

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

In the Matter of)
)
Amendment of Section 73.622(b),)
Table of Allotments,)
Digital Television Broadcast Stations,)
(Appleton, Wisconsin))
)
Amendment of Section 73.622(b),)
Table of Allotments,)
Digital Television Broadcast Stations,)
(Green Bay, Wisconsin))

MB Docket No. 04-185
RM-10860

MM Docket No. 01-334
RM-10343

RECEIVED

JUL 12 2004

To: The Secretary, FCC
Attn: Chief, Video Division, Media Bureau

Federal Communications Commission
Office of Secretary

COMMENTS REGARDING NOTICE OF PROPOSED RULEMAKING

State of Wisconsin – Educational Communications Board (“WECB”), by its counsel,¹ hereby comments on the Notice of Proposed Rulemaking (“NPRM”) released May 21, 2004 in response to Ace TV, Inc.’s (“Ace”) request for the substitution of DTV Channel 27 for DTV Channel 59 at Appleton, Wisconsin. WECB does not object to Ace’s use of Channel 27 at Appleton, but opposes the channel substitution to the extent that it presupposes the outcome of a related rulemaking proposal to allot DTV Channel 39 at Green Bay, Wisconsin.

Background

On December 14, 2001, the FCC released a Notice of Proposed Rulemaking for the substitution of DTV Channel 39 for the DTV Channel 56 allotted to CBS Broadcasting Inc.’s

¹ Please note that WECB is now represented by Dow, Lohnes & Albertson, pllc, which represents a change in counsel from when its prior pleadings were filed in MM Docket No. 01-334, RM-10343.

("CBS") Station WFRV-TV, Green Bay, Wisconsin. See MM Docket No. 01-334, RM-10343. WECB timely filed an Opposition to the Channel 39 rulemaking proposal on February 4, 2002. Also on February 4, 2002, Ace filed a Counterproposal, requesting the substitution of DTV Channel 39 for WACY-TV's assigned DTV Channel 59 at Appleton.² Ace and CBS filed Joint Reply Comments on February 8, 2002, resulting in the issuance of this NPRM for Channel 27 at Appleton. CBS filed additional Reply Comments in the Channel 39 proceeding on February 8, 2002 and February 19, 2002, and WECB filed Reply Comments on February 19, 2002. WECB's Opposition and Reply Comments explained that operation of CBS's Station WFRV-DT on DTV Channel 39 in Green Bay would cause extensive interference to WECB's Station WPNE-TV, NTSC Channel 38, Green Bay, Wisconsin.

**Ace's Proposed Appleton Channel Substitution Relies Upon
CBS's Unresolved Green Bay Channel Proposal**

The NPRM states that Ace's proposal for Channel 27 at Appleton is part of an agreement to resolve the conflicting DTV Channel 39 proposals of Ace and CBS. In a footnote, the NPRM states that there is no mutual exclusivity between the allotment of DTV Channel 39 to Green Bay and the use of DTV Channel 27 at Appleton. WECB has no objection to Ace's use of DTV Channel 27, however, with WECB's technical objection to CBS's Channel 39 proposal currently pending before the FCC, WECB respectfully submits that it is premature for the Commission to address the merits of Ace's Appleton rulemaking proposal. Ace's proposal is based upon Ace's agreement with CBS and presupposes CBS's use of DTV Channel 39 for WFRV. WECB therefore restates its objections to CBS's proposal for the allotment of DTV Channel 39 in Green Bay. Moreover, WECB submits that an alternative channel is available to CBS for use as a

² As WECB noted in its February 19, 2002 Reply Comments, it opposes any use of Channel 39

continued...

viable substitute DTV channel for WFRV, namely Channel 45 at Green Bay. As discussed below, utilization of DTV Channel 45 as the paired DTV Channel for WFRV would better serve the public interest because it would not result in the impermissible interference and logistical problems that CBS's proposed use of Channel 39 are bound to cause.

The Green Bay Channel Substitution Would Frustrate the Public Interest By Causing Interference to Existing Noncommercial Educational Television Service

As WECB detailed in its Opposition and Reply, the proposed operation of WFRV-DT on Channel 39 from a non-collocated site approximately 5.34 miles from the WPNE-TV facility would result in interference and operational difficulties for WPNE-TV (including logistical problems with coordination of future upgrades or facility modifications), as well as additional interference to other nearby stations. In particular, the use of a high density digital signal for WFRV-DT on a channel adjacent to WPNE-TV's Channel 39, without co-location of facilities, would cause extensive interference to local viewers' existing reception of WPNE-TV's noncommercial educational programming. *See* Engineering Statement at 2.

In its implementation of the digital television transition, the FCC has specifically recognized the potential interference hazards caused by adjacent channel NTSC and DTV operations. In its *Service Reconsideration Order*, the FCC stated that "revisions are needed to reduce the potential for adjacent channel interference" and "a solution that includes tightening the DTV emissions mask, making a number of specific DTV allotment changes where needed, and providing flexible administrative processes to encourage adjacent channel co-locations offers

...continued

in the Green Bay or Fox Valley areas.

the best approach for addressing adjacent channel interference concerns.”³ Given the lack of co-location in this instance, a different DTV allotment than that proposed by CBS should be the required solution, particularly since a viable allotment is available.

**An Alternative In-Core DTV Channel is Available
for Use as WFRV-DT’s Substitute Paired Allotment**

CBS’s proposed use of DTV Channel 39 at Green Bay as the substitute paired channel for WFRV is unnecessary. Another vacant channel that would not result in the same interference problems is available. As detailed in the attached Engineering Statement and its exhibits, a frequency study demonstrates that DTV Channel 45 is available for WFRV-DT and represents a more suitable choice.⁴ Although there is presently a pending application in File No. BPCT-19960920YF for adjacent Channel 44 at Green Bay, the proposed station is not likely to ever commence operations. The Channel 44 application appears ungrantable due to presence of WMMF-DT, currently operating on Channel 44 at Fond du Lac, Wisconsin, and because it specifies a 1,200 foot tower in downtown Green Bay which is highly unlikely to be approved by the Federal Aviation Administration or the City Planning and Zoning Commissions. See Engineering Statement at 3.

Moreover, CBS could easily use DTV Channel 45 for WFRV at its currently authorized DTV site location, or, if necessary, co-locate WFRV-DT with the NTSC Channel 44 facility

³ *Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service*, 11 CR 634, 13 FCC Rcd 7418, 63 FR 13546 (Feb. 23, 1998), FCC 98-24, MM Docket No. 87-268 (*Memorandum Opinion and Order on Reconsideration of the 5th Report and Order*, aka “*Service Reconsideration Order*”) at paragraph 92.

⁴ The Commission should note that the application in FCC File No. BPCT-19960722KN, for a new TV station on Channel 45 at Richland Center, Wisconsin was dismissed on July 17, 2003, subsequent to the previous pleading cycle in CBS’s Green Bay rulemaking proposal in MM Docket No. 01-334, RM-10343.

(were it ever to be constructed). *See* Engineering Statement at 3. The operation of WFRV-DT on Channel 45 at the station's currently authorized site, ERP, height and radiation pattern would comply with all FCC rules and regulations and meet the 2% *de minimus* interference criteria with respect to all relevant NTSC and DTV stations. *See* Engineering Statement at 3-4. Although WECB's own TV translator W45CD in Fence, Wisconsin would likely be displaced by WFRV-DT's use of Channel 45, WECB accepts this consequence and nonetheless submits that this alternative is preferable to the interference that WFRV-DT's use of adjacent DTV Channel 39 would cause to analog reception of WPNE-TV, Channel 38.

