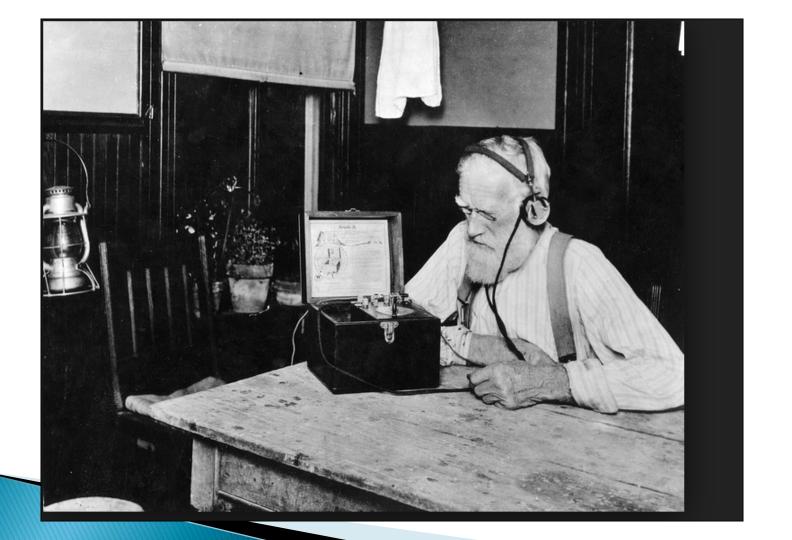
AM Rejuvenation – Docket 13–249 FIRST REPORT AND ORDER

Doug Vernier, V-Soft Communications & Telecommunications Consultants













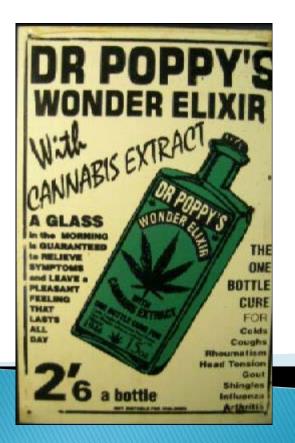


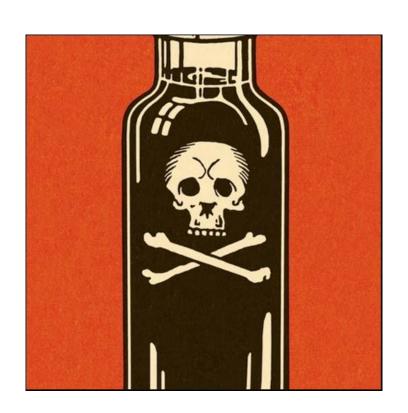


AM Radio Listening



What AM needs is Rejuvenation!







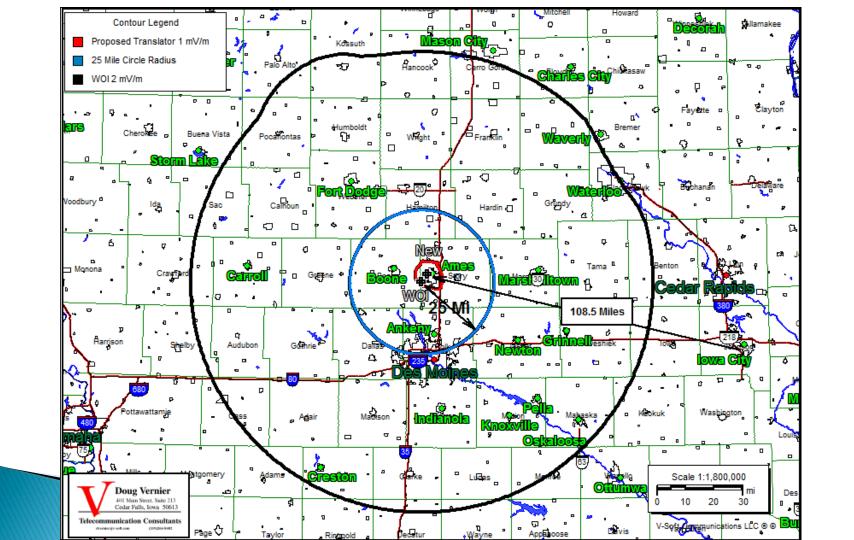


FM Translators for AM Stations

- Existing Rules for Cross–Service modified
- Site moves require crossing 60 dBu contours
- Matoon Waiver for AM Station translators
 - Current and proposed sites must be MX
 - No History of Band-hopping
 - 4 year holding requirement

