety can use the Mexican NSPAC channels without the Mexican ERP restriction; however, Public Safety will lose channels if forced to use 25 kHz channels. The use of 12 kHz channels is not part of the Mexican treaty.
- Eighty (80) Public Safety channels that were suffering Nextel adjacent channel interference will not be.
- Nextel will get the 866-869 MHz channels. Nextel gains 52 channels.

Achievement of Goals summary:

The FCC’s NPRM Goals are not achieved through the “Consensus” Plan. This solution makes the Public Safety communications and interference problem worse, e.g., it does improve the state of 80 channels a little but makes 120 channels worse.

Border area users above 861 MHz will still receive co-channel interference from Nextel 861-866 MHz operation on the regular plan. The plan displaces all Nextel users or all B/ILT and high-site SMR users in Tucson and/or extends Tucson border zone bubble farther north thus propagating the border zone plan further north. It creates a zone around the border zone 70-mile boundary where reserved Public Safety spectrum on the regular plan and Public Safety spectrum on the border side encompasses almost the entire spectrum from 851-861 MHz.

Thus, Pinnacle West believes the “Consensus” Plan for the Mexican border area is unworkable. It is counter to the goals of improving Public Safety communications and only lays waste to a vital public asset.

Appendix ‘B’ -An alternative Mexican border zone plan.

This plan is based on the perceived need for a rebanding with the goal to improve Public Safety communications.

Renegotiate the Mexican treaty:

- Do a one-for-one frequency spectrum swap for the three (3) MHz at 806-809/851-854 MHz with the three (3) MHz at 821-824/866-869 MHz. Include with this swap all treaties/waivers that were obtained for use of the Mexican allocation in the existing 821-824/866-869 MHz range.
- Align Mexican NPSPAC channels with new U.S. NPSPAC channels.
- Do away with the offset channel requirement.
- Allow the U.S. to continue to license Mexican channels on U.S. soil on a secondary basis. However, instead of ERP limits at the transmitter, specify a maximum emission limit allowed across the border.
- Provide for a three-year transition period where Mexico will inhibit any new users of the 800 MHz band in both the new and old NPSPAC areas of the band, dependent on the status of the transition on the U.S. side.
- Provide a procedure to retune or reimburse any Mexican users that happen to be using the spectrum allocated for the new NPSPAC channels.

2. Re-allocate and align the border zone 851-866 MHz range of channels to align with the regular plan channels. Including protected secondary users of the allocated Mexican channels on US soil.

3. Apply technical corrections to minimize Public Safety and CII interference during the time it takes to renegotiate the treaty, See “Appendix C”.

4. Provide more spectrum for Public Safety by reallocating 40 SMR channels in the interleaved area to Public Safety.

This plan retains the same Mexican/U.S. quantity of spectrum. Since there is very little use of the 800 MHz Band in Mexico (with the exception Nextel), Pinnacle West believes that this treaty can be changed in a relatively short time frame.

Re-allocate and align the border zone

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 community, 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 and would have to negotiate with Mexico to use these spectrum.

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 to renegotiate the treaty can potentially be made up.

The Mexican border plan has a significantly different channel allocation then the regular plan: channel uses are not aligned, all frequencies are offset by 12.5 KHz, and the number of channels allocated to each user class is different. Therefore, the reallocation of channels will have to be based on current users to be fair. The following is a comparison of the number of channels allocated and used in the channel plans for Tucson and Yuma Arizona.

Provide more spectrum for Public Safety

In the regular area, the "Consensus" plan shifts SMR channels (Nextel) to Public Safety in the interleaved area. In the border area, with a total rebanding and the lack of Nextel channels in the 856-861 MHz range, Pinnacle West proposes to reallocate 40 SMR channels in 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 gives Public Safety 14 contiguous channels in five blocks, an efficient and beneficial allocation. So when the regular plan is applied to the US allocation in the Mexican border area we get the following allocation:

	MEX plan allocation	Reg plan Allocation for U.S. areas	Move some SMR to PS per “Consensus ” plan **	TUCSON usage	YUMA usage	Tucson new allocation	Yuma new allocation
PS	85	60	100	93	82	100	100
ILT / CII	60	30	30	45	30	45	30
B	60	30	30	40	13	40	30
HI-SMR	95 *	80	40	12	117	15	100***
Nextel >861		100	100	110	58	100	40
Mexican	100	100	100	100	100	100	100
Totals:	400	400	400	400	400	400	400

* This number is the 83 allocated to SMR + 12 general category

** As per “Consensus” Plan to shift SMR (Nextel) channels to Public Safety in the interleaved area.

*** Existing high-site SMR in Yuma continues to use 17 Business licenses in Yuma. Existing high-site SMR extends to 865 in Yuma.

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.

Considerations Against the Plan:

- 100% of users are required to move in either plan.
- Nextel would have to continue to work with Mexico to use the 866-869 MHz spectrum.

Considerations Supporting the Plan:

- Actually improves Public Safety and CII communications.
- Cleans up the Mexican border zone band plan.

Summary

Pinnacle West believes this plan is better than the “Consensus” plan and better serves the public interest. Portions of this plan such as the elimination of the offset channel requirement and alignment of the border and regular channels should be done even if the 800 MHz band is not re-banded.

Appendix ‘C’ -Technical mitigation before, during, and after rebanding

Section 1 -Changes to rules

Pinnacle West proposes the following changes in the existing part 90 rules.

section 90.635 add low site ERP restriction

Remove or revise the last three columns in Table 4.

These columns allowing up 1000 watts ERP per channel at sites as low as (0) meters HAAT obviously does not fit with today’s environment. In today’s environment, low sites are installed to either fill coverage holes for a small area or as part of a cellular implementation with just a few miles between sites. Neither of these implementations would justify more than just a few watts of power to effectively communicate. Indeed if 1000 watts ERP were actually used radios and cell phones within kilometers of the transmitter would fail.

Add new section:

(e)The composite effective radiated power for base stations with a site HAAT lower than 40 meters using frequencies in the 800 MHz band shall be limited by the height of the tower and the number of channels in use. See table 5. For HAAT above 40 meters Table 4 applies with an implied service area radius no larger than 60% of the distance to the license owners nearest adjacent site.

Exceptions to this table are allowed if the site is on property controlled/owned by the licensee in which no other users of the 800 MHz band (channels 1-400) are likely. This exception is in the form of an addition to the MAX allowed ERP based on distance to the property line. See Table 5a. The calculation of this exception shall be included with the applicant’s request for license or license modification.

TABLE 5 – Maximum Radiated power for sites with HAAT below 40 meters (98.4 feet)

Antenna height. (meters)	Maximum ERP	
	1-5 transmitters	More than 5 transmitters
0-20	15	10 watt ERP /40dBm
20-30	20	12
30-40	35	15
>40 See table 4	See table 4	See table 4-Using 60% of the distance to next cell site. Typically 5 miles max.

Table 5a – Addition to Max ERP allowed for campus systems

Distance from antenna to fence (feet)	Additional ERP Allowed

0-2500	0
2500-3500	+8W ERP
3500-5000	+40W ERP
5000-7000	+70W ERP
7000-10000	+90W ERP

In addition, if the site has more than 5 transmitters, frequencies chosen shall minimize the third IM harmonic to other users in the area.

Note: The intent of this rule change is to limit on-the-street power received by Public Safety and CII radios, thus, reducing IM interference potential.

The original FleetCall application anticipated antenna heights of 200'⁵. The current low site deployment at 30' to 50' feet is an obvious and significant difference that requires an adjusted technical standard to account for the dramatic increase of on-the-street power. The term Low site/ Low power would imply that the power being used at low sites is significantly less than the power used at high site locations, the rules should reflect this assumption.

Change 90.691 to reduce side band emissions – this is an existing rule, changes are highlighted:

Sec. 90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. This rule also applies to commercial SMR site licenses within in the EA Block. The emission limits are as follows:

- (1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \text{ Log}_{10} (f/6.1)$ decibels or $50 + 10 \text{ Log}_{10} (P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.
- (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz from the center of the outer channel in the block, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \text{ Log}_{10} (P)$ decibels or 80 decibels, whichever is the lesser attenuation.

(b) For base stations with a site HAAT lower than 40 meters using frequencies in the 800 MHz band. The emission limits are as follows:

⁵ ref Carolina light and power 5/6/02 attachment A-6 paragraph 16)

- (1) For any frequency adjacent to the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \text{ Log}_{10}(f/6.1)$ decibels, where f is the delta in kHz from the frequency and the center of the outer channel.
- (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz from the center of the outer channel in the block, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \text{ Log}_{10}(f/6.1)$ decibels, or $90 + 10\text{Log}_{10}(P)$ decibels⁴ or 105 decibels, whichever is the lesser attenuation, where f is the delta in kHz from the frequency and the center of the outer channel

(c) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

Change 90.210 to reduce side band emissions from non-analog transmitters:

Sec. 90.210 Emission masks. – This is an existing rule, changes are highlighted:

(g) Emission Mask G. For transmitters that are not equipped with an audio low-pass filter pursuant to Sec. 90.211(b), the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

- (1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5 kHz, but no more than 10 kHz: At least $83 \log (f_d / 5)$ dB;
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 10 kHz, but no more than 250 percent of the authorized bandwidth: At least $116 \log (f_d / 6.1)$ dB, or $50 + 10 \log (P)$ dB, or 70 dB, whichever is the lesser attenuation;
- (3) On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log (P)$ dB;
- (4) For base stations with a site HAAT lower than 40 meters using frequencies in the 800 MHz band. The emission limits are as follows:

- (i) For any frequency removed from the center of the authorized bandwidth between $\frac{1}{2}$ the authorized bandwidth, to and including $1\frac{1}{2}$ the authorized bandwidth, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116\text{Log}_{10}(f/6.1)$ decibels, where f is the delta in

⁴ Alternatively the 700 MHz band specification of $76+10\log(P)$ would be the absolute minimum for side band attenuation.

kHz from the frequency and the center of the authorized bandwidth of the channel.

- (ii) For any frequency removed from the center of the authorized bandwidth greater than 1½ the authorized bandwidth from the center of the channel, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \text{ Log}_{10}(f/6.1)$ decibels, or $90 + 10\text{Log}_{10}(P)^4$ decibels or 105 decibels, whichever is the lesser attenuation, where f is the delta in kHz from the frequency and the center of the authorized bandwidth of the channel.

Similar change to section 90.669 emission limits for MTA licenses

Sec. 90.669 Emission limits.

- (a) On any frequency in an MTA licensee's spectrum block that is adjacent to a non-MTA frequency, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 plus $10 \text{ Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation. Note: The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

(b) For base stations with a site HAAT lower than 40 meters using frequencies in the 800 MHz band. The emission limits are as follows:

- (i) For any frequency in an MTA licensee's that is adjacent to a non-MTA frequency the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \text{ Log}_{10}(f/6.1)$ decibels, where f is the delta in kHz from the frequency and the center of the MTA licensees channel.
- (ii) For any frequency removed from an MTA license greater than 1½ the authorized bandwidth from the center of the channel, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \text{ Log}_{10}(f/6.1)$ decibels or at least $90 + 10\text{Log}_{10}(P)$ decibels or 105 decibels⁴, whichever is the lesser attenuation, where f is the delta in kHz from the frequency and the center of the MTA licensees channel

- (c) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

2) Still allow adequate signal strength at the SMR receiver.

Analysis references in the record:

Numerous responses to the NPRM have addressed the interference issue from a technical basis.

Much of that information provided was used for this proposal.