Conclusion

For the reasons stated above, WECB comments on the Notice of Proposed Rulemaking for DTV Channel 27 at Appleton, Wisconsin, supports it to the extent it resolves interference to WECB's NTSC Channel 38 Station WPNE-TV, opposes it to the extent it presupposes the allotment of DTV Channel 39 at Green Bay, Wisconsin, and reaffirms its opposition to the related Notice of Propose Rulemaking released December 14, 2001 for DTV Channel 39 at Green Bay.

Respectfully submitted,

STATE OF WISCONSIN – EDUCATIONAL COMMUNICATIONS BOARD

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July 12, 2004

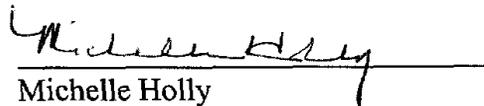
CERTIFICATE OF SERVICE

I, Michelle Holly, certify that a copy of the foregoing "Comments Regarding Notice of Proposed Rulemaking" was served this 12th day of July, 2004, by hand delivery or First Class United States mail, postage prepaid, upon the following:

Chief, Video Division, Media Bureau*
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Michelle Holly

*By Hand Delivery

**Engineering Statement on behalf of
Wisconsin Educational Communications Board
Relating to a Proposal by the Licensee of
WACY-TV, Appleton, Wisconsin
To Change Digital TV Assignment to Channel 27**

July 2004

This Engineering Statement has been prepared by B. Benjamin Evans, P.E., of Evans Associates, Consulting Telecommunications Engineers in Thiensville, Wisconsin, on behalf of the State of Wisconsin Educational Communications Board ("WECB"), licensee of Educational Television Station WPNE(TV) assigned to Green Bay, Wisconsin.

This engineering statement supports WECB's comments regarding the petition for rulemaking (MM Docket #04-185, RM-10860), filed by Ace TV, Inc., licensee of TV Station WACY-TV in Appleton, Wisconsin to substitute DTV Channel 27 for DTV Channel 59 at Appleton, Wisconsin¹, and is relevant in the matter of the petition by CBS Broadcasting, Inc. to substitute DTV Channel 39 for DTV Channel 56 in Green Bay, Wisconsin².

I. Background

CBS Broadcasting, Inc., licensee of NTSC Station WFRV, Channel 5 in Green Bay, is presently assigned DTV Channel 56. WPNE's NTSC channel is 38, and Channel 42 is the corresponding DTV assignment.

¹ Originally, Ace had requested that Channel 39 be substituted for Channel 59, which would affect WPNE's analog signal and would be mutually exclusive with the request by WFRV to utilize Channel 39 for their DTV operation.

² WFRV has requested that Channel 39 be substituted for its out-of-core assignment Channel 56. Channel 39 is adjacent to WPNE's analog Channel 38 facility and would not be co-located. On that basis, WECB opposed WFRV's request to change its DTV assignment to Channel 39.

WFRV has requested a modification to the FCC's Table of Digital Allotments to assign DTV Channel 39 in place of the out-of-core Channel 56 assignment. WECB is opposed to this change because operation of a high-density digital signal adjacent to WECB's NTSC assignment would cause extensive interference to WECB's educational program viewers in northeastern Wisconsin due to the fact the these adjacent channel are neither co-located nor co-owned. WFRV-DT may also cause prohibited interference to facilities in Illinois and Michigan³.

WPNE operates with 1070 KW ERP and an antenna height of 375 meters HAAT, 599 meters AMSL (325 m AGL). WFRV-TV proposes to operate their DTV transmitter from a site that is 5.34 miles from WPNE using 1000 KW and an antenna height of 364 meters HAAT. This horizontal offset will unavoidably cause interference to WPNE, due to the fact that there will be areas that receive a higher signal level on DTV Channel 39 than they receive on NTSC Channel 38 (see the attached technical exhibit previously submitted to the FCC).

WPNE's service area covers 832,407 persons (2000 U.S. Census) and 17,996 square kilometers. It is estimated that at least 20,000 persons will receive actual interference as a result of WFRV's proposal. Many of the viewers of Wisconsin Public Television programming utilize older TV sets that are highly susceptible to adjacent channel interference. Digital broadcasting is extremely dense, and can be expected to overload a high percentage of these receivers, due to the absence of a "guard band" on the low frequency side of Channel 39. Interference is expected to be especially severe to the audio sub-carrier.

³ Whether or not a prohibited level of interference is caused is related to arcane software assumptions involving uniform population distribution within each census-designated area. WECB's primary objection to the WFRV application is and remains interference to its present analog operation in Green Bay.

II. WECB's Opposition to DTV Ch. 39 and Availability of Alternate Channel

It is the position of this engineer and WECB that the CBS's proposed assignment of DTV Channel 39 to WFRV is not technically viable, and therefore that the grant of CBS's request would not be in the public interest. The details of WECB's opposition have been presented in WECB's February 2002 comment regarding CBS's proposal.

The requested DTV Channel 39 assignment is also unnecessary. A frequency study conducted by this engineering firm has discovered that WFRV should be able to use Channel 45 for their DTV transmissions. This frequency is adjacent to an unoccupied NTSC Channel 44 assignment at Green Bay. The 44-NTSC/45-DTV represents a far better situation than the 38-NTSC/39-DTV that CBS proposes, since Channel 44, for which an application is pending by *Green Bay 44 LLC*, is not on the air at the present time. In all likelihood, it will never be on the air in Green Bay, for the following reasons:

1. Green Bay 44's application appears to be ungrantable because DTV Channel 44 is specified at Fond du Lac for station WMMF, thereby forcing Green Bay 44 to find another channel⁴, and
2. Green Bay 44 specifies a 1300-foot tower in downtown Green Bay which, in the experience of this consultant, would never be approved either by the FAA or the City Planning and Zoning Commissions.

The FCC's allotment of DTV Channel 44 to Fond du Lac alone will preclude the use of NTSC Channel 44 in Green Bay. If, in spite of these facts, the FCC requires that Channel 44 in Green Bay warrants protection, WECB believes that DTV Channel 45 could be co-located with NTSC Channel 44, thereby keeping potential interference to a negligible amount.

⁴ Green Bay 44 has filed a petition to substitute Channel 50 for Channel 44 in Green Bay (MM Docket No. 01-325, RM-10136).

This engineer has determined that Channel 45 could be used by CBS as their DTV assignment in Green Bay, at their currently-authorized DTV site, ERP, height, and antenna radiation pattern, in full compliance with all FCC rules and regulations⁵. As shown in the attached supporting documents, the proposed DTV Channel 45 operation would observe the 2% *de minimus* interference criterion with respect to all pertinent NTSC and DTV assignment in accordance with of the FCC Rules. Conversely, WFRV-DT, specified on Channel 45, would not receive theoretical interference in excess of the guidelines of §73.623.

It should be noted that the use of Channel 45 for DTV in Green Bay would likely displace WECB's "Fence" translator on Channel 45 (W45CD). This situation is acceptable to WECB; it is expected that another channel will be found for this translator.

For the same reasons that apply to CBS's proposed DTV channel substitution, the assignment of DTV Channel 39 to WACY-DT would also be technically unsound and would not be acceptable to WECB. This is because WACY-DT is located in the same antenna farm as WFRV-DT and **is not** collocated with WPNE. WECB prefers that Channel 27 be assigned instead, as is proposed by Ace TV.

III. Conclusions and Recommendations

Based upon the above analysis, it is clear that extensive interference and operational difficulties would occur as a result of a grant of a request to operate a DTV facility on Channel 39 in Green Bay, whether by WFRV-DT or by WACY-DT.