New AM Translator Rejuvenation Rules

- 6 month app window for C and D classes
- Can move a translator up to 250 miles
- Any available commercial band FM frequency
- Translator 60 dBu inside AM 2 mV/m or 25 mile circle from the AM transmitter
- ▶ 2nd 3 month window for all classes
- New station windows open in 2017



Daytime Coverage Rules Modified

- Rule was... 5 mV/m contour covers 80% of principal city-area or pop
- Changes to 50 %
- 80% for new stations and allocations was 100%

Nighttime Coverage Changes

- Rule was 80% of community area or population with NIF
 - Requirements eliminated for existing stations
 - 50% NIF coverage for new stations or when changing the community of license

Ratchet Rule is Eliminated

- Was a change to an AM station would require a 10% reduction of the interference contribution to the NIF of other stations
- Prevented stations from improving nighttime coverage

Makes life easier for AM stations

- Expanding urban sprawl city boundaries are expanding
- Value of property worth more than station
- Finding new property for AM towers very difficult
- Available sites are often well outside city boundaries
- Tower restrictions, NEPA requirements



Wider use of Modulation Dependent Carrier level (MDCL)

- Saves 20 to 40 percent on power consumption
- Experimental Authority no longer required
- Send a letter to FCC with notification

Modified Antenna Efficiencies

- Reduced by 25%
- Further reduction may be granted on an experimental basis
- Allows more flexibility in multiplexing with other AM stations
- Smaller antennas can be used such as the Valcom V33075AM.



MINIMUM Required Efficiencies

| Class of station | Effective field (at 1 km) | Current Rules |
|------------------------------|------------------------------|---------------|
| All Class A (except Alaskan) | 275 mV/m. | 362 mV/m. |
| Class A (Alaskan), B and D | 215 mV/m. | 282 mV/m. |
| Class C | 180 mV/m. | 241 mV/m. |

Further Notice FCC Proposals

- Class A is now protected at night on co-channel to the 0.5 mV/m 50% skywave - FCC asks, "should that be changed to 0.1 mV/m ground wave contour?"
- Should the special Critical Hour protections be eliminated for class A stations?
- Should the 1991 rules for calculating RSS values of interfering field strength for calculating NIF be used instead of current rules? (i.e. change back to the 50% exclusion method and consider only co-channel.)

FCC Daytime proposal - pre 1991 rules

Current Rules

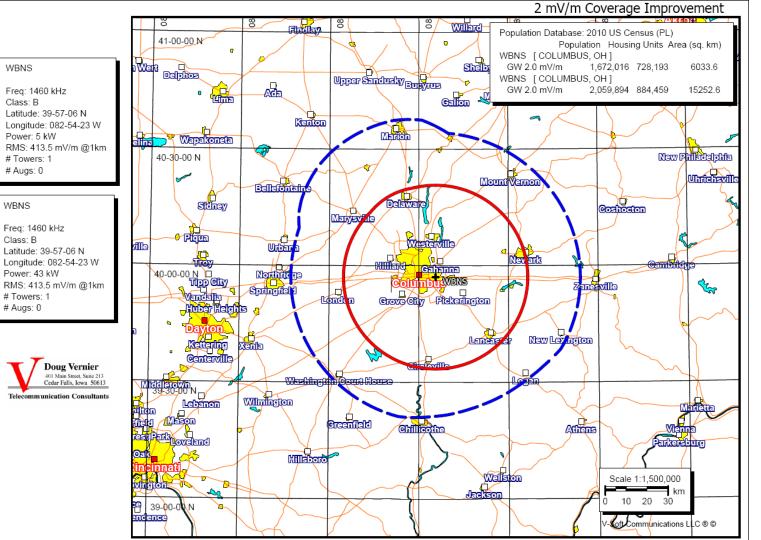
| | | GICS |
|---------------------------------|--|---|
| Frequency sepa- ration (kHz) | Contour of proposed station (classes B, C and D) (mV/m) | Contour of any other station (mV/m) |
| 0 | 0.005 0.025 | 0.100 (Class A). 0.500(Other classes). |
| | 0.500 | 0.025 (All classes). |
| 10 | 0.250 | 0.500(All classes). |
| | 0.500 | 0.250 (All classes). |
| 20 | 5 | 5 (All classes). |
| 20 | 5 25 | 5 (All classes). 25 (All classes). |
| 30 | 25 | 20 (All Classes). |