Of particular note:

- Alltel, AT&T, Cingular, Southern LINC, Western Wireless 5/6/02
Section 2.2 drives home the point that receive overload/desense is the predominate contributor to the current interference environment. Rebanding alone will not solve the problem, without receiver passband modifications.)
- Motorola's *Ex Parte* presentation October 30, 2002. Slide 9 shows a chart depicting the measured power levels from 17 Nextel sites at varying distances from the site. It shows that aggregate on-the-street CMRS/SMR signal strength stronger than -49dB is likely to cause intermodulation products in 800 MHz Public Safety and CII receivers. The chart also shows at the 90 percentile intermodulation interference potential extends out 5000 feet from the tower.
- Motorola's *Ex Parte* presentation 9/20/02. Slide 5: "for every -1dB reduction of undesired signal gives 3db improvement in $C/(I+N)$."
- Pinnacle West Capital Corp. submittal on 5/7/02:

Examples of noise emissions on page 23-29 and subsequent analysis shows actual Nextel emissions and proposes solutions.
- UTC submittal of 5/6/02 contains Appendix A and detailed description of a Near – Far interference case with Consumers Energy and Nextel, description includes noise floor measurements, with Nextel installing autotune cavity combiners to resolve.
- Private Wireless Coalition "Consensus" Plan supplement, Appendix 'F'. Restates the -98dBm requirement for Public Safety and CII radios.
- State of New York filing 5/6/02, appendix K - has a good description of accumulative effect on the noise floor of multiple transmitters.
- Carolina Power & Light Company attachment with original FleetCall application: page A-6 paragraph 15, Reveals that the "intended configuration used 200' towers", thus on-the-street power was not a big issue.
- 700 MHz band (UTC filing) $76+10\log(P)$ for OOB.

Analysis of Public Safety and CII with low-site SMR.

Assumptions:

- 1) Signal strength of desired signal from 'far' site is -98dbm or stronger. (From Nextel's Appendix F).
- 2) Receiver minimum required C/(I+N) ratio is 20dB. Essentially the same as Motorola's 12dB SINAD on September and October presentations.
- 3) To avoid IM interference the maximum on-the-street composite signal strength from low-site SMR allowed would be -49dbm SMR channel power(from Motorola responses).
- 4) Existing Emission mask varies based on those found in section 90.693 for EA licenses, or section 210 mask 'G' for digital 800 or 90.669 for MTA licenses or the proposed new emission mask.
- 5) Assume a standard antenna pattern lobe for a 40-foot tall antenna that puts maximum power on the street at 550 feet.

Intermodulation/receiver desense/overload is governed by on-the-street power falling within the receivers pass-band so exact frequency is not relevant. Therefore, on-the-street power can be calculated by a calculation that factors free space loss with the low-site ERP factored by the number of transmitters active at the site.

Given the assumptions above, the maximum ERP allowed at a low site to eliminate IM interference is represented by the following equation:

$$(10 \log (ERP_w * 1000)) - \text{free space loss in dB} \leq -49\text{dBm}$$
$$\text{Maximum Far Field } ERP_{\text{dBm}} \leq -49\text{dB} + \text{free space loss in dB}$$

Assuming a 550-foot distance and 40-foot tower.

The free space loss is 75.5dB

Tower $ERP_{\text{dBm}} \leq -49\text{dbm} + 75.5\text{dB}$

Tower $ERP_{\text{dBm}} \leq 26.5\text{dBm}$

Which converts to something under 1 Watt ERP

This one (1) watt would have to be shared (composite power) among all transmitters at the site.

This result suggests that no workable amount of power reduction will allow Public Safety and CII radios to operate at 100% of the time near low-site SMR sites. However, a 10dB ERP reduction will reduce the area affected significantly. Combined with the chosen frequencies that will not cause intermod components on any the channels used by Public Safety and CII in that area, this should limit or eliminate the interference received.

At 10 Watts ERP and 2500 feet, the on-the-street signal strength for one transmitter would be:

Assuming a 2500-foot distance and 40-foot tower.

The free space loss is 88.69dB

10 watts ERP = +40dbm

40dBm-88.69dB = -48.69dBm which is close to Motorola's defined -49dBm limit.

So, 10 Watts ERP limits the IM and receiver overload exposure to about 2500 feet. Less power would limit this exposure even further. Combined with selections of frequencies that do not cause IM to local Public safety and Critical Infrastructure Industry users in the area, this should reduce the interference problem to an acceptable level. (This is a little farther than observed measurement. Motorola graphs indicate this should happen at 2000 feet).

=====

To verify the existing condition, on-the-street field strength is:

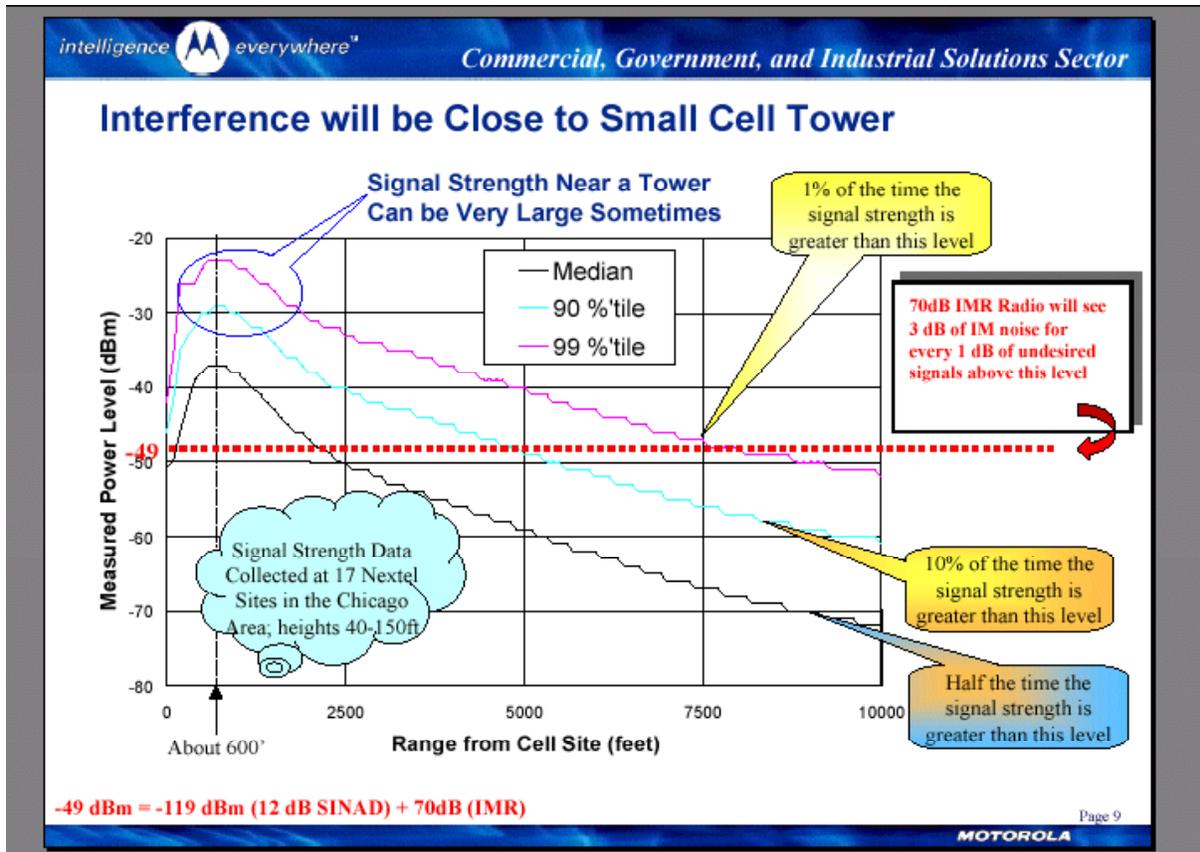
At a distance of 550 feet, free space loss is approximately 75.5dB

100 watts ERP = 50dBm

50dBm-75 dB == -25 dBm - which is stronger than the -49dBm Motorola recommends.

This is also stronger than what was witnessed on spectrum analyzer at a Schlotzky's Deli across the I17 freeway from a Nextel site so the Nextel power may not be at 100W ERP and/or the free space loss is larger than the ideal conditions in the table.

The two following slides are from Motorola's presentation of *Ex Parte* filing of 10/31/02. The first one below basically indicates that radios are susceptible to IM interference if on-the-street power is stronger than -49dBm. It can be expected that this will occur up to a mile and half from a Nextel site.



Interference will be Close to small Cell Tower – over a mile

This second slide also from Motorola emphasizes the point that just moving around in the band will not help. Strong interfering signals must be moved out of the radios passband.

Receiver Front-end functions

The diagram illustrates the receiver front-end functions. It starts with an antenna connected to a HARMONIC FILTER, followed by an ANTENNA SWITCH. The signal then passes through a pre-selector filter, which is characterized by a graph showing a 3 dB bandwidth of 50 MHz. The graph plots frequency in MHz, with a green shaded 'Desired band' between 851 and 869 MHz, and a yellow shaded 'Pre-selector band' between 835 and 885 MHz. The signal then passes through a Low Noise Amplifier (LNA) and another filter. The LNA is labeled 'Low Noise Amplifier'.

Pre-selector Characteristics

3 dB bandwidth = 50 MHz

851 869
835 885

Pre-selector Filters:

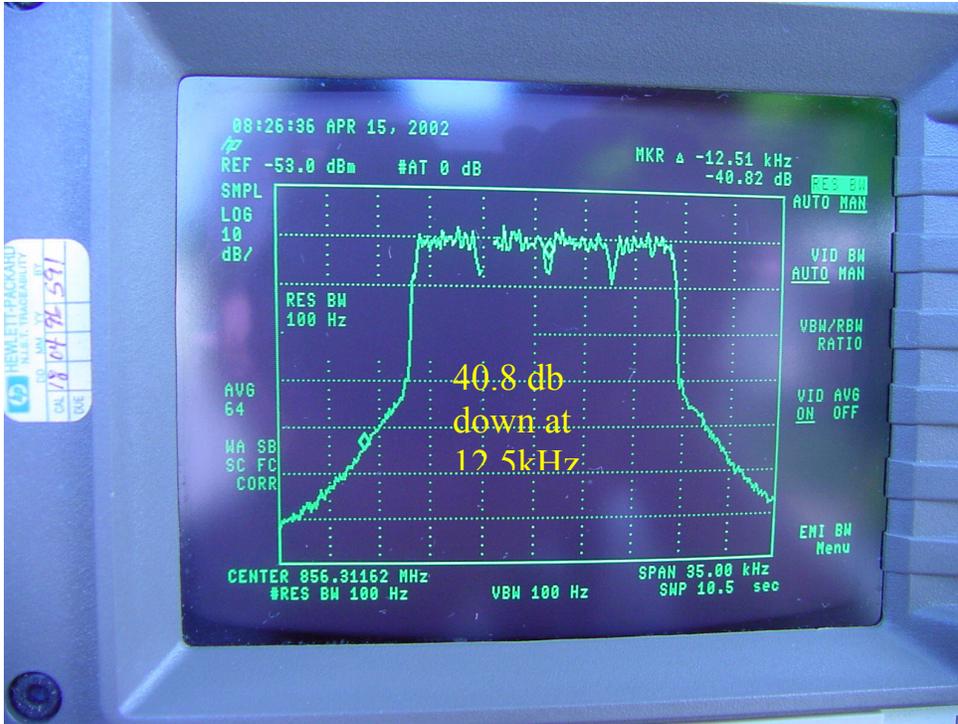
- Protects receiver from Image Spurs
- Pass Band flat over desired band
 - Margin for temperature, mfg variance
- Poles (roll off)
 - Minimize Insertion Loss
 - Roll off fast enough to meet Receiver Spur Spec (Image)
- Portable designs restrict size

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MOTOROLA

Two Slides from Pinnacle West field observations:

The Big Picture –down town Phoenix - notice high signal levels and significant out of band emissions





Typical Nextel – Low site. Strong (-53dBm) on-the-street signal.

To address Pinnacle West's on-channel interference problem, the distance away from the frequencies should help if side band noise is kept to a minimum.

