The firm of du Treil, Lundin & Rackley, Inc. (dLR) respectfully submits these Comments in the above captioned proceeding relating to the establishment of an improved model for predicting the broadcast television field strength received at individual locations particularly as it relates to the proposed use of the U.S.G.S. Land Use Land Cover (LULC) database. dLR has provided consulting engineering services to the communications industry for almost 60 years and has considerable experience with broadcasting propagation prediction models and field strength propagation measurements. The FCC has proposed the use of the LULC database as a means of correlating a clutter loss factor with the type of land cover prevalent in an area. One of the fundamental problems, as identified in the FCC Notice of Proposed Rule Making (NPRM) in this proceeding, is the availability of appropriate measurement data that allows for the development of correlating clutter factors. The FCC proposed to base the clutter factor data on a paper by Thomas N. Rubinstein entitled "Clutter Losses and Environmental Noise Characteristics Associated with Various LULC Categories." Although the Rubinstein paper provides very useful data, the data it provides seem to be geared more toward land mobile applications rather than television broadcasting applications.

The measurements described in the Rubinstein paper apparently are based on vertically polarized transmissions, received in a moving vehicle close to street level. The analysis of the clutter factor is based on the Okumura propagation model, which is a curve-based model that employs a height above average terrain figure similar to the FCC FM/TV Propagation Curves to determine signal level. Television broadcasting services are designed based on the assumption of a fixed horizontally-polarized receiving antenna elevated to 30 feet above ground level. For this reason, we believe that the Rubinstein data, while appropriate for land mobile applications, may over-estimate clutter factors as they relate to television broadcasting. Furthermore, we believe the use of the Okumura model as the baseline signal level reference is an imprecise approach. The Okumura model was developed to predict signal levels for land mobile type applications primarily in urban and suburban areas. It would be more precise to employ a terrain sensitive point-to-point model such as the Longley-Rice Model to determine the baseline signal level, and thus the resulting clutter factor.

Now, it may be possible to obtain the raw Rubinstein data and re-analyze the data using a Longley-Rice point-to-point model approach. In the absence of any other data, we would recommend this approach. However, the question of polarization and receive antenna height would remain. The more ideal solution would be for the FCC to conduct or commission a measurement study similar to Rubinstein's but geared toward the television broadcasting service. Measurements could be made across the television spectrum using 30-ft-elevated horizontally-polarized receiving antenna at appropriate correlating LULC locations. Since the Longley-Rice model (ILLR) is to be employed for the prediction model, it could be employed to determine the baseline field strength level for estimating clutter losses.

Notwithstanding the above, if the Commission decides to employ the Rubinstein data as it has proposed in the NPRM, we would suggest the application of clutter losses to all areas regardless of whether 0.6-Fresnel-Zone clearance exists. We understand that the FCC reasoning for limiting the application of the clutter factors only to areas where 0.6-Fresnel-Zone clearance exists because the Rubinstein data were developed based on this assumption. However, we submit that the 0.6-Fresnel-Zone clearance factor was employed by Rubinstein only as a means of measuring the field strength without the variable of terrain obstructions in the equation. By measuring in 0.6-Fresnel-Zone clearance areas Rubinstein was able to better isolate the clutter factor itself, separate from other terrain

effects. Now because this was the means of collecting the data itself does not mean that the data cannot, or should not, be applied broadly to the categories outlined in the LULC. In fact, there is no logical reason that the clutter data should not be applied without regard to Fresnel Zone clearance, because clutter losses will exist regardless of whether the receiving location is in a line-of-sight zone, partially terrain obstructed or fully terrain obstructed. The clutter factor is a parameter of the local receiving conditions independent of the path the electromagnetic waves have taken to get to that receive location. Furthermore, use of the clutter factor only where there is 0.6-Fresnel Zone clearance could lead to rather anomalous results where the partially terrain shadowed receiver would be predicted to have a higher signal than the next door neighbor that has full Fresnel Zone clearance. Therefore, we believe the most logical approach would be to apply the clutter factors evenly across the categories as proposed.

Louis R. du Treil, P.E.
John A. Lundin, P.E.
Ronald D. Rackley, P.E.
W. Jeffrey Reynolds
Louis Robert du Treil, Jr., P.E.
Charles A. Cooper, P.E.
du Treil, Lundin & Rackley, Inc.
201 Fletcher Avenue
Sarasota, Florida 34237
(941) 329-6000
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