Ace TV has proposed the use of a non-interference channel for WACY-DT. WFRV has the same opportunity to operate their DTV facility in the core spectrum without causing

⁵ A pending application for NTSC Ch. 45 in Richland Center, WI (BPCT-19960722KN), which may have prevented the assignment of this channel at Green Bay heretofore, was dismissed on June 17, 2003.

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interference to the WPNE's analog Channel 38. WFRV-DT could operate on Channel 45 from the site of its choice. NTSC Channel 44 could be specified as co-located with the herein-proposed DTV Channel 45 assignment until Channel 44 is deleted from Green Bay.

Therefore, WECB does not oppose the petition by Ace TV to modify WACY's DTV assignment to specify Channel 27 (in lieu of WACY's last proposal to use DTV Channel 39), but remains opposed to the use of DTV Channel 39 by WFRV in Green Bay.



B. Benjamin Evans, P.E.

July 12, 2004

Attachments

WPNE/WFRV Technical Interference Exhibit dated February 2002

Figures 1 through 8 – OET Bulletin 69 Studies for WFRV-DT Ch. 45, Green Bay WI

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COPY OF
ENGINEERING EXHIBIT
IN SUPPORT OF REPLY COMMENTS OF THE
WISCONSIN EDUCATIONAL COMMUNICATIONS BOARD
REGARDING A PROPOSED AMENDMENT TO §73.622(b)
BY CBS BROADCASTING, INC. TO ASSIGN
DTV CHANNEL 39 TO GREEN BAY, WISCONSIN (February 2002)

This Engineering Statement and attached exhibits have been prepared on behalf of the State of Wisconsin Educational Communications Board ("WECB"), licensee of noncommercial television station WPNE(TV) in Green Bay, Wisconsin, in support of reply comments in MM Docket No. 01-334 opposing the proposal by CBS Broadcasting, Inc. ("CBS") to assign DTV Channel 39 to Green Bay, Wisconsin, one channel up in frequency from WPNE's NTSC operation on Channel 38 licensed to Green Bay. The proposed DTV Channel 39 assignment for WFRV in Green Bay would be in lieu of its currently assigned DTV Channel 56.

The CBS petition represents a substantial departure from FCC policy, and proposes a type of DTV assignment for which no other example could be found in the present FCC database (out of nearly 200 N+1 combinations, not one instance was identified of separate licensees serving the same market that were not precisely co-located).

I. Abstract

WECB continues to strenuously object to the utilization of channel 39 by any licensee in Green Bay or the Fox Valley area. The proposal by CBS to move WFRV's DTV assignment was not discussed in advance with WECB's engineering staff, thereby eliminating any opportunity to research and analyze acceptable alternatives. Neither has CBS addressed the operational burdens that would be placed upon WPNE as a result of the proposed assignment. Indeed, CBS has provided no evidence that it has exhaustively investigated the use of the other core channels. This is especially unfortunate since, in the

experience of this engineer and WECB, a spirit of consensus was beginning to develop among the multiple system broadcast licensees, public and private alike, to build a national digital television infrastructure as free as possible from the ad-hoc infirmities that emanate from unrestrained self-interest.

The mere presence of the WPNE/WFRV N+1 channel situation in Green Bay would be grave enough, but the situation is further exacerbated as a result of the proposed use of a DTV site 5.34 miles away from WPNE. Proposing to precisely co-locate with WPNE on the same tower structure would have indicated that some attempt, albeit small, had been made to lessen the adverse impact to WPNE. As it is, it appears as though no consideration whatsoever has been given to mitigating what could be a devastating blow to a publicly-owned TV facility that has been providing educational services to the residents of northeastern Wisconsin for 30 years, including services to the home-bound and disabled.

In CBS's rebuttal, its arguments dismissing WECB's contention of interference relying solely upon *process*, as opposed to the reasonableness of *outcomes*. In the opinion of WECB, the onus is on CBS to prove there will NOT be interference to WPNE, since it has already been assigned a DTV channel in full accord with the FCC's selection criteria and interference algorithms. In all fairness, CBS must address the *public interest* of its proposal, whereas the existing record addresses only *self-interest*. The matter of whether or not the process utilized by CBS to determine compliance with FCC rules successfully predicts the harm to be suffered by WPNE will be discussed in this exhibit, and will refute the arguments made in CBS's *Reply Comments*.

II. The De Minimus Issue and Calculation Process

As pointed out by CBS, the macro procedure to be employed in determining DTV contours and the included populations has, indeed, been codified as per established rules and practices. However, these rules were established to ensure that each assigned DTV

channel had a minimum impact upon other NTSC and DTV facilities while servicing the city of license. There was no provision for a "second round" of assignments tasked to reduce the costs for some stations while increasing interference to others. Interference was initially given to numerous facilities based upon the initial allocation table in the 6th R&O; CBS's proposal slices the salami one more time to give some of these same stations more interference.

CBS claims that its proposal meets the FCC's allocation criteria, in spite of the harm caused to the Marshfield allocation, WPNE's home service area, and the service area of several other TV stations. In WECB's view, the public interest is ill served by the WFRV proposal, which cuts a vast swath of degraded service from Rockford Illinois to Grand Rapids Michigan to Green Bay Wisconsin, all in the interest of assigning a lower channel to WFRV.

Public interest aside, there is a fair amount of uncertainty and disagreement within the broadcast industry concerning the implementation details and precise calculation methodology related to the procedures used to allocate DTV channels. This uncertainty is a direct result of the industry's relative lack of experience with digital signal propagation and receiver behavior under various conditions in the field. It is also related to the fact that various computer programs, operating systems and compilers produce different results due to internal floating-point round-off errors. As another factor, it would appear that there is disagreement concerning whether 1990 census figures should be used to determine the population percentages, when updated Year 2000 figures are available. Finally, a consensus has not been reached among the FCC, licensees and consultants concerning the exact method of population distribution that should be employed, and whether or not viewers already receiving interference are adversely impacted by additional, new interference. It is therefore likely that the total amount of interference to be received by the affected stations may be even greater than indicated by either CBS or by the ECB *Petition to Deny*. In the case of WPNE, the interference will certainly be more extensive than predicted as the attached Figure 1 shows.

It should be noted that interim coefficients were assigned to the DTV interference parameters during the early allocation process, so that the FCC could locate a DTV channel for every NTSC licensee. It is quite another matter to utilize these same coefficients to incrementally impact several other licensees, in order to "improve" the financial position of one facility.

In the opinion of the affiant, it is petitioner's foremost responsibility to be as accurate with its figures as possible, and to minimize adverse impact on other licensees. CBS, looking for a second kick at the allocation system, should not attempt to select channels based upon computer anomalies or immature allocation criteria. WECB therefore contends that more accurate and conservative calculation standards and methods should supersede flawed or less accurate methods when the public interest is involved⁶.

In the instant case, interference figures and the associated included populations can be subject to manipulation, depending upon which software program is used, and what assumptions are made concerning uniform population distribution. The fact remains that new and additional interference will be caused to a number of TV facilities as outlined in WECB's previous exhibit, which shows impermissible interference up to 4%. WECB and this affiant stand behind the previously submitted population numbers, since they represent interference to persons that would not receive interference from WFRV if the channel swap were not made. CBS has evidently excluded interference due to WFRV in areas already receiving interference from other third-party facilities (a process called "masking"), which WECB feels is inappropriate in the instant case. Obviously, any incremental increase in interference makes the interference worse.

⁶ WECB would look to CBS to determine the effect in its own market of even fractional percentages of interference, even if a hand count was necessary. As shown in the attached Figure 1, one area of devastating interference would be the city of Green Bay, which has an extremely high population density.