Desired signal is -98db, so the total adjacent channel power plus noise/interference on Pinnacle West's frequency from other nearby transmitters must be weaker.

Existing situation:

The sideband noise from a transmitter at 100 watts at a distance of 550 feet would be:

The free space loss is 75db.

100 watts ERP = 50dbm at the top of antenna

Existing emission mask max limit is $(43 + 10\log(P))$, so for a 100 watt transmitter this = 63dB reduction.

The equation is then:

Tower ERP – side band emission reduction – free space loss = on the street signal from side band emission.

$50\text{dbm} - 63\text{dB} - 75\text{dB} = -88\text{dBm}$ of side band noise on the street from one channel away at 100w ERP

So even one transmitter could exceed the desired on-the-street signal strength even removed from the channel by two-channel spaces and 550 ft away from the tower.

Reducing the ERP to 10W does not help the side band emission limit. The same calculation results in an on-the-street signal from sideband emissions limit of:

$40\text{dBm} - 53\text{dB} - 75\text{dB} = -88\text{dBm}$ which allows the same side band on-the-street emissions.

The observed emission profiles beyond the adjacent channel are somewhat higher than the $43 - 10\log(P)$ required but do not reduce in intensity as the frequency delta gets farther from the carrier frequency. Observed sideband emissions exceed -100 dBm for several channels away from the allocated frequency.

Performing these calculations with the recommended standards results in the following:

A transmitter at 10 watts at a distance of 550 feet would be:

The free air loss is 75db.

10 watts ERP = +40dbm radiated from the antenna

Revised emission mask max limit is $116\log(f\text{-delta}/6.1)$ so for a 2nd adjacent channel it would be 105dB reduction.

Equation is then:

Tower ERP – side band emission reduction – free space loss = on the street signal from side band emission.

$+40\text{dbm} - 105\text{dB} - 75\text{dB} = -140\text{dBm}$ of side band noise on the street from one channel, well within the tolerances of Public Safety and CII radios.

The accumulative effect of multiple transmitters will raise the noise floor so this standard should be applied to all low-level sites with more than five transmitters. Accordingly, both a lower ERP and a tighter emission standard need to be implemented to obtain some interference relief with on Public safety and Pinnacle West's channels in the current interleaved band plan.

An overlay of the various technical standards over a typical Nextel transmitter.

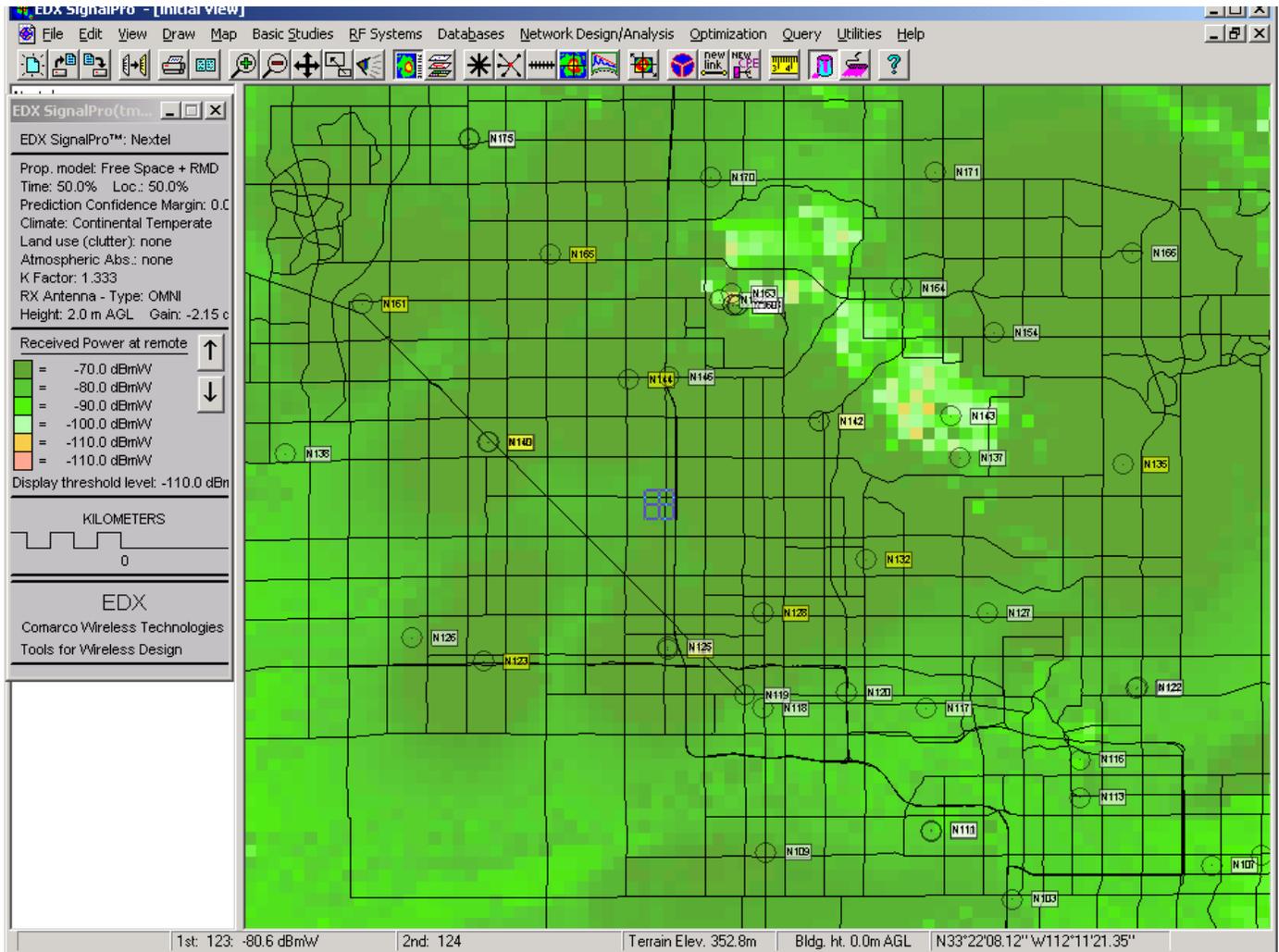


Section 3 -- Can Nextel still function with these new standards?

In Central Phoenix, it appears that there is a maximum of around six miles between sites.

- 1) Equipment such as auto-tune cavity combiners and filters are readily available to limit side band and spurious emissions.
- 2) A simulation study (see the following picture) performed by Pinnacle West reduced the power to 10W ERP at a handful of low-level Nextel sites in Phoenix (the yellow labels). This quick study (several assumptions were made) reveals that the on-the-street signal strength between these sites never gets lower than -80dBm. As the specification for IDEN receivers is -110dBm (10% Bit Error Rate) there is ample signal for reliable

communications even assuming that building penetration losses were on the order of 20dB. Also considering the fact most Nextel Radios only transmit at .6 watts (point 6 watts) maximum (with less than unity gain antennas), the range for two way communications is limited by the handheld transmitter, not the base station transmitter.



References:

FCC rule sections:

1. According to 90.207, about 800 MHz emissions.
2. According to 90.209, about 800 MHz emissions.
3. 90.210. Which defines the emission mask. According to this document 800 MHz band users should be using 'B' or 'G'. Both have a $45 + 10\log(P)$ emission limit beyond the two adjacent channels on each side of the licensed channel. This is high as the accumulative effect of several transmitters at a site leads to desense (or receiver overload) on receivers that are close to the site.
4. 90.213 freq. stability "800 MHz fixed base stability set to 1.5 parts per million (ppm) (note this has a big impact on Pinnacle West's 4125's and 2875's as Pinnacle West is co-channelled with Nextel so they must meet this freq. stability standard! (part 90.645 gives them an exception if they are exclusive users of a frequency)
5. 90.209 authorized bandwidth is 20 kHz with 25 kHz channel spacing.
6. 90.635 address limitations on power and antenna height. This section contains a table for HAAT from 0 – 50 feet with a distance requirement of 4 miles has an ERP limit of 8 watts.
7. 90.645 paragraph 'f' says that 90.209 OOB shall be met!
8. 90.669 emission limits states that "for MTA license blocks: on any frequency in a MTA licensee's spectrum block that is adjacent to a non-MTA frequency the power of emission shall be attenuated below the transmitter power (P) by at least 43 plus $10\log 10/(P)$ decibels or 80 decibels, whichever is the lesser attenuation."
“
9. 90.671 also discusses field strength limits at the EA boundary for MTA's EA-based SMRs systems. Sets these to "40dBuV/m" [FR 6158, 6159 Feb 16 1996 and FR 21992 May 4, 1995]
10. 90.689 field strength limits for EA licenses (same 40 dBuV/m limit with some discussion of predicted 36 and 40 dB V/m contours using calculation defined in figure 10 of section 73.699 with a correction factor of -9dB and predicted 18 and 22 dBV/m contours
11. 90.691 - special emission mask for EA licenses in the 800 MHz band. Applies only to 'outer' channels in band and channels next to other licensees. At 1-1/2 channels away (37.5 kHz from center of outer freq.) power must be attenuated $116 \log(f/6.1)$ but they also have $50 + 10\log(P)$ or 80dB.

Submittals in this proceeding

1. Original NPRM sections 75,76,79 solicited input regarding limits on emissions, reducing power and field strength measurements on the field.
2. Alltel, AT&T, Cingular, Southern Linc, Western Wireless 5/6/02
Section 2.2 drives home the point that receive overload/desense is the predominate contributor to the current interference environment. Rebanding alone will not solve the problem, without receiver passband modifications.
3. Motorola's *Ex Parte* presentation October 30,2002. Slide 9 shows a chart depicting the measured power levels from 17 Nextel sites at varying distances

- from the site. It shows that aggregate on-street CMRS/SMR signal strength stronger than -49db is likely to cause Intermodulation products in 800 MHz Public Safety and CII receivers. The chart also shows at the 90 percentile intermod interference potential extends out 5000 feet from the tower.
4. Motorola's *ExParte* presentation 9/20/02. Slide 5. "For every -1dB reduction of undesired signal gives 3db improvement in $C/(I+N)$."
 5. Pinnacle West Capital Corp. submittal on 5/7/02. Examples of noise emissions on page 23-29 and subsequent analysis shows actual Nextel emissions and proposes solutions.
 6. UTC submittal of 5/6/02 contains Appendix A and detailed description of a Near – Far interference case with Consumers Energy and Nextel, description includes noise floor measurements, with Nextel installing auto tune cavity combiners to resolve.
 7. Private Wireless Coalition "Consensus Plan" supplement, Appendix 'F'. Defines the -98dBm requirement for Public Safety and CII radios.
 8. Nextel's latest says to reduce signal by $43-10\log(P)$ below 861 MHz and $78-10\log(p)$ below 859 MHz.
 9. Preferred Communications Systems, Reply Comments, August 7, 2002, at page 5 -The "lower 80" auction #36 sold 80 nationwide 800 MHz channels for \$29 Million
 10. State of New York filing 5/6/02, appendix K - has a good description of accumulative effect on the noise floor of multiple transmitters.
 11. Carolina Power & Light Company attachment with original FleetCall application: page A-6 paragraph 15, Reveals that the "intended configuration used 200' towers", thus on-the-street power was no a big issue.
 12. 700 MHz band (UTC filing) $76+10\log(P)$ for OOB.

