Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	).	
Policies to Promote Rural Radio Service and to	)	
Streamline Allotment and	)	MB Docket No. 09-52
Assignment Procedures	)	

The firm of du Treil, Lundin & Rackley, Inc. (dLR) respectively submits these Comments in the above captioned proceeding relating to the *Polices to Promote Rural Radio Service and to Streamline Allotment and Assignment Procedures* (herein "NPRM"). dLR, and its predecessors, have provided consulting engineering services to the broadcasting industry for over 60 years including assisting broadcasters in analyzing coverage areas based upon different types of propagation prediction models and preparing thousands of FCC applications for broadcast stations.

By these Comments, dLR is responding on two issues raised in the NPRM: (1) the proposed guidelines for Section 73.313(e) Supplemental Propagation Showings and (2) Service Value Index calculations. Each issue is discussed separately.

<u>Supplemental Propagation Showings</u>

dLR is opposed to formally adopting the specific FCC proposed guidelines used to determine whether terrain "departs widely" from the average ground elevation and therefore, justifies the use of an alternate propagation model. Instead, dLR believes the sole guideline on the permissiveness of an alternate prediction methodology is if the calculated distance to contour using an alternate propagation model varies by more than 10 percent [+/-] from that calculated by the standard prediction methodology.

The proposed FCC guidelines to justify the use of an alternate propagation model have to satisfy one of the following circumstances:

- Delta-h, when the terrain roughness factor, measured along the radial running from the antenna site to the community of license from a

distance of 10 to 50 kilometers from the antenna site is less than or equal to 20 meters or greater than or equal to 100 meters and there is line-of-sight to the community of license.

- Antenna height above average terrain (HAAT) variance of 30 percent or more along a single radial in the direction of a community's center, from 3 to 16 kilometers from the antenna site compared to the HAAT along the same radial measured from 3 kilometers from the antenna site to the community's outer boundary (i.e. extended radial).

dLR believes these aforementioned proposed guidelines are too restrictive and suggests the Commission should solely determine the acceptability of the use of an alternate propagation model if the calculated distance to contour varies by at least 10% of the same contour value distance calculated by the standard prediction methodology for the following reasons:

- The majority of the Country's population and radio stations are in areas where the terrain does not depart widely as defined by the FCC's proposed guidelines and therefore, would be ineligible to use an alternate propagation model
- The HAAT 30% variance guideline test is believed at best to only have been rarely accepted by the Commission in support the use of an alternate propagation model since that policy guideline was implemented.
- The Commission as early as 1965 suggested for the development of more accurate methods of field strength predictions, in lieu of the standard FCC propagation curves. An alternate propagation model, such as Longely-Rice, is generally a better predictor of field strengths over a specific area than the standard FCC propagation curves.
- The Video Branch of the Media Bureau routinely employs an alternate propagation model in the allocation of DTV stations.

Demonstrating the alternate propagation model contour distance varies beyond at least +/- 10% of the Commission standard propagation curves contour distance for the same radial should be sufficient to justify there is a wide departure in the terrain and therefore permit the use of an alternate propagation model.

Majority of Radio Stations are Ineligible to Employ Alternate Propagation Models

dLR has calculated that the majority of the population in the United States (of the 48 contiguous States) resides in the type of ground topography that would be ineligible to use an alternate propagation model based upon the delta-h qualification. Based upon a sampling of Latitude Parallels, it was determined that approximately 54 percent of the country's population resides in land areas that would be defined by the Commission as not widely departing.[1] As there are logically more radio stations where a larger population is present, it can also be concluded that the majority of radio stations are also located in such areas.

Therefore, the Commission is effectively precluding the majority of radio stations, both existing and proposed, from being eligible to use alternate propagation models.

HAAT Variance of 30% or More

dLR believes the proposed guideline to restrict the use of alternate propagation models to when the HAAT varies by more than 30% on an extended radial has at best only rarely been used successfully by an applicant since that policy guideline was implemented. In past informal discussions with FCC staff and also recent informal polling of other consulting engineers involved with such applications has reveled that this specific guideline is not known to be successfully and accurately employed by any applicant.

[1] The dLR calculations are based upon an analysis of the terrain in one degree grids across the continental United States at representative and periodically spaced latitudes of 32, 35, 38 and 41 degrees. These latitudes are located in the center of the United States and are considered representative. At the center of each one degree grid cell, the terrain standard deviation was calculated for a 50 square kilometer grid based upon a 3-second terrain database. This terrain standard deviation calculation is analogous to the delta-h calculation. The population within each entire degree cell was also determined. Therefore, the population with terrain standard deviations for each cell greater than 20 meters or less than 100 meters, which is considered typical terrain variations by the FCC, were determined and compared as a percentage to the entire population for each specific Latitude Parallel. The average of the resulting populations is 54 percent for all the Parallels.

To have an HAAT on an extended radial exceeding 30% would require a radial with relatively smooth terrain for the initial 16 kilometers from the transmitter site, and then have consistently and substantially lower or higher ground elevation beyond 16 kilometers. An example of such would be encountering a high plateau 16 kilometers beyond the transmitter site. This type of terrain is extremely rare and therefore, explains why this guideline may not have been used to accurately justify an alternate propagation model.

Therefore, dLR cannot support the use of such a stringent guideline that is unlikely, or at best rarely, to ever be used in support of an accurate alternate propagation showing.