These considerations aside, the above allocation matters are not critical to WECB's objection to the assignment of channel 39 since WFRV could easily alter its radiation pattern and/or power to comply with any small discrepancies in population percentages. However, WECB strongly objects to the creation of ANY new interference within its own market, whether it is the 1.7% as calculated by CBS's technique or the more accurate area shown in Figure 1, attached.

It is the position of WECB that any proposal to change the original allotment plan must be evaluated on a case-by-case basis, including a harder look at the interference potential, and should only be granted upon a strong public interest showing that does **not** include a claimed hardship resulting from an out-of-core DTV allotment. In developing their allocation plan, the FCC purposely shied away from N+1 DTV assignments such as proposed by CBS, and it made such assignments only when no other channels were available, either in or out of the core⁷. In almost all of these cases, the FCC assigned the DTV channel to the adjacent NTSC station, as opposed to another licensee, so that the unitary licensee would have control over the amount of interference as well as ongoing operations. Furthermore, as calculated by this engineer, unless the NTSC/DTV adjacent channel pair is located at the same site (referred to as *precise* co-location), there would be unacceptable amounts of interference to the NTSC signal in areas where the 1:1 signal ratio is exceeded. Figure 1, attached, shows the calculated extent of this interference⁸. The interference areas, as shown in red in the attached Figure 1, impacts approximately 390,000 people, or far more than the "*de minimus*" showing by CBS. WECB's position is that, because of the obvious effect it would have on WPNE, CBS's proposal must be

⁷ The 6th Report & Order of the FCC's ATV proceeding, as subsequently modified, assigned 194 DTV channels that were upper first adjacent to NTSC stations in the same 50-mile area. Out of those, 168 were assigned to the adjacent NTSC licensee, and specified the same site. Of the 26 remaining combinations, 12 represent the same licensee proposing separate sites, 10 specify different licensees and essentially the same site (within 3 seconds), and 4 combinations represent different licensees and totally different markets. No instances were found where two separately-licenses stations in the same market utilized N+1 channels that were not precisely co-located.

⁸ Current FCC Rules consider the limits of "collocation" to be 12 kilometers for UHF adjacent channel DTV-analog pairs. It is WECB's position that there is no reasonable foundation for this evidently arbitrary number, especially in cases that require intimate operational coordination among adjacent channel licensees.

scrutinized to a higher degree than it would otherwise be subject if it were just a maximization application on a DTV channel allotted in the 6th R&O.

III. The Development of Digital Propagation and Interference Standards

WECB's primary objection to the channel 39 assignment rests upon the issues of actual field interference and the additional operational burden placed upon WPNE that would be evident at ANY power level and ANY radiation pattern proposed by WFRV.

In the experience of this consultant, extensive ongoing changes to calculation procedures inevitably follow the implementation of a new technology; this occurs because real-world field experience must be continuously incorporated into theoretical predictions and early lab estimates. In the past, such ongoing modifications dynamically changed the rules for FM/TV coverage area, FM/TV co-channel and adjacent channel interference, and subcarrier performance. These changes occurred in the face of initially well-defined FCC process rules⁹, because the models used had not been perfected.

Evans Associates has taken extensive field readings on ATSC and NTSC TV facilities under every conceivable environmental condition. Before DTV ATSC transmission was authorized, field readings were taken on WMVS-TV in Milwaukee under experimental authority to determine the likelihood of potential interference resulting from various propagation anomalies. As a result of these readings, numerous issues were raised with respect to the technical parameters contained in the FCC's Sixth Report and Order, relating directly to the DTV channels that were to be sought by WMVS. One of the main conclusions of this field study, which was not filed with the FCC, was that N+1 assignments were to be avoided at all costs. If the assignment of an N+1 channel was deemed to be unavoidable, both channels should be assigned to the same licensee, and the cable-TV adjacent-channel standard ratio of 1:1 in signal strength should be observed in

⁹ The FCC's attempted establishment of the "terrain roughness factor" is a case in point.

both the horizontal and the elevation planes of radiation. This would require precise co-location and pattern matching.

Generally, the FCC establishes and codifies technical procedures that allow expeditious processing of the majority of applications. Special requests and waivers to deal with unusual circumstances are dealt with on an *ad hoc* basis. It is the position of WECB and this affiant that the instant case qualifies as a special circumstance, requiring more extensive scrutiny than a routine scan of the petition would reveal.

Frequently, early applicants for new technology systems and/or petitioners lock onto anomalies of newly established processes to advance positions that may be inimical to other licensees or to the broadcast infrastructure in general. It is contended that the burden for CBS is especially steep in this case, since it would move its DTV facility from a channel that had been properly assigned to one that would cause real-world operational and technical problems for another licensee. While CBS may wish to perform this swap in its own financial self-interest, the fact remains that it is not in the *public interest* to do so, which protection is the primary mission of the FCC. It is therefore incumbent upon CBS to demonstrate undeniable accuracy and unassailable confidence in its results. Once the channel is assigned, the damage cannot be undone without a public interest impact and a financial penalty. The fact remains that Evans Associates, employing its 35 years of broadcast experience and expertise, has determined that interference not anticipated by the present immature status of the FCC DTV assignment rules will exist with respect to WPNE if channel 39 is assigned to Green Bay or anywhere in the Fox Valley area. More to the point, it is WECB's opinion that there is no compelling public interest reason to perform the channel swap requested by the petitioner when other solutions are available.

IV. WECB's Operational Burden

In its reply, CBS made light of the operational burden to be placed upon WECB. The affiant discussed the CBS proposal with several equipment manufacturers and

consultants, all of who agreed with the affiant that, at the very least, filtering measures would be required on the part of WPNE, and operational issues were likely to occur as well. The CBS response to the pilot stability issue was similarly spurious, since no method of locking the digital pilot to the WPNE carrier was described (phase-lock loop using off-air pickup, cesium clock, etc.). Maintaining stability of the DTV pilot carrier is obviously unavailing if the NTSC signal drifts with respect to the pilot. The operational burden associated with calls from viewers whose TV sets receive interference was similarly not addressed. CBS has made no effort to contact WECB to address these problems, or to discuss means of mitigation and/or compensation.

IV. Conclusions and Summary

In this engineer's opinion, it is obvious that the CBS proposal represents unnecessary damage to the FCC's allotment plan, imposed by a large corporation at the expense of a small-market educational facility. WECB believes that CBS's proposal should be evaluated according to the more stringent engineering parameters described herein for the following reasons:

- The presented allocation calculations and standards are insufficiently accurate;
- CBS's interference areas included "masked" interference;
- CBS has not stated if there are any other channel alternatives available;
- CBS has not stated how the DTV signal is to be locked to WPNE, and whether FCC requirements can be maintained via that method;
- The assumption of a "five mile co-location" with respect to WFRV and WPNE are based upon apocryphal foundations;
- There are few or no existing examples of this worst-case type of the CBS-proposed N+1 assignment, indicating the arrangement was studiously avoided in the 6th R&O allocation process;
- Once the assignment is made, adverse experience would obtain in non-real time, resulting in harm and financial loss to WECB;

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- There is no evidence that CBS would be able, or even willing, to assist WECB with an expensive mitigation program; indeed, one could say that CBS's pleading represents a high level of arrogance and entitlement;
- There is no public interest reason to make the requested switch, since an alternative out-of-core channel is available to WFRV.

Accordingly, WECB requests that CBS's petition be denied as not in the public interest.