Proposed Rules - Pre 1991

| Frequency | Contour of proposed station | Contour of any |
|------------|-----------------------------|-----------------------|
| Separation | (classes B, C and D) | other station |
| (kHz) | (mV/m) | (mV/m) |
| 0 | 0.005 | 0.100 (Class A) |
| | 0.100 | 2.0 (Other classes) |
| | 2.0 | 0.100 (Other classes) |
| 10 | 0.500 | 0.500 (Class A) |
| | 2.0 | 2.0 (Other classes) |
| 20 | 25.0 | 25.0 (All classes) |

WBNS-Pre Rejuvenation - Max Power = 5 kW

| ΑN | AM Daytim | ie Study | | | | | | | × | |
|---|--------------|-------------|----------------|----|--------------|---------------|---------|----------|---|--|
| 5 | Show: 🔽 Co | ✓ 1st ✓ | 2nd 🔽 3rd 🖟 | Co | ntour Labels | Ix Displa | ıy > | | | |
| Reference Station: WBNS, 1460 kHz Edit Ref Pattern Cont Props | | | | | | | | | | |
| | Call | Freq | City | ST | Dist | Azi | In | Out <+> | | |
| ❷ | WABQ | 1460 | PAINESVILLE | ОН | 243.4 | 35.9 | 17.32 | -3035.50 | • | |
| ✓ | WJCP | 1460 | NORTH VERNON | IN | 258.9 | 244.9 | 17.62 | -1515.00 | | |
| ✔ | WMBA | 1460 | AMBRIDGE | PA | 240.5 | 73.9 | 32.03 | -770.00 | _ | |
| ✔ | WJER | 1450 | DOVER-NEW PHI | OH | 138.2 | 63.7 | -188.00 | -663.25 | | |
| ✓ | WPON | 1460 | WALLED LAKE | MI | 292.1 | 350.0 | 61.21 | -477.00 | | |
| ✓ | WKAM | 1460 | GOSHEN | IN | 305.7 | 305.5 | 20.88 | -440.00 | | |
| ✓ | WKAM | 1460 | GOSHEN | IN | 305.6 | 305.6 | 22.77 | -384.00 | | |
| ✔ | WLQR | 1470 | TOLEDO | OH | 192.7 | 345.3 | -34.25 | -340.75 | | |
| ✓ | WLEC | 1450 | SANDUSKY | OH | 166.4 | 6.5 | 22.12 | -234.50 | | |
| ✓ | WPON | 1460 | WALLED LAKE | MI | 293.1 | 349.0 | 90.01 | -179.75 | | |
| ✔ | WMOH | 1450 | HAMILTON | OH | 152.1 | 245.9 | 1.66 | -169.75 | | |
| | WLQR | 1470 | TOLEDO | OH | 195.9 | 341.5 | 17.17 | 7.23 | | |
| | WHNK | 1450 | PARKERSBURG | WV | 139.4 | 122.3 | 25.90 | 19.80 | | |
| | WCLT | 1430 | NEWARK | OH | 44.0 | 78.2 | 24.30 | 24.30 | | |
| | WBUC | 1460 | BUCKHANNON | WV | 256.4 | 115.9 | 40.53 | 26.83 | | |
| | WMRN | 1490 | MARION | OH | 75.9 | 345.4 | 51.95 | 51.95 | | |
| | WBEX | 1490 | CHILLICOTHE | OH | 69.3 | 186.4 | 52.23 | 52.23 | | |
| | WRGM | 1440 | ONTARIO | OH | 93.9 | 15.2 | 52.61 | 52.61 | | |
| | WRVK | 1460 | MOUNT VERNON | KY | 309.4 | 203.1 | 65.83 | 55.68 | | |
| | WLYV | 1450 | FORT WAYNE | IN | 225.0 | 302.8 | 77.95 | 60.63 | | |
| | WEKB | 1460 | ELKHORN CITY | KY | 297.8 | 170.5 | 96.70 | 83.35 | | |
| | WGNR | 1470 | ANDERSON | IN | 239.7 | 272.0 | 93.16 | 84.33 | | |
| | WJPA | 1450 | WASHINGTON | PA | 229.5 | 84.2 | 101.58 | 88.77 | | |
| | WLOA | 1470 | FARRELL | PA | 244.8 | 56.3 | 100.09 | 90.87 | | |
| | WLUX | 1450 | DUNBAR | W۷ | 204.1 | 151.0 | 99.07 | 92.93 | | |
| | WBFC | 1470 | STANTON | KY | 244.8 | 199.9 | 97.89 | 93.94 | • | |
| | <u>E</u> dit | <u>A</u> dd | <u>R</u> emove | Co | nt Props | Relationships | S | Select > | | |