Appendix D 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	Freque nc y_ Input b1	LICENSEE	XMIT_ADDR	XMIT_CIT Y	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 MOUNTAIN	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 MOUNTAIN	WPCP496	325830	1113935
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

These overlapping
Mexican planar
channels

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Frequency_SrchList	Distance miles	Frequency_Input_b1	LICENSEE	XMIT_ADDR	XMIT_CIT_Y	CALLSIGN	XMIT_LAT	XMIT_LONG
856.05	0	856.05	TUCSON, CITY OF	4004 S PARK AVE RD	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	WPR868	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	WPR868	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
856.1	26.09411	856.0875	NEXTEL LICENSE HOLDINGS 4 INC DBA NEXTEL COMMUNICA	18 MI NE	TUCSON	R498093	322454	1104258
856.1	26.09411	856.0875	NEXTEL LICENSE HOLDINGS 4, INC	18 MI NE	TUCSON	WPEA391	322454	1104258
856.1	0	856.1	PIMA, COUNTY OF	TUCSON MTN	TUCSON	WNPN639	321456	1110701
856.1	36.36158	856.1125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
856.125	40.54209	856.1125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
856.125	0	856.125	PIMA, COUNTY OF	MT LEMMON	TUCSON	WNPN639	322626	1104716
856.125	33.07337	856.1375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
856.125	9.281383	856.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
856.125	62.74360	856.1375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10 MOUNTAIN S	SACATON MOUNTAIN	WPCP496	325830	1113935
856.125	60.15143	856.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPOA279	324927	1114252

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Frequency_SrchList	Distance miles	Frequency_Input_b1	LICENSEE	XMIT_ADDR	XMIT_CIT_Y	CALLSIGN	XMIT_LAT	XMIT_LONG
856.125	9.480409	856.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
856.125	60.15143	856.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
856.15	63.77030	856.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
856.15	63.62395	856.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
856.15	0	856.15	SIERRA VISTA, CITY OF	1011 N CORONADO	SIERRA VISTA	WNB699	313356	1101623
856.175	65.56084	856.1625	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPOA279	324927	1114252
856.175	65.56084	856.1625	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
856.175	38.77853	856.175	TOHONO OODHAM NATION OF ARIZONA	KITT PK OBSERVATORY SITE	THREE POINTS	WPLT955	315744	1113601
856.175	0	856.175	TOHONO OODHAM NATION OF ARIZONA	PAN TAK ST & KOMOLIC ST	TUCSON	WPLT955	320658	1105753
856.2	0	856.2	PIMA, COUNTY OF	ELEPHANT HEAD	AMADO	WNP639	314218	1105531
856.225	0	856.225	PIMA, COUNTY OF	MT LEMMON	TUCSON	WNP639	322626	1104716
856.25	0	856.25	TUCSON AIRPORT AUTHORITY	TUCSON INTL ARPRT 7005 S PLUMER	TUCSON	WPHC689	320723	1105632
856.25	0	856.25	TUCSON AIRPORT AUTHORITY	TUCSON INTL ARPRT 7005 S PLUMER	TUCSON	WPHC689	320723	1105632
856.25	13.40376	856.25	TUCSON AIRPORT AUTHORITY	TUCSON MOUNTAIN SITE	TUCSON	WPHC689	321457	1110659
856.25	13.40376	856.25	TUCSON AIRPORT AUTHORITY	TUCSON MOUNTAIN SITE	TUCSON	WPHC689	321457	1110659
857	0	857	SIERRA VISTA, CITY OF	911 N CORONADO	SIERRA VISTA	WNB699	313350	1101625
857	64.14112	857.0125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPCZ779	322454	1104258
857	63.70075	857.0125	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
857.025	60.47506	857.0125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPCZ779	322454	1104258
857.025	49.07946	857.0125	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
857.025	0	857.025	TOHONO OODHAM NATION OF ARIZONA	KITT PK OBSERVATORY SITE	THREE POINTS	WPLT955	315744	1113601
857.025	34.96559	857.025	TOHONO OODHAM NATION	QUIJOTOA MTN	SELLS	WPLT955	320815	1120934

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Frequency_SrchList	Distance miles	Frequency_Input b1	LICENSEE	XMIT_ADDR	XMIT_CITY	CALLSIGN	XMIT_LAT	XMIT_LONG
857.025	16.63562	857.025	OF ARIZONA TOHONO OODHAM NATION OF ARIZONA	ST HWY 86 & POLICE RD	SELLS	WPLT955	315500	1115242
857.025	54.25198	857.0375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
857.025	49.22936	857.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
857.025	69.87289	857.0375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAIN S	WPCP496	325830	1113935
857.025	59.76656	857.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
857.05	43.11993	857.0375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
857.05	9.434403	857.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
857.05	68.18167	857.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
857.05	0	857.05	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPLT950	321309	1104725
857.05	0	857.05	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPLT950	321309	1104725
857.05	0	857.05	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPLT950	321309	1104725
857.05	10.27427	857.05	TUCSON, CITY OF	7600 N COBBLESTONE RD	TUCSON	WPLT950	322042	1105304
857.05	10.27427	857.05	TUCSON, CITY OF	7600 N COBBLESTONE RD	TUCSON	WPLT950	322042	1105304
857.05	9.434403	857.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E SAINT ANDREW DR	TUCSON	WNHE930	321955	1105254
857.075	6.798407	857.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E SAINT ANDREW DR	TUCSON	WNHE930	321955	1105254
857.075	0	857.075	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPLT950	321627	1105833
857.075	0	857.075	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPLT950	321627	1105833
857.075	4.455500	857.075	TUCSON, CITY OF	1649 W ANKLAM RD	TUCSON	WPLT950	321252	1110018
857.075	4.455500	857.075	TUCSON, CITY OF	1649 W ANKLAM RD	TUCSON	WPLT950	321252	1110018
857.075	0	857.075	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPLT950	321627	1105833
857.075	0	857.075	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPLT950	321627	1105833
857.075	39.40330	857.0875	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
857.1	36.36158	857.0875	NEXTEL LICENSE	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400

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Frequency_SrchList	Distance miles	Frequency_Input b1	LICENSEE	XMIT_ADDR	XMIT_CIT Y	CALLSIGN	XMIT_LAT	XMIT_LONG
857.1	0	857.1	HOLDINGS 4, INC	TUCSON MTN	TUCSON	WNP639	321456	1110701
857.1	36.36158	857.1125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
857.125	40.54209	857.1125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
857.125	0	857.125	PIMA, COUNTY OF	MT LEMMON	TUCSON	WNP639	322626	1104716
857.125	33.07337	857.1375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
857.125	9.281383	857.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
857.125	62.74360	857.1375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAIN S	WPCP496	325830	1113935
857.125	60.15143	857.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPOA279	324927	1114252
857.125	9.480409	857.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
857.125	60.15143	857.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
857.15	68.55048	857.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
857.15	68.33734	857.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
857.15	0	857.15	NOGALES, CITY OF	ATOP NOGALES HILL	NOGALES	WPRG840	312020	1105712
857.175	0	857.175	ARIZONA, STATE OF	530 N VINE BLDG 58	TUCSON	WPKU975	321343	1105710
857.175	0	857.175	ARIZONA, STATE OF	530 N VINE BLDG 58	TUCSON	WPKU975	321343	1105710
857.2	0	857.2	PIMA, COUNTY OF	ELEPHANT HEAD	AMADO	WNP639	314218	1105531
857.225	0	857.225	PIMA, COUNTY OF	MT LEMMON	TUCSON	WNP639	322626	1104716
857.25	0	857.25	TUCSON AIRPORT AUTHORITY	TUCSON INTL ARPRT 7005 S PLUMER	TUCSON	WPHC689	320723	1105632
857.25	0	857.25	TUCSON AIRPORT AUTHORITY	TUCSON INTL ARPRT 7005 S PLUMER	TUCSON	WPHC689	320723	1105632
857.25	13.40376	857.25	TUCSON AIRPORT AUTHORITY	TUCSON MOUNTAIN SITE	TUCSON	WPHC689	321457	1110659
857.25	13.40376	857.25	TUCSON AIRPORT AUTHORITY	TUCSON MOUNTAIN SITE	TUCSON	WPHC689	321457	1110659
858	6.743748	858	ARIZONA, STATE OF	6401 S TUCSON BLVD	TUCSON	WNQ404	320812	1105607
858	20.13698	858	ARIZONA, STATE OF	MOUNT LEMMON	TUCSON	WNQ404	322625	1104715

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Frequency_SrchList	Distance miles	Frequency_Input_b1	LICENSEE	XMIT_ADDR	XMIT_CITY	CALLSIGN	XMIT_LAT	XMIT_LONG
858	0	858	ARIZONA, STATE OF	31 KM NNE TUMAMOC HILL 2 KM W	TUCSON	WNQG404	321251	1110020
858	21.87116	858.0125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPCZ779	322454	1104258
858.025	60.47506	858.0125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPCZ779	322454	1104258
858.025	0	858.025	TOHONO OODHAM NATION OF ARIZONA	KITT PK OBSERVATORY SITE	THREE POINTS	WPLT955	315744	1113601
858.025	34.96559	858.025	TOHONO OODHAM NATION OF ARIZONA	QUIJOTOA MTN	SELLS	WPLT955	320815	1120934
858.025	54.25198	858.0375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
858.025	49.22936	858.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
858.025	69.87289	858.0375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAIN	WPCP496	325830	1113935
858.05	40.16957	858.0375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
858.05	11.60180	858.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
858.05	68.60663	858.0375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAIN	WPCP496	325830	1113935
858.05	0	858.05	TUCSON, CITY OF	4004 S PARK AVE	TUCSON	WPLT950	321035	1105727
858.05	0	858.05	TUCSON, CITY OF	4004 S PARK AVE	TUCSON	WPLT950	321035	1105727
858.05	12.38044	858.05	TUCSON, CITY OF	7600 N COBBLESTONE RD	TUCSON	WPLT950	322042	1105304
858.05	12.38044	858.05	TUCSON, CITY OF	7600 N COBBLESTONE RD	TUCSON	WPLT950	322042	1105304
858.05	11.60180	858.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E SAINT ANDREW DR	TUCSON	WNHE930	321955	1105254
858.075	10.84798	858.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E SAINT ANDREW DR	TUCSON	WNHE930	321955	1105254
858.075	14.16845	858.075	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WPLT950	320920	1104624
858.075	14.16845	858.075	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WPLT950	320920	1104624
858.075	0	858.075	TUCSON, CITY OF	1649 W ANKLAM RD	TUCSON	WPLT950	321252	1110018
858.075	0	858.075	TUCSON, CITY OF	1649 W ANKLAM RD	TUCSON	WPLT950	321252	1110018

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Frequency_SrchList	Distance miles	Frequency_Input_b1	LICENSEE	XMIT_ADDR	XMIT_CIT_Y	CALLSIGN	XMIT_LAT	XMIT_LONG
858.075	41.72096	858.0875	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
858.1	36.36158	858.0875	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
858.1	0	858.1	PIMA, COUNTY OF	TUCSON MTN	TUCSON	WPNP639	321456	1110701
858.1	36.36158	858.1125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
858.125	40.54209	858.1125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
858.125	0	858.125	PIMA, COUNTY OF	MT LEMMON	TUCSON	WPNP639	322626	1104716
858.125	33.07337	858.1375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
858.125	9.281383	858.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
858.125	62.74360	858.1375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAIN S	WPCP496	325830	1113935
858.125	60.15143	858.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
858.15	40.16957	858.1375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
858.15	11.60180	858.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
858.15	68.60663	858.1375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAIN S	WPCP496	325830	1113935
858.15	62.81751	858.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
858.15	1.012267	858.15	TUCSON, CITY OF	202 W OHIO ST	TUCSON	WNNF913	321006	1105819
858.15	0	858.15	TUCSON, CITY OF	4004 S PARK AVE	TUCSON	WNNF913	321035	1105727
858.15	10.88891	858.15	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WNNF913	320920	1104624
858.15	12.91618	858.15	TUCSON, CITY OF	7600 N COBBLESTONE RD	TUCSON	WNNF913	322140	1105512
858.175	0	858.175	ARIZONA, STATE OF	530 N VINE BLDG 58	TUCSON	WPKU975	321343	1105710
858.175	0	858.175	ARIZONA, STATE OF	530 N VINE BLDG 58	TUCSON	WPKU975	321343	1105710
858.2	0	858.2	PIMA, COUNTY OF	ELEPHANT HEAD	AMADO	WPNP639	314218	1105531
858.225	56.68684	858.2125	ARIZONA, STATE OF	HELIOGRAPH PEAK 24KM SW	SAFFORD	WPMD244	323901	1095055
858.225	0	858.225	PIMA, COUNTY OF	MT LEMMON	TUCSON	WPNP639	322626	1104716
858.25	0	858.25	TUCSON AIRPORT AUTHORITY	TUCSON INTL ARPRT 7005 S	TUCSON	WPHC689	320723	1105632