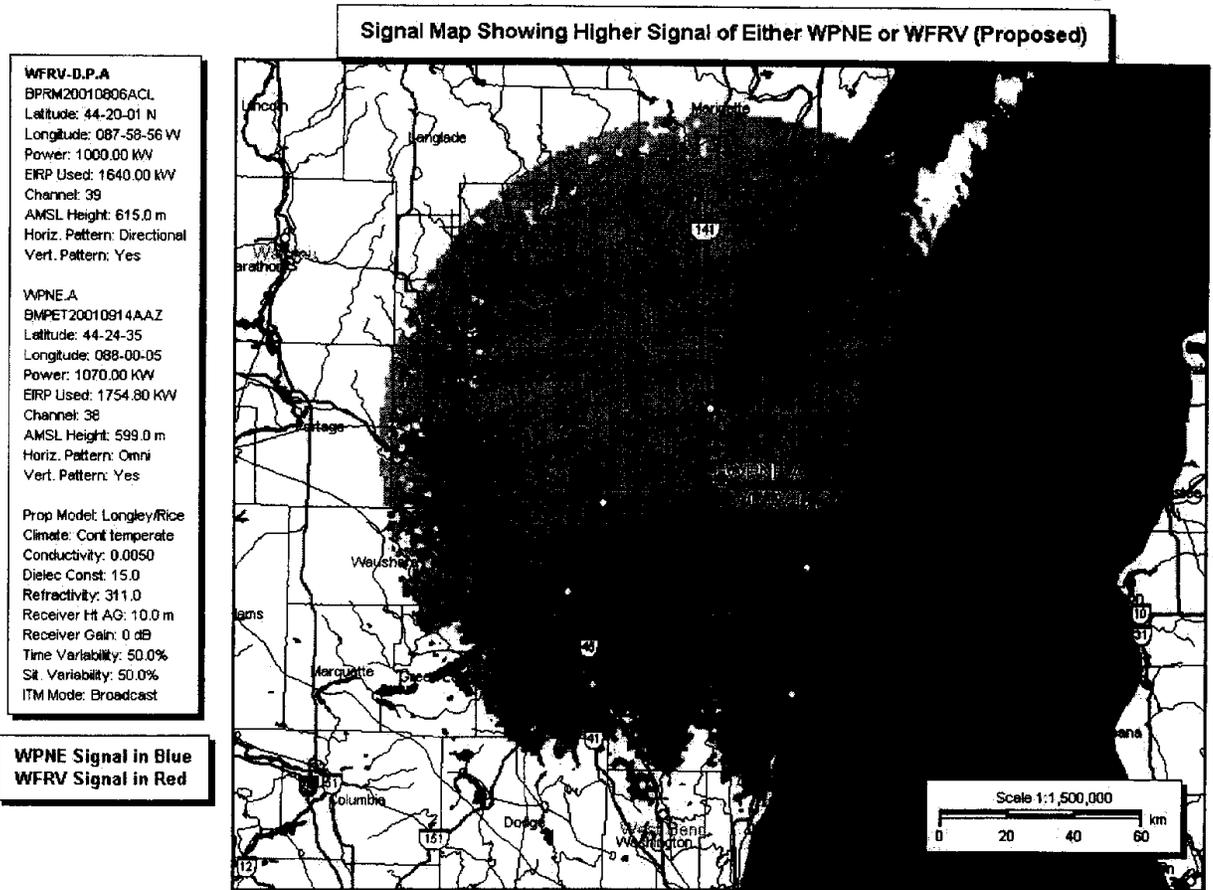
Respectfully submitted,

A handwritten signature in black ink, appearing to read "B. Benjamin Evans". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

B. Benjamin Evans P.E.

Engineering Consultant for WECB

Figure 1



**Outgoing Interference Calculations
WFRV-DT Proposed Channel 45
Green Bay, Wisconsin**

V-Soft Communications Population Report

WFRV-D.P.A (45) Green Bay, WI - BPRM20010806ACL
TV Outgoing Interference Study
Signal Resolution: 2 km
Consider NTSC Taboo: Yes
KWX error points are considered to
be interference free coverage.
of radials computed for contours: 72
Contours calculated using 8 radial HAAT.
LR Profile Spacing Increment: 1.0 km
Masked interference points are being counted
as interference free.

Study Date: 7/12/04
TV Database Date: 06-02-04

Population Database: 1990 US Census

Stations Considered:

Call Letters	City	State	Dist	Bear
KIIN-D.C (45)	Iowa City	IA	398.9	224.5
WSNS-D (45)	Chicago	IL	274.1	174.0
WFUP (45-)	Vanderbilt	MI	272.2	68.9
WLLA-D.A (45)	Kalamazoo	MI	283.4	133.0
WPNE.C (38Z)	Green Bay	WI	8.6	349.8
WPNE (38Z)	Green Bay	WI	8.6	349.6
WMMF-D.C (44)	Fond Du Lac	WI	130.6	214.6
AP501*(44+)	Green Bay	WI	20.1	354.4
AP426**(45Z)	Richland Center	WI	184.3	236.2
WMMF-D.A (44)	Fond Du Lac	WI	108.5	203.9
WDJT-D.C (46)	Milwaukee	WI	135.8	178.2
WTPX-D (46)	Antigo	WI	142.3	304.9
KIINTV-D.R (45)	IOWA CITY	IA	398.9	224.5
WSNS-D.R (45)	CHICAGO	IL	272.0	173.7
WLLA-D.R (45)	KALAMAZOO	MI	283.4	133.0
WMMFTV-D.R (44)	FOND DU LAC	WI	130.6	214.6
WDJTTV-D.R (46)	MILWAUKEE	WI	135.8	178.2

Stations which receive interference:

Call Letters	H Units	Population	Area (sq. km)
WSNS-D (45)	655	1,291	3.61
WFUP (45-)	938	930	172.33
WLLA-D.A (45)	196	439	24.90
AP501*(44+)	525	1,715	52.83
AP426**(45Z)	9,995	19,921	1358.27
WDJT-D.C (46)	3,448	8,977	373.76
WLLA-D.R (45)	48	161	7.14
WDJTTV-D.R (46)	1,006	2,500	127.17

Totals for WFRV-D.P.A (45)

Total population to which interference is caused: 35,934

Total number of housing units to which interference is caused: 16,811

* This application (BPCT-19960920YF) is ungrantable. See Engineering Statement. Applicant has petitioned to move to Channel 50 (RM-10136).

** This application (BPCT-19960722KN) was dismissed 6/17/2003.

Incoming Interference Calculations
WSNS-DT, Channel 45
Chicago, Illinois

V-Soft Communications Population Report

WSNS-D (45) Chicago, IL - BLCDT20010612AIB
TV Incoming Interference Study
Signal Resolution: 2 km
Consider NTSC Taboo: Yes
KWX error points are considered to
be interference free coverage.
of radials computed for contours: 72
Contours calculated using 8 radial HAAT.
LR Profile Spacing Increment: 1.0 km
Interference considered within the reference
station's NTSC counterpart's noise limited contour.
WSNSTV (44Z) Chicago, IL
Threshold for reception: 41.6

Study Date: 7/9/04
TV Database Date: 06-02-04

Population Database: 1990 US Census

Percentages calculated using a baseline population of 8,196,000.