WBNS

Class: B

Power: 5 kW

Towers: 1 # Augs: 0

Freq: 1460 kHz

Power: 43 kW

Towers: 1

Auas: 0

WBNS

Class: B

Frea: 1460 kHz

WBNS Post Rejuvenation - 43 kW

| ΑM | AM Daytime | e Study | | | | | | | | |
|---|------------|---------|---------------|----|-------|-------|--------|---------|--|--|
| Show: ▼ Co ▼ 1st ▼ 2nd ▼ 3rd ▼ Contour Labels Ix Display > | | | | | | | | | | |
| Reference Station: WBNS, 1460 kHz Edit Ref Pattern Cont Props | | | | | | | | | | |
| | Call | Freq | City | ST | Dist | Azi | In | Out <+> | | |
| $\overline{\mathbf{v}}$ | WABQ | 1460 | PAINESVILLE | OH | 243.4 | 35.9 | 89.14 | 4.53 | | |
| $\overline{\mathbf{v}}$ | WMBA | 1460 | AMBRIDGE | PA | 240.5 | 73.9 | 104.68 | 14.36 | | |
| $\overline{\mathbf{v}}$ | WJCP | 1460 | NORTH VERNON | IN | 258.9 | 244.9 | 94.44 | 16.53 | | |
| $\overline{\mathbf{v}}$ | WPON | 1460 | WALLED LAKE | MI | 292.1 | 350.0 | 138.89 | 28.02 | | |
| $\overline{\mathbf{v}}$ | WPON | 1460 | WALLED LAKE | MI | 293.1 | 349.0 | 153.59 | 33.17 | | |
| $\overline{\mathbf{A}}$ | WKAM | 1460 | GOSHEN | IN | 305.7 | 305.5 | 113.10 | 39.14 | | |
| \checkmark | WKAM | 1460 | GOSHEN | IN | 305.6 | 305.6 | 114.71 | 40.81 | | |
| \checkmark | WJER | 1450 | DOVER-NEW PHI | OH | 138.2 | 63.7 | 41.67 | 41.67 | | |
| \checkmark | WMOH | 1450 | HAMILTON | OH | 152.1 | 245.9 | 53.05 | 53.05 | | |
| $\overline{\mathbf{A}}$ | WHNK | 1450 | PARKERSBURG | WV | 139.4 | 122.3 | 56.39 | 56.39 | | |
| $\overline{\mathbf{A}}$ | WBUC | 1460 | BUCKHANNON | WV | 256.4 | 115.9 | 108.46 | 61.14 | | |
| $\overline{\mathbf{A}}$ | WRGM | 1440 | ONTARIO | OH | 93.9 | 15.2 | 66.66 | 66.66 | | |
| $\overline{\mathbf{A}}$ | WLEC | 1450 | SANDUSKY | OH | 166.4 | 6.5 | 70.36 | 70.36 | | |
| | WLQR | 1470 | TOLEDO | OH | 192.7 | 345.3 | 76.62 | 76.62 | | |
| $\overline{\mathbf{A}}$ | CJOY | 1460 | GUELPH | ON | 450.6 | 30.3 | 142.01 | 83.53 | | |
| $\overline{\mathbf{A}}$ | WLQR | 1470 | TOLEDO | OH | 195.9 | 341.5 | 83.57 | 83.57 | | |
| $\overline{\mathbf{A}}$ | CJOY | 1460 | GUELPH | ON | 450.6 | 30.3 | 146.13 | | | |
| $\overline{\mathbf{A}}$ | WRVK | 1460 | MOUNT VERNON | KY | 309.4 | 203.1 | 139.61 | 98.81 | | |
| $\overline{\mathbf{A}}$ | WEKB | 1460 | ELKHORN CITY | KY | 297.8 | 170.5 | 159.51 | 116.39 | | |
| $\overline{\mathbf{A}}$ | WDJO | 1480 | CINCINNATI | OH | 158.8 | 238.4 | 120.65 | 120.65 | | |
| _ | WHBC | 1480 | CANTON | OH | 170.8 | 52.6 | 124.25 | 124.25 | | |
| _ | WLYV | 1450 | FORT WAYNE | IN | 225.0 | 302.8 | 125.22 | | | |
| $\overline{\mathbf{A}}$ | WLUX | 1450 | DUNBAR | WV | 204.1 | 151.0 | 126.22 | | | |
| $\overline{\mathbf{A}}$ | WJPA | 1450 | WASHINGTON | PA | 229.5 | 84.2 | 140.61 | 140.61 | | |
| _ | WGNR | 1470 | ANDERSON | IN | 239.7 | 272.0 | 142.19 | 142.19 | | |
| ゼ | WBFC | 1470 | STANTON | KY | 244.8 | 199.9 | 142.98 | 142.98 | | |