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Frequency_SrchLst	Distance miles	Frequenc y_Input b1	LICENSEE	XMIT_ADDR	XMIT_CIT Y	CALLSIGN	XMIT_LAT	XMIT_LONG
858.25	0	858.25	TUCSON AIRPORT AUTHORITY	PLUMER TUCSON INTL ARPRT 7005 S PLUMER	TUCSON	WPHC689	320723	1105632
858.25	13.40376	858.25	TUCSON AIRPORT AUTHORITY	TUCSON MOUNTAIN SITE	TUCSON	WPHC689	321457	1110659
858.25	13.40376	858.25	TUCSON AIRPORT AUTHORITY	TUCSON MOUNTAIN SITE	TUCSON	WPHC689	321457	1110659
859	0	859	TOHONO OODHAM NATION OF ARIZONA	KITT PK OBSERVATORY SITE	THREE POINTS	WPLT955	315744	1113601
859	0	859	TOHONO OODHAM NATION OF ARIZONA	KITT PK OBSERVATORY SITE	THREE POINTS	WPLT955	315744	1113601
859	16.63562	859	TOHONO OODHAM NATION OF ARIZONA	ST HWY 86 & POLICE RD	SELLS	WPLT955	315500	1115242
859	60.47506	859.0125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPCZ779	322454	1104258
859.025	21.67739	859.0125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPCZ779	322454	1104258
859.025	0	859.025	TUCSON, CITY OF	4004 S PARK AVE	TUCSON	WPQB416	321035	1105727
859.025	10.88891	859.025	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WPQB416	320920	1104624
859.025	10.88891	859.025	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WPQB416	320920	1104624
859.025	40.16957	859.0375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
859.025	11.60180	859.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
859.025	68.60663	859.0375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAIN S	WPCP496	325830	1113935
859.025	62.81751	859.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPOA279	324927	1114252
859.025	62.81751	859.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPOA279	324927	1114252
859.05	33.73063	859.0375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
859.05	6.798407	859.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
859.05	62.63034	859.0375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAIN S	WPCP496	325830	1113935
859.05	57.39775	859.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPOA279	324927	1114252

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Frequency_SrchList	Distance miles	Frequency_Input_b1	LICENSEE	XMIT_ADDR	XMIT_CIT_Y	CALLSIGN	XMIT_LAT	XMIT_LONG
859.05	57.39775	859.0375	NEXTEL LICENSE HOLDINGS 4, INC TUCSON, CITY OF	CASA GRANDE MOUNTAIN PARK 1000 S RANDOLPH WAY	CASA GRANDE TUCSON	WPRA969	324927	1114252
859.05	5.592545	859.05	TUCSON, CITY OF	1000 S RANDOLPH WAY	TUCSON	WPLT950	321235	1105504
859.05	5.592545	859.05	TUCSON, CITY OF	1000 S RANDOLPH WAY	TUCSON	WPLT950	321235	1105504
859.05	0	859.05	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPLT950	321627	1105833
859.05	0	859.05	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPLT950	321627	1105833
859.05	0	859.05	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPLT950	321627	1105833
859.05	0	859.05	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPLT950	321627	1105833
859.05	7.240251	859.05	TUCSON, CITY OF	7600 N COBBLESTONE RD	TUCSON	WPLT950	322042	1105304
859.05	7.240251	859.05	TUCSON, CITY OF	7600 N COBBLESTONE RD	TUCSON	WPLT950	322042	1105304
859.05	6.798407	859.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E SAINT ANDREW DR	TUCSON	WNHE930	321955	1105254
859.075	11.60180	859.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E SAINT ANDREW DR	TUCSON	WNHE930	321955	1105254
859.075	3.823764	859.075		1649 W ANKLAM RD	TUCSON		321252	1110018
859.075	3.823764	859.075		1649 W ANKLAM RD	TUCSON		321252	1110018
859.075	1.012267	859.075	TUCSON, CITY OF	202 W OHIO ST	TUCSON	WNNF913	321006	1105819
859.075	0	859.075	TUCSON, CITY OF	4004 S PARK AVE	TUCSON	WNNF913	321035	1105727
859.075	10.88891	859.075	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WNNF913	320920	1104624
859.075	12.91618	859.075	TUCSON, CITY OF	7600 N COBBLESTONE RD	TUCSON	WNNF913	322140	1105512
859.075	10.23115	859.075	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPLT950	321309	1104725
859.075	10.23115	859.075	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPLT950	321309	1104725
859.075	10.23115	859.075	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPLT950	321309	1104725
859.075	10.23115	859.075	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPLT950	321309	1104725
859.075	45.45138	859.0875	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
859.1	36.36158	859.0875	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
859.1	0	859.1	PIMA, COUNTY OF	TUCSON MTN	TUCSON	WNP639	321456	1110701
859.1	36.36158	859.1125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400

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Frequency_SrchList	Distance miles	Frequency_Input_b1	LICENSEE	XMIT_ADDR	XMIT_CIT_Y	CALLSIGN	XMIT_LAT	XMIT_LONG
859.125	40.54209	859.1125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
859.125	0	859.125	PIMA, COUNTY OF	MT LEMMON	TUCSON	WPNP639	322626	1104716
859.125	33.07337	859.1375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
859.125	9.281383	859.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
859.125	62.74360	859.1375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAIN S	WPCP496	325830	1113935
859.125	60.15143	859.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
859.15	40.16957	859.1375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
859.15	11.60180	859.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
859.15	68.60663	859.1375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAIN S	WPCP496	325830	1113935
859.15	62.81751	859.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
859.15	8.104197	859.15		7910 S KOLB RD	TUCSON		320635	1105037
859.15	8.104197	859.15		7910 S KOLB RD	TUCSON		320635	1105037
859.15	1.012267	859.15	TUCSON, CITY OF	202 W OHIO ST	TUCSON	WNNF913	321006	1105819
859.15	0	859.15	TUCSON, CITY OF	4004 S PARK AVE	TUCSON	WNNF913	321035	1105727
859.15	10.88891	859.15	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WNNF913	320920	1104624
859.15	12.91618	859.15	TUCSON, CITY OF	7600 N COBBLESTONE RD	TUCSON	WNNF913	322140	1105512
859.15	21.67739	859.1625	NEXTEL LICENSE HOLDINGS 4, INC	18 MI NE	TUCSON	WPEA386	322454	1104258
859.15	11.38870	859.1625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
859.175	47.19040	859.1625	NEXTEL LICENSE HOLDINGS 4, INC	18 MI NE	TUCSON	WPEA386	322454	1104258
859.175	36.70335	859.1625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
859.175	0	859.175	PASCUA YAQUI TRIBE	KEYSTONE PEAK	GREEN VALLEY	WPQJ764	315241	1111257
859.2	0	859.2	PIMA, COUNTY OF	ELEPHANT HEAD	AMADO	WPNP639	314218	1105531
859.225	0	859.225	PIMA, COUNTY OF	MT LEMMON	TUCSON	WPNP639	322626	1104716
859.25	0	859.25	TUCSON AIRPORT AUTHORITY	TUCSON INTL ARPRT 7005 S PLUMER	TUCSON	WPHC689	320723	1105632

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Frequency_SrchList	Distance miles	Frequency_Input_b1	LICENSEE	XMIT_ADDR	XMIT_CIT_Y	CALLSIGN	XMIT_LAT	XMIT_LONG
859.25	0	859.25	TUCSON AIRPORT AUTHORITY	TUCSON INTL ARPRT 7005 S PLUMER	TUCSON	WPHC689	320723	1105632
859.25	13.40376	859.25	TUCSON AIRPORT AUTHORITY	TUCSON MOUNTAIN SITE	TUCSON	WPHC689	321457	1110659
859.25	13.40376	859.25	TUCSON AIRPORT AUTHORITY	TUCSON MOUNTAIN SITE	TUCSON	WPHC689	321457	1110659
860	0	860	TOHONO OODHAM NATION OF ARIZONA	KITT PK OBSERVATORY SITE	THREE POINTS	WPLT955	315744	1113601
860	0	860	TOHONO OODHAM NATION OF ARIZONA	KITT PK OBSERVATORY SITE	THREE POINTS	WPLT955	315744	1113601
860	60.47506	860.0125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPCZ779	322454	1104258
860.025	0	860.025	NOGALES, CITY OF	ATOP MT BENEDICT	NOGALES	WPRG840	312346	1105522
860.025	64.52387	860.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
860.025	64.31166	860.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
860.05	43.11993	860.0375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
860.05	9.434403	860.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
860.05	68.18167	860.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPOA279	324927	1114252
860.05	9.290067	860.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
860.05	68.18167	860.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
860.05	11.08638	860.05		10001 S WILMOT	TUCSON	WPQB416	320406	1105122
860.05	11.08638	860.05		10001 S WILMOT	TUCSON	WPQB416	320406	1105122
860.05	0	860.05		250 S HARRISON RD	TUCSON	WPQB416	321309	1104725
860.05	0	860.05		250 S HARRISON RD	TUCSON	WPQB416	321309	1104725
860.05	0	860.05	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPQB416	321309	1104725
860.05	0	860.05	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPQB416	321309	1104725
860.05	9.434403	860.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E SAINT ANDREW DR	TUCSON	WNHE930	321955	1105254
860.075	2.783795	860.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E SAINT ANDREW DR	TUCSON	WNHE930	321955	1105254

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Frequency_SrchLst	Distance_miles	Frequency_Input_b1	LICENSEE	XMIT_ADDR	XMIT_CIT_Y	CALLSIGN	XMIT_LAT	XMIT_LONG
860.075	0	860.075	TUCSON, CITY OF	4701 N SWAN RD	TUCSON	WPKV700	321734	1105336
860.075	4.960285	860.075	TUCSON, CITY OF	7600 N COBBLESTONE RD	TUCSON	WPKV700	322140	1105512
860.075	41.68167	860.0875	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
860.1	36.36158	860.0875	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPGH422	324308	1112400
860.1	0	860.1	PIMA, COUNTY OF	TUCSON MTN	TUCSON	WNPN639	321456	1110701
860.125	0	860.125	PIMA, COUNTY OF	MT LEMMON	TUCSON	WNPN639	322626	1104716
860.125	33.07337	860.1375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
860.125	9.281383	860.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
860.125	62.74360	860.1375	NEXTEL LICENSE HOLDINGS 4, INC	4 MI E OF I10	SACATON MOUNTAIN S	WPCP496	325830	1113935
860.125	60.15143	860.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPOA279	324927	1114252
860.125	9.480409	860.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
860.125	60.15143	860.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
860.15	56.50431	860.1375	NEXTEL LICENSE HOLDINGS 4, INC	1/4 MI N OF CORONADO WASH	DURHAM WASH	WPCP482	324149	1111601
860.15	36.90747	860.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E ST ANDREW DR	TUCSON	WPCP491	321955	1105254
860.15	36.70335	860.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
860.15	0	860.15	PASCUA YAQUI TRIBE	KEYSTONE PEAK	GREEN VALLEY	WPQJ764	315241	1111257
860.175	11.16977	860.175	ARIZONA UNIVERSITY BOARD OF REGENTS	250 S HARRISON	TUCSON	WPMJ675	321309	1104625
860.175	11.16977	860.175	ARIZONA UNIVERSITY BOARD OF REGENTS	250 S HARRISON	TUCSON	WPMJ675	321309	1104625
860.175	6.822347	860.175	ARIZONA UNIVERSITY BOARD OF REGENTS	250 W KING	TUCSON	WPMJ675	321627	1105833
860.175	6.822347	860.175	ARIZONA UNIVERSITY BOARD OF REGENTS	250 W KING	TUCSON	WPMJ675	321627	1105833
860.175	0	860.175	ARIZONA UNIVERSITY BOARD OF REGENTS	4004 S PARK	TUCSON	WPMJ675	321035	1105727
860.175	0	860.175	ARIZONA UNIVERSITY BOARD OF REGENTS	4004 S PARK	TUCSON	WPMJ675	321035	1105727
860.175	0	860.175	ARIZONA UNIVERSITY BOARD OF REGENTS	4004 S PARK	TUCSON	WPMJ675	321035	1105727
860.175	10.88891	860.175	ARIZONA UNIVERSITY	5270 S	TUCSON	WPMJ675	320920	1104624

