BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of:	)	
	)	
Establishment of an Improved Model for	)	**CS Docket No. 00-11**
Predicting the Broadcast Television Field	)	
Strength Received at Individual Locations	)	

To: The Commission

COMMENTS OF THE ASSOCIATION FOR MAXIMUM SERVICE TELEVISION, INC. AND THE NATIONAL ASSOCIATION OF BROADCASTERS

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EXECUTIVE SUMMARY

In February 1999, the Commission endorsed a specific version of the Longley-Rice signal propagation model tailored for use in applying the Satellite Home Viewer Act ("SHVA"). The purpose of the new model was to predict whether particular households are capable of receiving at least a Grade B intensity signal from a local network station -- the linchpin of eligibility under SHVA to receive distant network signals. Because the model was customized for individual households, the Commission dubbed it the "Individual Location" Longley-Rice model, or "ILLR." The Commission made clear that its goal in crafting the ILLR model was *accuracy*, so that the model would "neither overpredict[] nor underpredict[] served households." *Satellite Delivery of Network Signals to Unserved Households for Purposes of the Satellite Home Viewer Act*, CS Docket No. 98-201, ¶ 78 (Feb. 2, 1999) ("SHVA Report & Order"). The Commission properly rejected -- as inconsistent with the objective of scientific accuracy -- proposals to adopt a model that would tilt towards underprediction, *i.e.*, falsely predicting that households are unserved when they are actually served. *Id*. at ¶ 76-78.

Only nine months later, in the Satellite Home Viewer Improvement Act ("SHVIA"), Congress reaffirmed the Grade B intensity standard for receipt of distant network stations, and strongly endorsed use of the most accurate possible predictive model for determining which households can receive Grade B signals. In a new statutory provision captioned "*Accurate* Predictive Mode," for example, Congress mandated use of the Commission's existing ILLR model in copyright cases. While it directed that the Commission consider modifications to that model, Congress specifically insisted that such modifications would be applicable under the Copyright Act only if they "*increase the accuracy* of that model." 17 U.S.C. § 119(a)(2)(B)

(emphasis added). Similarly, in a Communications Act provision, Congress directed the Commission to develop a predictive model (based on ILLR) for *"reliably"* determining which locations can receive Grade B intensity signals. 47 U.S.C. § 339(c)(3) (emphasis added).

Although Congress asked the Commission to ensure that the model takes into account "terrain, building structures, and other land cover variations," *id.*, it made clear that the Commission should make changes to its existing model only if they improve its accuracy. As explained in the authoritative Conference Report -- which is entitled to "great deference" -- Section 339(c)(3) directs the Commission "to *attempt to increase [ILLR's] accuracy* further by taking into account . . . land cover variations . . . ." SHVIA Conference Report, 145 Cong. Rec. H11796 (daily ed. Nov. 9, 1999) (emphasis added). *See also id. (*"If the Commission discovers other practical ways to *improve the accuracy* of the ILLR model still further, it should implement those methods as well.") (emphasis added).

Congress not only mandated that the Commission retain the goal of maximizing the accuracy of the ILLR model, it also specified how to test whether it had achieved that goal: "the linchpin of whether particular proposed refinements to the ILLR model result in greater accuracy is whether the revised model's predictions are *closer to the results of actual field testing* in terms of predicting whether households are served by a local affiliate of the relevant network." Conference Report, 145 Cong. Rec. at H11796 (emphasis added). If the new model fails that exacting standard, Congress has mandated that the existing, highly accurate ILLR model be used. In other words, the Commission cannot use this proceeding simply to expand the universe of subscribers eligible for distant signals, but must instead subject any new model it proposes to the basic scientific requirement of showing that it better predicts real world TV signal measurements

than the existing ILLR model. Indeed, the Commission cannot even approach this proceeding with any preconception that expansion of the universe of eligible subscribers is a likely outcome.

In the NPRM at issue here, the Commission proposes to amend the ILLR model, ostensibly to build in a new factor to take into account buildings, vegetation, and other land cover variations. (These proposed modifications are a "one-way ratchet" – they can only reduce, and never increase, the signal intensity predicted for a particular location.)

Unfortunately, the Commission's proposal is inconsistent with Congress' express directives, and there is no reason to believe that it will make the existing ILLR model more accurate. *First*, the existing ILLR model is already highly accurate, and for most network stations already tilts heavily in favor of satellite carriers by *under*predicting whether particular households can receive a signal from a station of the relevant network. (We provide below a detailed empirical comparison of the existing ILLR model's predictions to the results of more than 1,000 real-world signal intensity measurements.) Because the proposed changes can only reduce, and never increase, predicted signal intensity, they are likely only to worsen the existing problem of underprediction -- making the ILLR model less accurate, in violation of Congress' mandate.