Stations which cause interference:

Call Letters	H Units	Population	%	Area (sq. km)
KIIN-D.C (45)	2766	7293	0.089	36.46
WDJT-D.C (46)	339	836	0.010	18.00
WFRV-D.P.A (45)	702	1425	0.017	10.85

Masking Summary:

Call Letters	Total Interference		Unique Interference	
	Population	%	Population	%
KIIN-D.C (45)	7293	0.089	7159	0.087
WDJT-D.C (46)	836	0.010	836	0.010
WFRV-D.P.A (45)	1425	0.017	1291	0.016

Stations considered which do not cause interference:

WSNSTV (44Z)
WXIN-D (45)
WHMETV (46Z)
WDIV-D (45)
WRGTTV (45Z)
WLLA-D.R (45)

Call Letters	City	State	Dist	Bear
KIIN-D.C (45)	Iowa City	IA	308.4	268.0
WSNSTV (44Z)	Chicago	IL	0.0	0.0
WXIN-D (45)	Indianapolis	IN	251.9	150.8
WHMETV (46Z)	South Bend	IN	126.7	103.9
WDIV-D (45)	Detroit	MI	372.1	78.1
WRGTTV (45Z)	Dayton	OH	372.3	128.9
WDJT-D.C (46)	Milwaukee	WI	139.1	350.1
WLLA-D.R (45)	KALAMAZOO	MI	195.2	66.3
WFRV-D.P.A (45)	Green Bay	WI	274.1	354.2

Totals for WSNS-D (45)

Calculation Area Population:	8,222,167	(	24070.1 sq. km)
Not Affected by Terrain Loss:	8,222,133	(	24066.5 sq. km)
Total NTSC Interference:	0	(	0.0 sq. km)
DTV Only Interference:	9,420	(	58.1 sq. km)
Total DTV Interference:	9,420	(	58.1 sq. km)
Interfered Population:	9,420	(	58.1 sq. km)
Interference Free:	8,212,713	(	24008.4 sq. km)
Percent Interference:	0.11		
Terrain Blocked Population:	34	(	3.6 sq. km)
Contour Area Population:	8,220,443		

Incoming Interference Calculations
WFUP(TV), Channel 45
Vanderbilt, Michigan

V-Soft Communications Population Report

WFUP (45-) Vanderbilt, MI - BLCT19970626KE

TV Incoming Interference Study

Signal Resolution: 2 km

Consider NTSC Taboo: Yes

KWX error points are considered to
be interference free coverage.

of radials computed for contours: 72

Contours calculated using 8 radial HAAT.

LR Profile Spacing Increment: 1.0 km

Interference considered within the
reference station's 64 dBu FCC countour.

Threshold for reception: 64

Study Date: 7/9/04

TV Database Date: 06-02-04

Population Database: 1990 US Census

Percentages calculated using a baseline population of 141,319.

Stations which cause interference:

Call Letters	H Units	Population	%	Area (sq. km)
WDIV-D (45)	230	121	0.086	20.87
CBLNTV (45Z)	3	10	0.007	10.41
WFRV-D.P.A (45)	2536	2874	2.034	318.01

Masking Summary:

Call Letters	Total Interference		Unique Interference	
	Population	%	Population	%
WDIV-D (45)	121	0.086	121	0.086
CBLNTV (45Z)	10	0.007	10	0.007
WFRV-D.P.A (45)	2874	2.034	2874	2.034

Stations considered which do not cause interference:

WLLA-D.R (45)

WGKU-D.R (59)

Call Letters	City	State	Dist	Bear
WDIV-D (45)	Detroit	MI	323.4	156.9
CBLNTV (45Z)	Wingham	ON	309.9	113.1
WLLA-D.R (45)	KALAMAZOO	MI	295.0	191.4
WGKU-D.R (59)	VANDERBILT	MI	0.0	0.0
WFRV-D.P.A (45)	Green Bay	WI	272.2	251.2

Totals for WFUP (45-)

Calculation Area Population:	143,086	(	15374.9 sq. km)
Not Affected by Terrain Loss:	141,319	(	14985.5 sq. km)
Total NTSC Interference:	10	(	10.4 sq. km)
DTV Only Interference:	2,995	(	338.9 sq. km)
Total DTV Interference:	2,995	(	338.9 sq. km)
Interfered Population:	3,005	(	349.3 sq. km)
Interference Free:	138,314	(	14636.2 sq. km)
Percent Interference:	2.13		
Terrain Blocked Population:	1,767	(	389.4 sq. km)
Contour Area Population:	143,205		

**Incoming Interference Calculations
Proposed WLLA-DT (BPCT-19991108AAD)
Kalamazoo, Michigan**

V-Soft Communications Population Report

WLLA-D.A (45) Kalamazoo, MI - BPCDT19991108AAD
TV Incoming Interference Study
Signal Resolution: 2 km
Consider NTSC Taboo: Yes
KWX error points are considered to
be interference free coverage.
of radials computed for contours: 72
Contours calculated using 8 radial HAAT.
LR Profile Spacing Increment: 1.0 km
Interference considered within the reference
station's NTSC counterpart's noise limited contour.
WLLA (64Z) Kalamazoo, MI
Threshold for reception: 41.6

Study Date: 7/9/04
TV Database Date: 06-02-04

Population Database: 1990 US Census

Percentages calculated using a baseline population of 1,153,893.

Stations which cause interference:

Call Letters	H Units	Population	%	Area (sq. km)
WZPX-D (44)	2923	7878	0.683	53.86

Masking Summary:

Call Letters	Total Interference Population	%	Unique Interference Population	%
WZPX-D (44)	7878	0.683	7878	0.683

Stations considered which do not cause interference:

WSNS-D (45)
WXIN-D (45)
WHMETV (46Z)
WFUP (45-)
WDIV-D (45)
NEW (46+)
WRGTTV (45Z)
WFRV-D.P.A (45)

Call Letters	City	State	Dist	Bear
WSNS-D (45)	Chicago	IL	195.2	247.8
WXIN-D (45)	Indianapolis	IN	303.6	192.1
WHMETV (46Z)	South Bend	IN	122.3	208.6
WZPX-D (44)	Battle Creek	MI	34.7	68.3
WFUP (45-)	Vanderbilt	MI	295.0	10.9
WDIV-D (45)	Detroit	MI	185.4	92.0
NEW (46+)	Bay City	MI	127.7	40.4
WRGTTV (45Z)	Dayton	OH	331.1	161.8
WFRV-D.P.A (45)	Green Bay	WI	283.4	314.8

Totals for WLLA-D.A (45)

Calculation Area Population:	1,153,893	(	12922.6 sq. km)
Not Affected by Terrain Loss:	1,153,893	(	12922.6 sq. km)
Total NTSC Interference:	0	(	0.0 sq. km)
DTV Only Interference:	7,878	(	53.9 sq. km)
Total DTV Interference:	7,878	(	53.9 sq. km)
Interfered Population:	7,878	(	53.9 sq. km)
Interference Free:	1,146,015	(	12868.8 sq. km)
Percent Interference:	0.68		
Terrain Blocked Population:	0	(	0.0 sq. km)
Contour Area Population:	1,157,395		

Incoming Interference Calculations
WLLA Initial DTV Allotment
Kalamazoo, Michigan

V-Soft Communications Population Report

WLLA-D.R (45) KALAMAZOO, MI - BLCT871119KE
TV Incoming Interference Study
Signal Resolution: 2 km
Consider NTSC Taboo: Yes
KWX error points are considered to
be interference free coverage.
of radials computed for contours: 72
Contours calculated using 8 radial HAAT.
LR Profile Spacing Increment: 1.0 km
Interference considered within the reference
station's NTSC counterpart's noise limited contour.
WLLA (64Z) Kalamazoo, MI
Threshold for reception: 41.6

Study Date: 7/9/04
TV Database Date: 06-02-04

Population Database: 1990 US Census

Percentages calculated using a baseline population of 1,153,893.