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Frequency_SrchList	Distance miles	Frequency_Input b1	LICENSEE	XMIT_ADDR	XMIT_CIT Y	CALLSIGN	XMIT_LAT	XMIT_LONG
			BOARD OF REGENTS	HOUGHTON				
860.175	10.88891	860.175	ARIZONA UNIVERSITY BOARD OF REGENTS	5270 S HOUGHTON	TUCSON	WPMJ675	320920	1104624
860.175	3.608943	860.175	ARIZONA UNIVERSITY BOARD OF REGENTS	530 N VINE BLDG 58	TUCSON	WPMJ675	321343	1105710
860.175	3.608943	860.175	ARIZONA UNIVERSITY BOARD OF REGENTS	530 N VINE BLDG 58	TUCSON	WPMJ675	321343	1105710
860.2	0	860.2	PIMA, COUNTY OF	ELEPHANT HEAD	AMADO	WPNP639	314218	1105531
860.225	0	860.225	PIMA, COUNTY OF	MT LEMMON	TUCSON	WPNP639	322626	1104716
860.25	0	860.25	PIMA, COUNTY OF	ELEPHANT HEAD	AMADO	WPNP639	314218	1105531
861	0	861	PIMA, COUNTY OF	TUCSON MTN	TUCSON	WPNP639	321456	1110701
861.05	0	861.05	PIMA, COUNTY OF	MT LEMMON	TUCSON	WPNP639	322626	1104716
861.05	58.71121	861.0625	NEXTEL LICENSE HOLDINGS 2 INC	SIGNAL PEAK SITE 7	GLOBE	WPGH432	331730	1105001
861.05	40.54209	861.0625	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
861.05	9.480409	861.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
861.05	60.15143	861.0625	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
861.1	0	861.1	PIMA, COUNTY OF	TUCSON MTN	TUCSON	WPNP639	321456	1110701
861.1	36.36158	861.1125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
861.1	14.78794	861.1125	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
861.1	52.79890	861.1125	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
861.15	39.40330	861.1375	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
861.15	6.637176	861.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
861.15	57.39775	861.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
861.15	0	861.15		250 W KING AVE	TUCSON	WPQB416	321627	1105833
861.15	0	861.15		250 W KING AVE	TUCSON	WPQB416	321627	1105833
861.15	5.946711	861.15		7600 N COBBLESTONE RD	TUCSON	WPQB416	322042	1105504
861.15	5.946711	861.15		7600 N COBBLESTONE RD	TUCSON	WPQB416	322042	1105504
861.15	0	861.15	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPQB416	321627	1105833
861.15	0	861.15	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPQB416	321627	1105833
861.15	39.40330	861.1625	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
861.15	6.637176	861.1625	NEXTEL LICENSE	5200 E. ST	TUCSON	WPRA868	321944	1105257

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Frequency_SrchLst	Distance miles	Frequency_Input_b1	LICENSEE	XMIT_ADDR	XMIT_CIT	CALLSIGN	XMIT_LAT	XMIT_LONG
861.15	57.39775	861.1625	HOLDINGS 4, INC	ANDREWS DRIVE				
861.2	51.45511	861.1875	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
861.2	0	861.2	NEXTEL LICENSE HOLDINGS 2 INC	MOUNT LEMMON RADIO RIDGE	TUCSON	WPGD325	322630	1104653
861.2	50.43648	861.2125	PIMA, COUNTY OF	ELEPHANT HEAD	AMADO	WPNP639	314218	1105531
861.25	0	861.25	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPKM975	322454	1104258
861.25	43.06030	861.2625	PIMA, COUNTY OF	ELEPHANT HEAD	AMADO	WPNP639	314218	1105531
862	0	862	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
862	36.36158	862.0125	PIMA, COUNTY OF	TUCSON MTN	TUCSON	WPNP639	321456	1110701
862	14.78794	862.0125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
862	52.79890	862.0125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	TUCSON	WPRA868	321944	1105257
862.05	0	862.05	PIMA, COUNTY OF	5200 E. ST ANDREWS DRIVE	TUCSON	WPNP639	321944	1105257
862.05	58.71121	862.0625	NEXTEL LICENSE HOLDINGS 2 INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
862.05	40.54209	862.0625	NEXTEL LICENSE HOLDINGS 4, INC	MOUNTAIN PARK	TUCSON	WPNP639	322626	1104716
862.05	9.480409	862.0625	NEXTEL LICENSE HOLDINGS 4, INC	SIGNAL PEAK SITE 7	GLOBE	WPGH432	331730	1105001
862.05	60.15143	862.0625	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
862.1	0	862.1	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
862.1	36.36158	862.1125	NEXTEL LICENSE HOLDINGS 4, INC	ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
862.1	14.78794	862.1125	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
862.1	52.79890	862.1125	NEXTEL LICENSE HOLDINGS 4, INC	MOUNTAIN PARK	TUCSON	WPNP639	321456	1110701
862.15	41.55051	862.1375	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
862.15	8.300202	862.1375	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	TUCSON	WPRA868	321944	1105257
862.15	59.26177	862.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
862.15	8.451059	862.15	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
862.15	9.986855	862.15	NEXTEL LICENSE HOLDINGS 4, INC	MOUNTAIN PARK	PICACHO	WPPN713	324308	1112400
862.15	0	862.15	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	NEWMAN PEAK	TUCSON	WPRA868	321944	1105257
862.15	0	862.15	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
862.15	0	862.15	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
862.15	0	862.15	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	4905 E BROADWAY	TUCSON	00005227	320820	1105309
862.15	0	862.15	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	8181 E. IRVINGTON	TUCSON	00006181	321000	1104926

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Frequency _SrchLst	Distance miles	Frequency y_input b1	LICENSEE	XMIT_ADDR	XMIT_CIT Y	CALLSIGN	XMIT_LAT	XMIT_LONG
862.15	0	862.15	DISTRICT PIMA COUNTY COMMUNITY COLLEGE DISTRICT	1255 N STONE AVE	TUCSON	WPRI676	321411	1105824
862.15	2.629794	862.15	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	2202 W ANKLAM RD	TUCSON	WPRI676	321335	1110100
862.15	2.629794	862.15	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	2202 W ANKLAM RD	TUCSON	WPRI676	321335	1110100
862.15	6.142013	862.15	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	5901 S CALLE SANTA CRUZ	TUCSON	WPRI676	320852	1105905
862.15	8.131490	862.15	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	6680 S COUNTRY CLUB RD	TUCSON	WPRI676	320730	1105539
862.15	7.980673	862.15	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	7330 N SHANNON RD	TUCSON	WPRI676	322025	1110201
862.15	9.986855	862.15	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	8181 E. IRVINGTON	TUCSON	WPRI676	321000	1104926
862.15	8.451059	862.15	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	4905 E BROADWAY	TUCSON	WPTP781	320820	1105309
862.15	41.55051	862.1625	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
862.15	8.300202	862.1625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
862.15	59.26177	862.1625	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
862.2	51.45511	862.1875	NEXTEL LICENSE HOLDINGS 2 INC	MOUNT LEMMON RADIO RIDGE	TUCSON	WPGD325	322630	1104653
862.2	0	862.2	PIMA, COUNTY OF	ELEPHANT HEAD	AMADO	WPNP639	314218	1105531
862.2	50.43648	862.2125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPKM975	322454	1104258
862.25	0	862.25	PIMA, COUNTY OF	ELEPHANT HEAD	AMADO	WPNP639	314218	1105531
862.25	43.06030	862.2625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
863	0	863	PIMA, COUNTY OF	TUCSON MTN	TUCSON	WPNP639	321456	1110701
863	36.36158	863.0125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
863	14.78794	863.0125	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
863	52.79890	863.0125	NEXTEL LICENSE	CASA GRANDE	CASA	WPR969	324927	1114252

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Frequency_SrchList	Distance miles	Frequency_Input b1	LICENSEE	XMIT_ADDR	XMIT_CIT Y	CALLSIGN	XMIT_LAT	XMIT_LONG
863.05	0	863.05	HOLDINGS 4, INC	MOUNTAIN PARK	GRANDE			
863.05	58.71121	863.0625	PIMA, COUNTY OF	MT LEMMON	TUCSON	WNP639	322626	1104716
863.05	40.54209	863.0625	NEXTEL LICENSE HOLDINGS 2 INC	SIGNAL PEAK SITE 7	GLOBE	WPGH432	331730	1105001
863.05	9.480409	863.0625	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
863.05	60.15143	863.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
863.1	0	863.1	NEXTEL LICENSE HOLDINGS 4, INC					
863.1	36.36158	863.1125	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	GRANDE	WPRA969	324927	1114252
863.1	14.78794	863.1125	NEXTEL LICENSE HOLDINGS 4, INC	TUCSON MTN	TUCSON	WNP639	321456	1110701
863.1	52.79890	863.1125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
863.15	45.45138	863.1375	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	TUCSON	WPRA868	321944	1105257
863.15	11.38870	863.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	GRANDE	WPRA969	324927	1114252
863.15	62.81751	863.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	GRANDE	WPRA969	324927	1114252
863.15	11.84858	863.15	TUCSON, CITY OF	7600 N COBBLESTONE RD	TUCSON	WPQB416	322042	1105504
863.15	11.84858	863.15	TUCSON, CITY OF	7600 N COBBLESTONE RD	TUCSON	WPQB416	322042	1105504
863.15	0	863.15	TUCSON, CITY OF	4004 S PARK AVE	TUCSON	WPQB416	321035	1105727
863.15	0	863.15	TUCSON, CITY OF	4004 S PARK AVE	TUCSON	WPQB416	321035	1105727
863.15	45.45138	863.1625	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
863.15	11.38870	863.1625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
863.15	62.81751	863.1625	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	GRANDE	WPRA969	324927	1114252
863.2	27.56758	863.1875	NEXTEL LICENSE HOLDINGS 2 INC	MOUNT LEMMON RADIO RIDGE	TUCSON	WPGD325	322630	1104653
863.2	45.42682	863.1875	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
863.2	17.80346	863.1875	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
863.2	61.34914	863.1875	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	GRANDE	WPRA969	324927	1114252