Commission Previously Suggested Development of Additional Propagation Models

The FCC, in as early as 1965, over 40 years ago, suggested that more advanced field strength propagation models, other than the standard FCC propagation curves, are necessary. As stated within FCC Report No. R-6502, Development of New VHF and UHF Propagation Curves for Television Broadcasting, 1965:

> "These newly developed VHF curves are based on data measured over various types of terrain, thus applicable to what might be termed as "average terrain" conditions. Such average curves cannot be expected to yield accurate answers for the prediction of field strengths over specific terrain, and within small areas. Consequently, there is indicated a need for the development of more accurate methods of field strength prediction, pointing in the direction of the "terrain correction factors" to be applied to the average curves, especially on the higher frequencies."

The inherent uncertainties with the standard FCC propagation curves are also noted in another FCC report, No. R-6602, Development of VHF and UHF Propagation Curves for TV and FM Broadcasting, 1966:

> "The new graphs for estimating field strengths may be used for general assignment purposes or for providing a rough estimate of the probable field strength distribution as applied to a proposed or existing facility. When so used, they will provide information which is believed to be substantially better than that provided by the existing graphs in the FCC Rules and Regulations. They cannot be used to predict which any

> accuracy the field which would be established by any specific operation over a particular path to any equally specific area, even when the terrain correction factor is employed."

It is believed that after 40 years of relying on these FCC propagation curves, additional industry accepted alternate propagation models should generally be permitted for contour distances calculations, especially over a particular path (radial) in the direction of a community of license, for which an alternate propagation model may be more appropriate than the standard FCC propagation curves. It is well known within the industry that a point-to-point alternate propagation model, such as Longley-Rice, is generally a more accurate predictor of field strengths over a specific path (radial) than the standard FCC propagation curves.

Use of Alternate Propagation Analysis for Digital Television Allocation

It is observed that the Commission has extensively used an alternate propagation model in developing the allocation for every full-service digital television. As stated within OET Bulletin No. 69, Longley-Rice Methodology for Evaluating TV Coverage and Interference, the Bulletin provides guidance on the implementation and use of Longley-Rice methodology for evaluating TV service coverage and interference in accordance with the Commission's Rules. In this case, the alternate propagation model of Longley-Rice was used in conjunction with the standard FCC propagation curves to allocate DTV stations around the country.

The OET-69 model also employs the Longley-Rice propagation model to calculate interference from analog television stations, whose aural carrier is Frequency Modulated, just like FM radio stations.

Therefore, such widespread use of an alternate propagation model in one branch of the Media Bureau (Video) for station allocations should have similar privileges in another branch (Audio) of the same Bureau.

Service Value Index Calculations

The Commission proposes to utilize a service value index ("SVI") calculation for both new AM stations and new FM allotments. The purpose is to discount raw population totals based on the number of services received as part of a Priority (4) Section 307(b) analysis. The SVI calculation method was adopted in the Commission's decision in Greenup, Kentucky ("*Greenup*").[2] The *Greenup* SVI method considers the total number of aural (AM, FM) services available to an area and the corresponding population for each aural service level area, or "pocket". The total population for each pocket is divided by the number of available aural services to obtain an SVI. Using this method, the population within a pocket is discounted as the number of available services received increases. These population service indices are then summed and the resulting number represents an overall SVI. The applicant proposing the higher SVI presumably would prevail.

Pursuant to *Greenup*, the availability of commercial (non-reserved band) FM services for SVI calculations are based on maximum facilities and uniform terrain, with the exception of Class C stations where actual facilities are presumed. Actual facilities are used for noncommercial (reserved band) FM stations. In addition, licensed and/or authorized commercial and noncommercial FM operations are considered along with vacant FM allotments. Furthermore, the availability of AM services for SVI calculations are based on the nighttime interference free ("NIF") contour for licensed and/or authorized operations.

[2] See Greenup, Kentucky and Athens, Ohio, Memorandum Opinion and Order in MM Docket No. 86-29, FCC 91-61.

dLR does not believe that the *Greenup* SVI method provides a true "snapshot" of the availability of FM services. First of all, presumption of maximum facilities for many commercial stations which may never be able to achieve such facilities for various reasons (FAA height limitations, 73.215 short-spacing limits, etc.) overstates both current coverage as well as coverage potential. Second, when Greenup was adopted almost 20 years ago the computer tools available for coverage analysis were rudimentary which, it is believed, necessitated use of uniform terrain for calculations of coverage. Today, software is readily available to permit use of actual terrain and facilities for FM service evaluations. Third, consideration of the coverage of vacant FM allotments, which might not be activated for many years, also overstates service availability.[3]

Furthermore, the *Greenup* SVI method presumes uniform distribution of population within each county. This was a valid approach prior to the availability of computerized Census population information based on population block level centroids. However, Census population information based on population centroids is now readily available for SVI calculations using mapping software, The mapping software utilizes the latest Census database of population centroids. The mapping software adds the populations of those centroids located within each service level pocket. Furthermore, it is noted that the Commission currently uses Census population centroids for analyses of service and interference for full-service DTV and LPTV/Class A authorizations.[4]

Therefore, dLR proposes that the *Greenup* SVI method be modified for FM service availability as follows: (1) only licensed or authorized facilities should be used (i.e. not vacant allotments) for both commercial and noncommercial stations; (2) actual terrain (3-16 km) should be utilized for coverage determinations using the USGS 3-second terrain database with calculations using periodic azimuths with at least 10 degree spacing; and (3) SVI population calculations should be based on the latest

[3] It can take years after adoption of an FM allotment for it to go to auction. For instance, vacant FM allotments for channel 255A at Floydada, Texas (MB Docket 02-259) and channel 273A at San Diego, Texas (MB Docket 02-264) were adopted by the Commission on November 6, 2002 and will be auctioned in September of 2009 (Auction 79), almost 7 years after these allotments were made.
[4] Such analyses are based on OET Bulletin No. 69.

available Census using population block level centroids. Adoption of this modified SVI calculation method will permit a more realistic evaluation of current FM service availability.

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