Stations which cause interference:

Call Letters	H Units	Population	%	Area (sq. km)
WZPX-D (44)	15968	41306	3.580	721.06
WDIV-D (45)	640	1602	0.139	10.80

Masking Summary:

Call Letters	Total Interference		Unique Interference	
	Population	%	Population	%
WZPX-D (44)	41306	3.580	39704	3.441
WDIV-D (45)	1602	0.139	0	0.000

Stations considered which do not cause interference:

- WSNS-D (45)
- WXIN-D (45)
- WHMETV (46Z)
- WFUP (45-)
- NEW (46+)
- WRGTTV (45Z)
- WFRV-D.P.A (45)

Call Letters	City	State	Dist	Bear
WSNS-D (45)	Chicago	IL	195.2	247.8
WXIN-D (45)	Indianapolis	IN	303.6	192.1
WHMETV (46Z)	South Bend	IN	122.3	208.6
WZPX-D (44)	Battle Creek	MI	34.7	68.3
WFUP (45-)	Vanderbilt	MI	295.0	10.9
WDIV-D (45)	Detroit	MI	185.4	92.0
NEW (46+)	Bay City	MI	127.7	40.4
WRGTTV (45Z)	Dayton	OH	331.1	161.8
WFRV-D.P.A (45)	Green Bay	WI	283.4	314.8

Totals for WLLA-D.R (45)

Calculation Area Population:	1,153,893	(	12922.6 sq. km)
Not Affected by Terrain Loss:	1,153,893	(	12922.6 sq. km)
Total NTSC Interference:	0	(	0.0 sq. km)
DTV Only Interference:	41,306	(	721.1 sq. km)
Total DTV Interference:	41,306	(	721.1 sq. km)
Interfered Population:	41,306	(	721.1 sq. km)
Interference Free:	1,112,587	(	12201.6 sq. km)
Percent Interference:	3.58		
Terrain Blocked Population:	0	(	0.0 sq. km)
Contour Area Population:	1,157,395		

Incoming Interference Calculations
WDJT-DT Construction Permit, Channel 46
Milwaukee, Wisconsin

V-Soft Communications Population Report

WDJT-D.C (46) Milwaukee, WI - BMPCDT20000419ABR
TV Incoming Interference Study
Signal Resolution: 2 km
Consider NTSC Taboo: Yes
KWX error points are considered to
be interference free coverage.
of radials computed for contours: 72
Contours calculated using 8 radial HAAT.
LR Profile Spacing Increment: 1.0 km
Interference considered within the reference
station's NTSC counterpart's noise limited contour.
WDJTTV (58Z) Milwaukee, WI
Threshold for reception: 41.679

Study Date: 7/9/04
TV Database Date: 06-02-04

Population Database: 1990 US Census

Percentages calculated using a baseline population of 2,230,000.

Stations which cause interference:

Call Letters	H Units	Population	%	Area (sq. km)
WHMETV (46Z)	136	370	0.017	7.06
WFRV-D.P.A (45)	516	1213	0.054	49.44

Masking Summary:

Call Letters	Total Interference		Unique Interference	
	Population	%	Population	%
WHMETV (46Z)	370	0.017	0	0.000
WFRV-D.P.A (45)	1213	0.054	843	0.038

Stations considered which do not cause interference:

WSNS-D (45)
WTVP-D.C (46)
WTTW-D (47)
WTHR-D (46)
NEW (46+)
KXLT-D.C (46)
WTPX-D (46)
WMSNTV (47+)

Call Letters	City	State	Dist	Bear
WSNS-D (45)	Chicago	IL	139.1	169.9
WTVP-D.C (46)	Peoria	IL	307.5	206.8
WTTW-D (47)	Chicago	IL	139.1	169.9
WTHR-D (46)	Indianapolis	IN	382.4	157.0
WHMETV (46Z)	South Bend	IN	222.8	138.5
NEW (46+)	Bay City	MI	285.9	81.6
KXLT-D.C (46)	Rochester	MN	377.0	280.6
WTPX-D (46)	Antigo	WI	248.5	330.9
WMSNTV (47+)	Madison	WI	130.8	267.8
WFRV-D.P.A (45)	Green Bay	WI	135.8	358.3

Totals for WDJT-D.C (46)

Calculation Area Population:	2,204,694	(19400.3 sq. km)
Not Affected by Terrain Loss:	2,204,377	(19382.6 sq. km)
Total NTSC Interference:	370	(7.1 sq. km)
DTV Only Interference:	843	(42.4 sq. km)
Total DTV Interference:	1,213	(49.4 sq. km)
Interfered Population:	1,213	(49.4 sq. km)
Interference Free:	2,203,164	(19333.1 sq. km)
Percent Interference:	0.05	
Terrain Blocked Population:	317	(17.7 sq. km)
Contour Area Population:	2,215,559	

Incoming Interference Calculations
WDJT Initial DTV Allotment, Channel 46
Milwaukee, Wisconsin

V-Soft Communications Population Report

WDJT-TV-D.R (46) MILWAUKEE, WI - BLCT900823KE
 TV Incoming Interference Study
 Signal Resolution: 2 km
 Consider NTSC Taboo: Yes
 KWX error points are considered to
 be interference free coverage.
 # of radials computed for contours: 72
 Contours calculated using 8 radial HAAT.
 LR Profile Spacing Increment: 1.0 km
 Interference considered within the reference
 station's NTSC counterpart's noise limited contour.
 WDJT-TV (58Z) Milwaukee, WI
 Threshold for reception: 41.679

Study Date: 7/9/04
 TV Database Date: 06-02-04

Population Database: 1990 US Census

Percentages calculated using a baseline population of 2,230,000.

Stations which cause interference:

Call Letters	H Units	Population	%	Area (sq. km)
WSNS-D (45)	1046	2475	0.111	3.62
WTTW-D (47)	9274	23818	1.068	18.07
WHMETV (46Z)	826	2034	0.091	42.53
NEW (46+)	46	95	0.004	14.12
WFRV-D.P.A (45)	961	2359	0.106	123.64

Masking Summary:

Call Letters	Total Interference		Unique Interference	
	Population	%	Population	%
WSNS-D (45)	2475	0.111	0	0.000
WTTW-D (47)	23818	1.068	21343	0.957
WHMETV (46Z)	2034	0.091	1901	0.085
NEW (46+)	95	0.004	71	0.003
WFRV-D.P.A (45)	2359	0.106	2226	0.100

Stations considered which do not cause interference:

WTVF-D.C (46)
 WTHR-D (46)
 KXLT-D.C (46)
 WTPX-D (46)
 WMSNTV (47+)

Call Letters	City	State	Dist	Bear
WSNS-D (45)	Chicago	IL	139.1	169.9
WTVF-D.C (46)	Peoria	IL	307.5	206.8
WTTW-D (47)	Chicago	IL	139.1	169.9
WTHR-D (46)	Indianapolis	IN	382.4	157.0
WHMETV (46Z)	South Bend	IN	222.8	138.5
NEW (46+)	Bay City	MI	285.9	81.6
KXLT-D.C (46)	Rochester	MN	377.0	280.6
WTPX-D (46)	Antigo	WI	248.5	330.9
WMSNTV (47+)	Madison	WI	130.8	267.8
WFRV-D.P.A (45)	Green Bay	WI	135.8	358.3

Totals for WDJTTV-D.R (46)

Calculation Area Population:	2,204,694	(	19400.3	sq. km)
Not Affected by Terrain Loss:	2,203,147	(	19329.4	sq. km)
Total NTSC Interference:	2,105	(	46.1	sq. km)
DTV Only Interference:	26,044	(	117.0	sq. km)
Total DTV Interference:	26,177	(	141.7	sq. km)
Interfered Population:	28,149	(	163.1	sq. km)
Interference Free:	2,174,998	(	19166.4	sq. km)
Percent Interference:	1.26			
Terrain Blocked Population:	1,547	(	70.8	sq. km)
Contour Area Population:	2,215,559			

**Incoming Interference Calculations
Proposed WFRV-DT Channel 45
Green Bay, Wisconsin**

1990 Census Population Data

V-Soft Communications Population Report

WFRV-D.P.A (45) Green Bay, WI - BPRM20010806ACL
 TV Incoming Interference Study
 Signal Resolution: 2 km
 Consider NTSC Taboo: Yes
 KWX error points are considered to
 be interference free coverage.
 # of radials computed for contours: 72
 Contours calculated using 8 radial HAAT.
 LR Profile Spacing Increment: 1.0 km
 Interference considered within the reference
 station's NTSC counterpart's noise limited contour.
 WFRVTV (05+) Green Bay, WI
 Threshold for reception: 41.6

Study Date: 7/12/04
 TV Database Date: 06-02-04

Population Database: 1990 US Census

Percentages calculated using a baseline population of 1,038,000.