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Frequency_SrchLst	Distance miles	Frequenc y_Input b1	LICENSEE	XMIT_ADDR	XMIT_CIT Y	CALLSIGN	XMIT_LAT	XMIT_LONG
863.2	0	863.2	PASCUA YAQUI TRIBE	4881 WEST CALLE TAROOK	TUCSON	WPQJ764	320724	1110400
863.2	28.72404	863.2125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPKM975	322454	1104258
863.25	0	863.25	PIMA, COUNTY OF	ELEPHANT HEAD	AMADO	WPNP639	314218	1105531
863.25	43.06030	863.2625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
864	0	864	PIMA, COUNTY OF	TUCSON MTN	TUCSON	WPNP639	321456	1110701
864	36.36158	864.0125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
864	14.78794	864.0125	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
864	52.79890	864.0125	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
864.05	38.15926	864.0375	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
864.05	2.343378	864.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
864.05	57.01115	864.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
864.05	0	864.05		7600 N COBBLESTONE RD	TUCSON	WPQB416	322042	1105504
864.05	0	864.05		7600 N COBBLESTONE RD	TUCSON	WPQB416	322042	1105504
864.05	15.55420	864.05	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WPQB416	320920	1104624
864.05	15.55420	864.05	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WPQB416	320920	1104624
864.05	65.41841	864.0625	NEXTEL LICENSE HOLDINGS 2 INC	SIGNAL PEAK SITE 7	GLOBE	WPGH432	331730	1105001
864.05	38.15926	864.0625	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
864.05	2.343378	864.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
864.05	57.01115	864.0625	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
864.1	0	864.1	PIMA, COUNTY OF	TUCSON MTN	TUCSON	WPNP639	321456	1110701
864.1	36.36158	864.1125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
864.1	14.78794	864.1125	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
864.1	52.79890	864.1125	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
864.15	49.54001	864.1375	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Frequency_SrchList	Distance miles	Frequency Input b1	LICENSEE	XMIT_ADDR	XMIT_CIT Y	CALLSIGN	XMIT_LAT	XMIT_LONG
864.15	9.290067	864.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
864.15	68.18167	864.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
864.15	12.58192	864.15		1649 W ANKLAM RD	TUCSON	WPQB416	321252	1110018
864.15	12.58192	864.15		1649 W ANKLAM RD	TUCSON	WPQB416	321252	1110018
864.15	0	864.15		250 S HARRISON RD	TUCSON	WPQB416	321309	1104725
864.15	0	864.15		250 S HARRISON RD	TUCSON	WPQB416	321309	1104725
864.15	0	864.15	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPQB416	321309	1104725
864.15	0	864.15	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPQB416	321309	1104725
864.15	49.54001	864.1625	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
864.15	9.290067	864.1625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
864.15	68.18167	864.1625	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
864.2	46.47765	864.1875	NEXTEL LICENSE HOLDINGS 2 INC	MOUNT LEMMON RADIO RIDGE	TUCSON	WPGD325	322630	1104653
864.2	58.99058	864.1875	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
864.2	0	864.2	PIMA, COUNTY OF	KEYSTONE PEAK	TUCSON	WPNP639	315238	1111256
864.2	47.22541	864.2125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPKM975	322454	1104258
864.25	0	864.25	PIMA, COUNTY OF	ELEPHANT HEAD	AMADO	WPNP639	314218	1105531
864.25	43.06030	864.2625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
865	0	865	PIMA, COUNTY OF	TUCSON MTN	TUCSON	WPNP639	321456	1110701
865	36.36158	865.0125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
865	14.78794	865.0125	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
865	52.79890	865.0125	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252
865.05	39.40330	865.0375	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
865.05	6.637176	865.0375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPR868	321944	1105257
865.05	57.39775	865.0375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPR969	324927	1114252

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Frequency_SrchList	Distance_miles	Frequency_Input_b1	LICENSEE	XMIT_ADDR	XMIT_CIT_Y	CALLSIGN	XMIT_LAT	XMIT_LONG
865.05	11.50761	865.05		250 S HARRISON RD	TUCSON	WPQB416	321309	1104725
865.05	11.50761	865.05		250 S HARRISON RD	TUCSON	WPQB416	321309	1104725
865.05	0	865.05		250 W KING AVE	TUCSON	WPQB416	321627	1105833
865.05	0	865.05		250 W KING AVE	TUCSON	WPQB416	321627	1105833
865.05	11.50761	865.05	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPQB416	321309	1104725
865.05	11.50761	865.05	TUCSON, CITY OF	250 S HARRISON RD	TUCSON	WPQB416	321309	1104725
865.05	0	865.05	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPQB416	321627	1105833
865.05	0	865.05	TUCSON, CITY OF	250 W KING AVE	TUCSON	WPQB416	321627	1105833
865.05	6.822347	865.05	TUCSON, CITY OF	4004 S PARK AVE	TUCSON	WPQB416	321035	1105727
865.05	6.822347	865.05	TUCSON, CITY OF	4004 S PARK AVE	TUCSON	WPQB416	321035	1105727
865.05	14.40494	865.05	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WPQB416	320920	1104624
865.05	14.40494	865.05	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WPQB416	320920	1104624
865.05	39.40330	865.0625	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
865.05	6.637176	865.0625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
865.05	57.39775	865.0625	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
865.1	0	865.1	PIMA, COUNTY OF	TUCSON MTN	TUCSON	WPNP639	321456	1110701
865.1	36.36158	865.1125	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
865.1	14.78794	865.1125	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
865.1	52.79890	865.1125	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
865.15	65.41841	865.1375	NEXTEL LICENSE HOLDINGS 2 INC	SIGNAL PEAK SITE 7	GLOBE	WPGH432	331730	1105001
865.15	38.15926	865.1375	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
865.15	2.343378	865.1375	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
865.15	57.01115	865.1375	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
865.15	0	865.15		7600 N COBBLESTONE RD	TUCSON	WPQB416	322042	1105504
865.15	0	865.15		7600 N COBBLESTONE RD	TUCSON	WPQB416	322042	1105504

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Frequency_SrchList	Distance miles	Frequenc y_Input b1	LICENSEE	XMIT_ADDR	XMIT_CIT Y	CALLSIGN	XMIT_LAT	XMIT_LONG
865.15	15.55420	865.15	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WPQB416	320920	1104624
865.15	15.55420	865.15	TUCSON, CITY OF	5270 S HOUGHTON RD	TUCSON	WPQB416	320920	1104624
865.15	38.15926	865.1625	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
865.15	2.343378	865.1625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
865.15	57.01115	865.1625	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
865.2	18.05965	865.1875	NEXTEL LICENSE HOLDINGS 2 INC	MOUNT LEMMON RADIO RIDGE	TUCSON	WPGD325	322630	1104653
865.2	41.55051	865.1875	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
865.2	8.300202	865.1875	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
865.2	59.26177	865.1875	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252
865.2	8.451059	865.2	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	4905 E BROADWAY	TUCSON	0000522777	320820	1105309
865.2	0	865.2	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	1255 N STONE AVE	TUCSON	WPRI676	321411	1105824
865.2	2.629794	865.2	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	2202 W ANKLAM RD	TUCSON	WPRI676	321335	1110100
865.2	6.142013	865.2	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	5901 S CALLE SANTA CRUZ	TUCSON	WPRI676	320852	1105905
865.2	8.131490	865.2	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	6680 S COUNTRY CLUB RD	TUCSON	WPRI676	320730	1105539
865.2	7.980673	865.2	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	7330 N SHANNON RD	TUCSON	WPRI676	322025	1110201
865.2	9.986855	865.2	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	8181 E. IRVINGTON	TUCSON	WPRI676	321000	1104926
865.2	8.451059	865.2	PIMA COUNTY COMMUNITY COLLEGE DISTRICT	4905 E BROADWAY	TUCSON	WPTP781	320820	1105309
865.2	19.44087	865.2125	NEXTEL LICENSE HOLDINGS 4, INC	11400 E CATALINA HWY	TUCSON	WPKM975	322454	1104258
865.25	0	865.25	PIMA, COUNTY OF	TUCSON MT	TUCSON	WPJT416	321456	1110701

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Frequency _SrchLst	Distance miles	Frequenc y_input b1	LICENSEE	XMIT_ADDR	XMIT_CIT Y	CALLSIGN	XMIT_LAT	XMIT_LONG
865.25	36.36158	865.2625	NEXTEL LICENSE HOLDINGS 4, INC	NEWMAN PEAK	PICACHO	WPPN713	324308	1112400
865.25	14.78794	865.2625	NEXTEL LICENSE HOLDINGS 4, INC	5200 E. ST ANDREWS DRIVE	TUCSON	WPRA868	321944	1105257
865.25	52.79890	865.2625	NEXTEL LICENSE HOLDINGS 4, INC	CASA GRANDE MOUNTAIN PARK	CASA GRANDE	WPRA969	324927	1114252

Appendix E Summary of existing channel allocations in Tucson and Yuma.

Summary of actual use

	TUCSON	YUMA
PS	93	82
ILT	45	30
BS	40	13
HISMR	12	117
N	110	58
Mexican	100	100
	400	400

Border Plan frequency	FCC_TYPE	Actual Use Tucson	Actual Use Yuma
856	PS	PS	PS
856.025	PS	PS	PS
856.05	PS	PS	ILT
856.075	PS	PS	PS
856.1	PS	PS	PS
856.125	PS	PS	PS
856.15	PS	PS	PS
856.175	PS	PS	PS
856.2	PS	PS	PS
856.225	PS	PS	PS
856.25	PS	PS	ILT
856.275	ILT	ILT	ILT
856.3	ILT	N	ILT
856.325	ILT	N	N
856.35	ILT	ILT	HISMR
856.375	ILT	ILT	ILT
856.4	ILT	ILT	HISMR
856.425	ILT	ILT	ILT
856.45	ILT	ILT	HISMR
856.475	BS	BS	BS
856.5	BS	BS	BS
856.525	BS	N	HISMR
856.55	BS	BS	BS
856.575	BS	BS	HISMR
856.6	BS	N	N
856.625	BS	BS	BS
856.65	BS	BS	HISMR
856.675	SMR	N	HISMR
856.7	SMR	N	HISMR
856.725	SMR	PS	HISMR
856.75	SMR	PS	HISMR
856.775	SMR	N	N
856.8	SMR	N	HISMR
856.825	SMR	N	HISMR
856.85	SMR	N	HISMR
856.875	SMR	PS	N
856.9	SMR	ILT	HISMR
856.925	SMR	N	N
856.95	SMR	N	N
856.975	SMR	N	HISMR
857	PS	PS	PS

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Border Plan frequency	FCC_TYPE	Actual Use Tucson	Actual Use Yuma
857.025	PS	PS	PS
857.05	PS	PS	PS
857.075	PS	PS	PS
857.1	PS	PS	PS
857.125	PS	PS	PS
857.15	PS	PS	PS
857.175	PS	PS	PS
857.2	PS	PS	PS
857.225	PS	PS	PS
857.25	PS	PS	PS
857.275	ILT	ILT	N
857.3	ILT	ILT	ILT
857.325	ILT	ILT	N
857.35	ILT	ILT	ILT
857.375	ILT	ILT	ILT
857.4	ILT	ILT	ILT
857.425	ILT	N	HISMR
857.45	ILT	N	N
857.475	BS	N	BS
857.5	BS	HISMR	BS
857.525	BS	HISMR	N
857.55	BS	N	HISMR
857.575	BS	N	HISMR
857.6	BS	BS	N
857.625	BS	BS	BS
857.65	BS	N	BS
857.675	SMR	N	HISMR
857.7	SMR	N	HISMR
857.725	SMR	N	HISMR
857.75	SMR	N	HISMR
857.775	SMR	N	N
857.8	SMR	N	HISMR
857.825	SMR	N	HISMR
857.85	GEN	N	HISMR
857.875	GEN	HISMR	N
857.9	GEN	ILT	N
857.925	SMR	N	HISMR
857.95	SMR	N	N
857.975	SMR	N	HISMR
858	PS	PS	PS
858.025	PS	PS	PS
858.05	PS	PS	PS
858.075	PS	PS	PS
858.1	PS	PS	PS
858.125	PS	PS	PS
858.15	PS	PS	PS
858.175	PS	PS	PS
858.2	PS	PS	PS
858.225	PS	PS	PS
858.25	PS	PS	PS
858.275	ILT	N	ILT
858.3	ILT	ILT	ILT
858.325	ILT	ILT	N
858.35	ILT	ILT	HISMR
858.375	ILT	ILT	N
858.4	ILT	ILT	HISMR
858.425	ILT	N	ILT