NAB AM Rejuvenation Study

| | | Form | | CTATION F | OWER (kW) | | I | | |
|-----|----------------|---------------|-----------------|-----------|-----------|------------|-----------------------|------------|------------------------------------|
| No. | Station | Freq (kHz) | City of license | Existing | Studied | Existing | POPULATION Studied | % Increase | Notes |
| 1 | Root: KBNP | 1410 | Portland, OR | 5 | 8.5 | 1.871.404 | 1,950,455 | 4.2% | 110123 |
| _ | Affected: KEDO | 1400 | Longview, WA | 1 | 1 | 2,072,101 | 2,000,100 | 11270 | Class C |
| | KZZD | 1390 | Salem, OR | 5 | 50 | | | | |
| | KYKN | 1430 | Keizer, OR | 5 | 50 | | | | |
| 2 | Root: KGAL | 1580 | Lebonon, OR | 5 | 50 | 122,548 | 407,173 | 232.3% | |
| | Affected: KOPB | 1600 | Eugene, OR | 5 | 50 | | | | All can go to 50 kW simultaneously |
| | KTIL | 1590 | Newarts,OR | 5 | 50 | | | | |
| | KOHI | 1600 | St. Helens, OR | 1 | 50 | | | | |
| 3 | Root: KGGR | 1040 | Dallas, TX | 3.3 | 27 | 6,538,981 | 7,176,814 | 9.8% | |
| | Affected: WHO | 1040 | DesMoines, IA | 50 | 50 | | | | Already max'd as non-DA |
| | KRMY | 1050 | Killen, TX | 0.25 | 0.5 | | | | 1 kW if Mexico ignored |
| | KXCA | 1050 | Lawton, OK | 0.25 | 3 | | | | Limited to 3 kW by KGGR |
| 4 | Root: KRRS | 1460 | Santa Rosa, CA | 1 | 1 | | | | No increase pre or post |
| 5 | Root: WAAM | 1600 | Ann Arbor, MI | 5 | 5 | | | | Blocked by Canada |
| 6 | Root: WADO | 1280 | New York, NY | 50 | 50 | 13,588,950 | 15,358,305 | 13.0% | Pattern opened out |
| | Affected: WSHU | 1260 | Westport, CT | 1 | 1.85 | | | | No incr if WBNR incr to 2.2 kW |
| | WBNR | 1260 | Beacon, NY | 1 | 2.2 | | | | 1 kW if WSHU goes to 1.85 kW |
| | WFJS (CP) | 1260 | Trenton, NJ | 5.9 | 50 | | | | No change to DA pattern |