Stations which cause interference:

Call Letters	H Units	Population	%	Area (sq. km)
WSNS-D (45)	184	464	0.045	35.46
WFUP (45-)	173	200	0.019	82.90
AP501 (44+)	4	3	0.000	55.23
WMMF-D.A (44)	5444	15662	1.509	347.38
WDJT-D.C (46)	3074	8383	0.808	344.15

Masking Summary:

Call Letters	Total Interference		Unique Interference	
	Population	%	Population	%
WSNS-D (45)	464	0.045	0	0.000
WFUP (45-)	200	0.019	200	0.019
AP501 (44+)	3	0.000	3	0.000
WMMF-D.A (44)	15662	1.509	14960	1.441
WDJT-D.C (46)	8383	0.808	7907	0.762

Stations considered which do not cause interference:

KIIN-D.C (45)
WLLA-D.A (45)
WTPX-D (46)

Stations which were not considered:

WMMF-D.C (44)
KIINTV-D.R (45)
WSNS-D.R (45)
WLLA-D.R (45)
WMMFTV-D.R (44)
WDJTTV-D.R (46)

Call Letters	City	State	Dist	Bear
KIIN-D.C (45)	Iowa City	IA	398.9	224.5
WSNS-D (45)	Chicago	IL	274.1	174.0
WFUP (45-)	Vanderbilt	MI	272.2	68.9
WLLA-D.A (45)	Kalamazoo	MI	283.4	133.0
WMMF-D.C (44)	Fond Du Lac	WI	130.6	214.6
AP501 (44+)	Green Bay	WI	20.1	354.4
WMMF-D.A (44)	Fond Du Lac	WI	108.5	203.9
WDJT-D.C (46)	Milwaukee	WI	135.8	178.2
WTPX-D (46)	Antigo	WI	142.3	304.9
KIINTV-D.R (45)	IOWA CITY	IA	398.9	224.5
WSNS-D.R (45)	CHICAGO	IL	272.0	173.7
WLLA-D.R (45)	KALAMAZOO	MI	283.4	133.0
WMMFTV-D.R (44)	FOND DU LAC	WI	130.6	214.6
WDJTTV-D.R (46)	MILWAUKEE	WI	135.8	178.2

Totals for WFRV-D.P.A (45)

Calculation Area Population:	1,042,193	(	35911.3 sq. km)
Not Affected by Terrain Loss:	1,041,130	(	35775.8 sq. km)
Total NTSC Interference:	203	(	114.0 sq. km)
DTV Only Interference:	23,688	(	677.3 sq. km)
Total DTV Interference:	23,688	(	677.3 sq. km)
Interfered Population:	23,891	(	791.3 sq. km)
Interference Free:	1,017,239	(	34984.5 sq. km)
Percent Interference:	2.30		
Terrain Blocked Population:	1,063	(	135.6 sq. km)
Contour Area Population:	1,041,623		

**Incoming Interference Calculations
Proposed WFRV-DT Channel 45
Green Bay, Wisconsin**

2000 Census Population Data

V-Soft Communications Population Report

WFRV-D.P.A (45) Green Bay, WI - BPRM20010806ACL

TV Incoming Interference Study

Signal Resolution: 2 km

Consider NTSC Taboo: Yes

KWX error points are considered to
be interference free coverage.

of radials computed for contours: 72

Contours calculated using 8 radial HAAT.

LR Profile Spacing Increment: 1.0 km

Interference considered within the reference
station's NTSC counterpart's noise limited contour.

WFRVTV (05+) Green Bay, WI

Threshold for reception: 41.6

Study Date: 7/12/04

TV Database Date: 06-02-04

Population Database: 2000 US Census (PL)

Percentages calculated using a baseline population of 1,038,000.

Stations which cause interference:

Call Letters	H Units	Population	%	Area (sq. km)
WSNS-D (45)	0	590	0.057	35.46
WFUP (45-)	0	279	0.027	82.90
AP501 (44+)	0	6	0.001	55.23
WMMF-D.A (44)	0	19819	1.909	347.38
WDJT-D.C (46)	0	11137	1.073	344.15

Masking Summary:

Call Letters	Total Interference		Unique Interference	
	Population	%	Population	%
WSNS-D (45)	590	0.057	0	0.000
WFUP (45-)	279	0.027	279	0.027
AP501 (44+)	6	0.001	6	0.001
WMMF-D.A (44)	19819	1.909	18728	1.804
WDJT-D.C (46)	11137	1.073	10372	0.999

Stations considered which do not cause interference:

KIIN-D.C (45)
WLLA-D.A (45)
WTPX-D (46)

Stations which were not considered:

WMMF-D.C (44)
KIINTV-D.R (45)
WSNS-D.R (45)
WLLA-D.R (45)
WMMFTV-D.R (44)
WDJTTV-D.R (46)

Call Letters	City	State	Dist	Bear
KIIN-D.C (45)	Iowa City	IA	398.9	224.5
WSNS-D (45)	Chicago	IL	274.1	174.0
WFUP (45-)	Vanderbilt	MI	272.2	68.9
WLLA-D.A (45)	Kalamazoo	MI	283.4	133.0
WMMF-D.C (44)	Fond Du Lac	WI	130.6	214.6
AP501 (44+)	Green Bay	WI	20.1	354.4
WMMF-D.A (44)	Fond Du Lac	WI	108.5	203.9
WDJT-D.C (46)	Milwaukee	WI	135.8	178.2
WTPX-D (46)	Antigo	WI	142.3	304.9
KIINTV-D.R (45)	IOWA CITY	IA	398.9	224.5
WSNS-D.R (45)	CHICAGO	IL	272.0	173.7
WLLA-D.R (45)	KALAMAZOO	MI	283.4	133.0
WMMFTV-D.R (44)	FOND DU LAC	WI	130.6	214.6
WDJTTV-D.R (46)	MILWAUKEE	WI	135.8	178.2

Totals for WFRV-D.P.A (45)

Calculation Area Population:	1,164,379	(35911.3 sq. km)
Not Affected by Terrain Loss:	1,163,024	(35775.8 sq. km)
Total NTSC Interference:	285	(114.0 sq. km)
DTV Only Interference:	30,323	(677.3 sq. km)
Total DTV Interference:	30,323	(677.3 sq. km)
Interfered Population:	30,608	(791.3 sq. km)
Interference Free:	1,132,416	(34984.5 sq. km)

Percent Interference: 2.95

Terrain Blocked Population:	1,355	(135.6 sq. km)
Contour Area Population:	1,163,769	