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Border Plan frequency	FCC_TYPE	Actual Use Tucson	Actual Use Yuma
858.45	ILT	N	HISMR
858.475	BS	BS	ILT
858.5	BS	BS	HISMR
858.525	BS	BS	HISMR
858.55	BS	N	HISMR
858.575	BS	N	HISMR
858.6	BS	BS	N
858.625	BS	BS	BS
858.65	BS	N	HISMR
858.675	SMR	N	HISMR
858.7	SMR	N	HISMR
858.725	SMR	N	HISMR
858.75	SMR	N	HISMR
858.775	SMR	N	N
858.8	SMR	N	HISMR
858.825	SMR	N	HISMR
858.85	GEN	BS	HISMR
858.875	GEN	HISMR	N
858.9	GEN	PS	HISMR
858.925	SMR	N	N
858.95	SMR	N	N
858.975	SMR	N	HISMR
859	PS	PS	PS
859.025	PS	PS	PS
859.05	PS	PS	PS
859.075	PS	PS	PS
859.1	PS	PS	PS
859.125	PS	PS	PS
859.15	PS	PS	PS
859.175	PS	PS	PS
859.2	PS	PS	PS
859.225	PS	PS	ILT
859.25	PS	PS	PS
859.275	ILT	N	ILT
859.3	ILT	ILT	ILT
859.325	ILT	ILT	N
859.35	ILT	ILT	HISMR
859.375	ILT	ILT	ILT
859.4	ILT	ILT	HISMR
859.425	ILT	PS	ILT
859.45	ILT	PS	HISMR
859.475	BS	BS	N
859.5	BS	N	ILT
859.525	BS	N	BS
859.55	BS	N	N
859.575	BS	N	N
859.6	BS	BS	N
859.625	BS	BS	N
859.65	BS	HISMR	HISMR
859.675	SMR	N	HISMR
859.7	SMR	N	HISMR
859.725	SMR	N	HISMR
859.75	SMR	N	HISMR
859.775	SMR	N	N
859.8	SMR	N	HISMR
859.825	SMR	N	HISMR
859.85	GEN	N	HISMR

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Border Plan frequency	FCC_TYPE	Actual Use Tucson	Actual Use Yuma
859.875	GEN	HISMR	N
859.9	GEN	ILT	HISMR
859.925	SMR	N	N
859.95	SMR	N	N
859.975	SMR	N	HISMR
860	PS	PS	PS
860.025	PS	PS	PS
860.05	PS	PS	PS
860.075	PS	PS	PS
860.1	PS	PS	PS
860.125	PS	PS	PS
860.15	PS	PS	PS
860.175	PS	PS	PS
860.2	PS	PS	PS
860.225	PS	PS	PS
860.25	PS	PS	PS
860.275	ILT	ILT	ILT
860.3	ILT	ILT	ILT
860.325	ILT	ILT	N
860.35	ILT	ILT	HISMR
860.375	ILT	ILT	HISMR
860.4	ILT	N	HISMR
860.425	ILT	PS	ILT
860.45	ILT	PS	HISMR
860.475	BS	BS	N
860.5	BS	N	HISMR
860.525	BS	N	BS
860.55	BS	N	BS
860.575	BS	BS	N
860.6	BS	BS	N
860.625	BS	BS	HISMR
860.65	BS	BS	BS
860.675	SMR	N	HISMR
860.7	SMR	N	HISMR
860.725	SMR	N	HISMR
860.75	SMR	N	HISMR
860.775	SMR	N	N
860.8	SMR	N	HISMR
860.825	SMR	N	HISMR
860.85	GEN	N	HISMR
860.875	GEN	ILT	N
860.9	GEN	ILT	HISMR
860.925	SMR	N	N
860.95	SMR	N	N
860.975	SMR	N	HISMR
861	PS	PS	PS
861.025	Mex	Mex	Mex
861.05	PS	PS	PS
861.075	Mex	Mex	Mex
861.1	PS	PS	PS
861.125	Mex	Mex	Mex
861.15	PS	PS	PS
861.175	Mex	Mex	Mex
861.2	PS	PS	PS
861.225	Mex	Mex	Mex
861.25	PS	PS	PS
861.275	Mex	Mex	Mex

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Border Plan frequency	FCC_TYPE	Actual Use Tucson	Actual Use Yuma
861.3	ILT	ILT	ILT
861.325	Mex	Mex	Mex
861.35	ILT	ILT	HISMR
861.375	Mex	Mex	Mex
861.4	ILT	ILT	HISMR
861.425	Mex	Mex	Mex
861.45	ILT	ILT	ILT
861.475	Mex	Mex	Mex
861.5	BS	N	HISMR
861.525	Mex	Mex	Mex
861.55	BS	BS	N
861.575	Mex	Mex	Mex
861.6	BS	BS	HISMR
861.625	Mex	Mex	Mex
861.65	BS	BS	HISMR
861.675	Mex	Mex	Mex
861.7	SMR	N	HISMR
861.725	Mex	Mex	Mex
861.75	SMR	N	HISMR
861.775	Mex	Mex	Mex
861.8	SMR	N	HISMR
861.825	Mex	Mex	Mex
861.85	SMR	N	HISMR
861.875	Mex	Mex	Mex
861.9	SMR	N	N
861.925	Mex	Mex	Mex
861.95	SMR	HISMR	N
861.975	Mex	Mex	Mex
862	PS	PS	PS
862.025	Mex	Mex	Mex
862.05	PS	PS	PS
862.075	Mex	Mex	Mex
862.1	PS	PS	PS
862.125	Mex	Mex	Mex
862.15	PS	PS	PS
862.175	Mex	Mex	Mex
862.2	PS	PS	PS
862.225	Mex	Mex	Mex
862.25	PS	PS	PS
862.275	Mex	Mex	Mex
862.3	ILT	ILT	ILT
862.325	Mex	Mex	Mex
862.35	ILT	ILT	HISMR
862.375	Mex	Mex	Mex
862.4	ILT	N	N
862.425	Mex	Mex	Mex
862.45	ILT	ILT	ILT
862.475	Mex	Mex	Mex
862.5	BS	BS	HISMR
862.525	Mex	Mex	Mex
862.55	BS	BS	HISMR
862.575	Mex	Mex	Mex
862.6	BS	BS	HISMR
862.625	Mex	Mex	Mex
862.65	BS	BS	HISMR
862.675	Mex	Mex	Mex
862.7	SMR	N	HISMR

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Border Plan frequency	FCC_TYPE	Actual Use Tucson	Actual Use Yuma
862.725	Mex	Mex	Mex
862.75	SMR	N	HISMR
862.775	Mex	Mex	Mex
862.8	SMR	N	HISMR
862.825	Mex	Mex	Mex
862.85	SMR	N	HISMR
862.875	Mex	Mex	Mex
862.9	SMR	HISMR	N
862.925	Mex	Mex	Mex
862.95	SMR	N	N
862.975	Mex	Mex	Mex
863	PS	PS	PS
863.025	Mex	Mex	Mex
863.05	PS	PS	PS
863.075	Mex	Mex	Mex
863.1	PS	PS	PS
863.125	Mex	Mex	Mex
863.15	PS	PS	PS
863.175	Mex	Mex	Mex
863.2	PS	PS	PS
863.225	Mex	Mex	Mex
863.25	PS	PS	PS
863.275	Mex	Mex	Mex
863.3	ILT	ILT	N
863.325	Mex	Mex	Mex
863.35	ILT	N	HISMR
863.375	Mex	Mex	Mex
863.4	ILT	N	HISMR
863.425	Mex	Mex	Mex
863.45	ILT	ILT	ILT
863.475	Mex	Mex	Mex
863.5	BS	BS	HISMR
863.525	Mex	Mex	Mex
863.55	BS	BS	HISMR
863.575	Mex	Mex	Mex
863.6	BS	BS	HISMR
863.625	Mex	Mex	Mex
863.65	BS	BS	HISMR
863.675	Mex	Mex	Mex
863.7	SMR	N	HISMR
863.725	Mex	Mex	Mex
863.75	SMR	N	HISMR
863.775	Mex	Mex	Mex
863.8	SMR	N	HISMR
863.825	Mex	Mex	Mex
863.85	SMR	N	HISMR
863.875	Mex	Mex	Mex
863.9	SMR	HISMR	N
863.925	Mex	Mex	Mex
863.95	SMR	N	N
863.975	Mex	Mex	Mex
864	PS	PS	PS
864.025	Mex	Mex	Mex
864.05	PS	PS	PS
864.075	Mex	Mex	Mex
864.1	PS	PS	PS
864.125	Mex	Mex	Mex

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Border Plan frequency	FCC_TYPE	Actual Use Tucson	Actual Use Yuma
864.15	PS	PS	PS
864.175	Mex	Mex	Mex
864.2	PS	PS	PS
864.225	Mex	Mex	Mex
864.25	PS	PS	PS
864.275	Mex	Mex	Mex
864.3	ILT	ILT	N
864.325	Mex	Mex	Mex
864.35	ILT	N	N
864.375	Mex	Mex	Mex
864.4	ILT	N	HISMR
864.425	Mex	Mex	Mex
864.45	ILT	ILT	ILT
864.475	Mex	Mex	Mex
864.5	BS	BS	HISMR
864.525	Mex	Mex	Mex
864.55	BS	HISMR	HISMR
864.575	Mex	Mex	Mex
864.6	BS	BS	HISMR
864.625	Mex	Mex	Mex
864.65	BS	BS	HISMR
864.675	Mex	Mex	Mex
864.7	SMR	N	HISMR
864.725	Mex	Mex	Mex
864.75	SMR	N	HISMR
864.775	Mex	Mex	Mex
864.8	SMR	N	HISMR
864.825	Mex	Mex	Mex
864.85	SMR	N	HISMR
864.875	Mex	Mex	Mex
864.9	SMR	HISMR	N
864.925	Mex	Mex	Mex
864.95	SMR	N	N
864.975	Mex	Mex	Mex
865	PS	PS	PS
865.025	Mex	Mex	Mex
865.05	PS	PS	PS
865.075	Mex	Mex	Mex
865.1	PS	PS	PS
865.125	Mex	Mex	Mex
865.15	PS	PS	PS
865.175	Mex	Mex	Mex
865.2	PS	PS	PS
865.225	Mex	Mex	Mex
865.25	PS	PS	PS
865.275	Mex	Mex	Mex
865.3	ILT	ILT	N
865.325	Mex	Mex	Mex
865.35	ILT	N	N
865.375	Mex	Mex	Mex
865.4	ILT	N	N
865.425	Mex	Mex	Mex
865.45	ILT	ILT	ILT
865.475	Mex	Mex	Mex
865.5	BS	BS	HISMR
865.525	Mex	Mex	Mex
865.55	BS	BS	HISMR

Pinnacle West Capital Corp. (Arizona Public Service Co.) 3rd round reply comments

Border Plan frequency	FCC_TYPE	Actual Use Tucson	Actual Use Yuma
865.575	Mex	Mex	Mex
865.6	BS	BS	HISMR
865.625	Mex	Mex	Mex
865.65	BS	BS	HISMR
865.675	Mex	Mex	Mex
865.7	SMR	N	HISMR
865.725	Mex	Mex	Mex
865.75	SMR	N	HISMR
865.775	Mex	Mex	Mex
865.8	SMR	N	HISMR
865.825	Mex	Mex	Mex
865.85	SMR	N	HISMR
865.875	Mex	Mex	Mex
865.9	SMR	HISMR	N
865.925	Mex	Mex	Mex
865.95	SMR	N	N
865.975	Mex	Mex	Mex