| | | Freq | 1 | STATION POWER (kW) | | | POPULATION | | l |
|-----|----------------|-------|-------------------|--------------------|---------------|-------------------------|-----------------|------------|-----------------------------------|
| No. | Station | (kHz) | City of license | Existing | Studied | Existing | Studied | % Increase | Notes |
| 7 | Root: WAOK | 1380 | Atlanta, GA | 25 | 50 | 2,309,863 | 2,875,142 | 24.5% | |
| | Affected: WLTA | 1400 | Alpharetta, GA | 1 | 1 | | | | Class C |
| | WRAB | 1380 | Arab, AL | 1 | 1 | | | | Stopped pre and post |
| | WFDR | 1370 | Manchester, GA | 2.3 | 50 | | | | |
| 8 | Root: WBNS | 1460 | Colombus, OH | 5 | 43 | 1,672,016 | 2,059,894 | 23.2% | |
| | Affected: WABQ | 1460 | Painesville, OH | 1 | 1 | | | | No to pre & post by Canada |
| | WMBA | 1460 | Ambridge, PA | 0.5 | 2.9 | l | | | Limited by WBNS and WJPA |
| | WJCP | 1460 | North Vernon, IN | 1 | 9 | | | | Limited by WBNS |
| 9 | Root: WGFA | 1360 | Watseka, IL | 1 | 50 | 18,987 | 378,922 | 1895.7% | If drop DA = 1 kW omni |
| | Affected: WLBK | 1360 | DeKalb, Il | 1 | 1.1 | | | | Limited by WGFA's increase |
| | WSAI | 1360 | Cincinatti, OH | 5 | 14 | | | | Limited at 14 kW by WGFA |
| | WLTH | 1370 | Gary, IN | 1 | 10 | | | | Not limited by WGFA |
| 10 | Root: WGSP | 1310 | Charlotte, NC | 5 | 50 | 1,098,642 | 1,773,157 | 61.4% | |
| | Affected: WISE | 1310 | Ashville, NB | 5 | 8 | | | | Limited at 8 kW by WGSP |
| | WTIK | 1310 | Durham, NC | 6 | 6.1 | l | | | Limited at 6.1 kW by WGSP |
| | WDKD | 1310 | Kingstree, SC | 5 | 20 | | | | Limited at 20 kW by WGSP |
| 11 | Root: WITY | 980 | Danville, IL | 1 | 50 | 104,003 | 790,143 | 659.7% | |
| | Affected: WMAY | 970 | Springfield, IL | 1 | 50 | | | | |
| | WITZ | 990 | Jasper, IN | 1 | 7 | | | | Limited at 7 kW by WRFM |
| | WONE | 980 | Dayton. OH | 5 | 5 | | | | Limiited at 5 kW by Canada |
| _ | WONE | 980 | Dayton. OH | 5 | 45 | | | | Adding a tower to make station DA |
| 12 | Root: WMGC | 810 | Murfreesboro, TN | 5 | 14 | 1,071,206 | 1,542,663 | 44.0% | |
| | Affected: WCKA | 810 | Jacksonville, AL | 50 | 50 | l | | | Pattern can be let out |
| | WCTA | 810 | Alamo, TN | 0.25 | 3 | | | | Limited at 3 kW by WMGC |
| | WTNW | 820 | Jasper, TN | 1 | 18 | | | | Limited at 18 kW by WMGC |
| 13 | Root: WNIV | 970 | Atlanta, GA | 5 | 50 | 1,943,321 | 3,701,197 | 90.5% | |
| - 1 | Affected: WRFC | 960 | Athens, GA | 5 | 20 | | | | Limited to 20 kW by WNIV |
| - 1 | WRHA | 970 | Spring City, TN | 0.5 | 7.5 | l | | | Limited to 7.5 kW by WNIV |
| | WISK | 990 | Lawrenceville, TN | 1 | 19 | | | | Limited to 19 kW by WNIV |
| 14 | Root: WRHL | 1060 | Rochelle, IL | 0.25 | 22 | 61,039 | 535,134 | 776.7% | |
| - 1 | Affected: WTSO | 1070 | Madison, WI | 10 | 10 | l | | | Limited to 10 kW by WRHL |
| - 1 | KFIL | 1060 | Preston, MN | 1 | 30 | l | | | Limited to 30 kW by KFIL |
| | WLIP | 1050 | Kenosha, WI | 0.25 | 0.5 | | | | Not limited by WRHL |
| | | | | | TOTALS | 30,400,960 | 38,548,999 | 26.8% | Increase of 8,148,039 |
| | | | | Δ. | verage increa | - se for stations al | hle to ungrade: | 319.6% | |

Average increase for stations able to upgrade: 319.6%

| AFFECTED STATION | | | | | | STATION PWR (kW) | | 0.5 mV/m) | 1 |
|------------------|------------------|----------|-------|------------------|---------|------------------|-------------|--------------|----------------------------|
| | ROOT | , | Freq | DSTATION | STATION | PVK (KVV) | IIVI FREE (| % CHG from | |
| No. | STATION | | (kHz) | City of license | Root | Affected | Population | existing pop | Notes |
| | | WABQ | | | 5 | 1 | 317,994 | | EXISTING |
| | | (note 4) | 1460 | Painsville, OH | 43 | 1 | 309,142 | -2.8% | Root increases |
| 8 | WBNS | | | | 5 | 0.5 | 663,877 | | EXISTING |
| | 1460 kHz | WMBA | 1460 | Ambridge, PA | 43 | 0.5 | 489,409 | -26.3% | Root increases |
| | Columbus, | | | | 43 | 2.9 | 1,263,963 | 90.4% | Root and affected increase |
| | ОН | | | | 5 | 1 | 237,725 | | EXISTING |
| | | WCJP | 1460 | North Vernon, IN | 43 | 1 | 170,994 | -28.1% | Root increases |
| | | | | | 43 | 9 | 391,754 | 64.8% | Root and affected increase |
| | | | | | 1 | 1 | 665,719 | | EXISTING |
| | WGFA 1360 kHz | WLBK | 1360 | DeKalb, Il | 50 | 1 | 299,407 | -55.0% | Root increases |
| 9 | | | | | 50 | 1.1 | 317,575 | -52.3% | Root and affected increase |
| | | WSAI | 1360 | Cincinnati, OH | 1 | 5 | 3,058,235 | | EXISTING |
| | Watseka, | | | | 50 | 5 | 2,518,272 | -17.7% | Root increases |
| | IL | | | | 50 | 14 | 3,005,454 | -1.7% | Root and affected increase |
| | | | | | 1 | 1 | 841,120 | | EXISTING |
| | | WLTH | 1370 | Gary, IN | 50 | 1 | 758,554 | -9.8% | Root increases |
| | | | | | 50 | 10 | 1,168,737 | 39.0% | Root and affected increase |
| \neg | | | | | 1 | 1 | 768,409 | | EXISTING |
| | | WMAY | 970 | Springfield, IL | 50 | 1 | 714,974 | -7.0% | Root increases |
| 11 | WITY | | | | 50 | 50 | 3,785,789 | 392.7% | Root and affected increase |
| | 980 kHz | | | | 1 | 1 | 647,182 | | EXISTING |
| | Danville, | WITZ | 990 | Jasper, IN | 50 | 1 | 621,955 | -3.9% | Root increases |
| | IL | | | | 50 | 7 | 938,751 | 45.1% | Root and affected increase |
| | | | | | 1 | 5 | 4,030,644 | | EXISTING |
| | | WONE | 980 | Dayton, OH | 50 | 5 | 3,918,799 | -2.8% | Root increases |
| | | | | | 50 | 45 | 5,595,894 | 38.8% | Root and affected increase |

AFFECTED STATION TOTALS

Current 0.5 mV/m population: 11,230,905

0.5 mV/m population after root increase: 9,801,506 -12.7%

0.5 mV/m population after root and affected increase: 16,777,059 49.4%

Pros - Power Increases

- Change from multiple towers to only one
- Great ability to multiplex on existing towers
- Increase daytime power serve larger audience
- More flexibility for relocation of facilities
- Use shorter less expensive towers
- Reduce Power bill MDCL
- More stations can increase nighttime power

CONS

- Be stopped from an increase by other stations
- Lose part of the 0.5 mV/m interference free
- Being forced to do a costly power increase
- Class A loses nighttime coverage
- Proposal needs the establishment of a fair method of opening an application window

Additional FCC Proposals - Notice of Inquiry

- Revise rules on cross service translators to fill-ins to allow 60 dBu contour to be no more that 25 miles from transmitter or to the 2 mV/m whichever is the "greater".
- In no event can the translator be beyond a 40 mile circle. (rather than the current 25 miles)

More Proposals - Comments requested

- Modify Partial Proof rules to reduce the number of radial measurements for DAs
- Modify rules for Methods of Moments Proofs
- Surrender licenses of dual expanded band stations
- Open Expanded Band to additional applicants
- Relax the main studio requirements

Discussion?