Second, the Commission has not conducted any empirical analysis to make the determination required by Congress: whether "the revised model's predictions are *closer to the results of actual field testing* in terms of predicting whether households are served by a local affiliate of the relevant network." Conference Report, 145 Cong. Rec. at H11796 (emphasis added). *Third*, the Commission's proposed changes are based on data collected for land-mobile purposes that is simply irrelevant to assessing the strength of TV broadcast signals. Among other things, the Rubinstein data on which the Commission proposes to rely were collected with a

vertically polarized antenna approximately *6 1/2 feet* above ground level (on top of a station wagon), even though the relevant type of antenna for SHVIA purposes is a *horizontally* polarized *rooftop* antenna *20 or 30 feet* above ground. Since clutter is much more pronounced close to the ground, and since antenna polarization can have a major impact on signal reception, the Rubinstein data almost certainly overstate, by a wide margin, any impact of clutter on the reception of TV signals with rooftop antennas. *Fourth*, the "clutter losses" reported in the Rubinstein study are contaminated with losses due to the lack of Fresnel zone clearance, because (contrary to Mr. Rubinstein's conclusions) his data were collected with antenna heights so low as to preclude such clearance in almost all cases. *Finally*, the U.S. Geological Survey data that the Commission proposes to incorporate is, in the words of an expert retained by EchoStar, both long out of date and "not sufficiently detailed to allow the accurate modeling of signal propagation along paths to individual households." *See infra* Part III(C) (quoting EchoStar expert).

In sum: the Commission's existing ILLR model is a highly accurate predictor of service for purposes of the SHVIA, and to the extent it is less than perfect, its errors are generally *under*predictions that harm broadcasters, not satellite carriers. The proposed modifications to the ILLR model not only will not improve the model, but are likely to exacerbate its already-existing problem of underprediction for most network stations. Accordingly, NAB and MSTV strongly urge the Commission not to adopt the proposed model, and instead to retain the current ILLR model until sound scientific research is conducted showing that a particular modification of the model actually improves its accuracy.

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AND THE NATIONAL ASSOCIATION OF BROADCASTERS

The National Association of Broadcasters ("NAB")[1] and the Association of Maximum Service Television, Inc. ("MSTV"),[2] hereby submit their comments in response to the Commission's Notice of Proposed Rulemaking ("NPRM") in the above-captioned matter.

I. The Commission May Modify the Existing ILLR Model Only if the Modification Improves the Model's Accuracy

When the Commission first adopted the Individual Location Longley-Rice ("ILLR") model in February 1999, it made clear that its goal was to neutrally and accurately implement the twin objectives of the Satellite Home Viewer Act: to protect local network stations from the importation of duplicative distant network stations to locations at which a Grade B signal from a local station is available, while permitting the small number of households that cannot receive a

[1] NAB is a nonprofit incorporated association that serves and represents America's radio and television broadcast stations and networks.

[2] MSTV is a non-profit trade association of local broadcast stations committed to achieving and maintaining the highest technical quality for the local broadcast system.

Grade B intensity signal from a local station to receive a distant network signal by satellite. SHVA Report & Order, ¶ 78 (model should "neither overpredict[] nor underpredict[] served households"). With the paramount objective of scientific neutrality and accuracy in mind, the Commission properly rejected proposals to stack the deck in favor of underprediction. *Id*. at ¶ 76-78.

In the Satellite Home Viewer Improvement Act ("SHVIA"), Congress directs the Commission to "ensure that [the ILLR] model takes into account terrain, building structures, and other land cover variations." 47 U.S.C. § 339(c)(3). But that directive is *not*, of course, a mandate to modify ILLR in ways that *reduce* its accuracy or are likely to do so. Rather, as Section 339(c)(3) itself makes clear, the Commission is charged with developing a predictive model for "*reliably* and presumptively determining the ability of individual locations to receive signals in accordance with the signal intensity standard in effect under section 119(d)(10)(A)." 47 U.S.C. § 339(c)(3) (emphasis added). The Conference Report, which, "next to the statute itself . . . is the most persuasive evidence of congressional intent" and is entitled to "great deference,"[3] explains that Section 339(c)(3) simply "requires the Commission *to* ***attempt*** *to increase* [the existing ILLR model's] *accuracy* further by taking into account not only terrain, as the ILLR model does now, but also land cover variations such as buildings and vegetation." Conference Report at H11796 (emphasis added). *See also id.* ("If the Commission discovers

[3] *Demby v. Schweiker*, 671 F.2d 507, 510 (D.C. Cir. 1981). *See also United States v. Hansen*, 566 F. Supp. 162, 166 (D.D.C. 1983) ("Next to the statute itself, the conference report of a bill is the most persuasive evidence of congressional intent, since it represents the final statement of the terms agreed to by both Houses."); *RJR Nabisco, Inc. v. United States*, 955 F.2d 1457, 1462 (11th Cir. 1992) ("Indications of congressional intent contained in a conference committee report deserve great deference . . .").

other practical ways to *improve the accuracy* of the ILLR model still further, it should implement those methods as well.") (emphasis added).

The Commission itself has previously recognized that changes to ILLR should be made only "[w]hen an *appropriate* application has been developed and accepted." SHVA Report & Order at ¶ 83 (emphasis added). With that sound principle in mind, the Commission rejected satellite industry proposals to have the Commission adopt an untested revision to the ILLR model. *See* SHVA Order on Reconsideration, CS Docket No. 98-201, FCC 99-278 (released Oct. 7, 1999).

The pre-eminent importance of accuracy is equally reflected in the SHVIA's amendments to the central statutory provision, Section 119 of the Copyright Act. In a new provision entitled "*Accurate* Predictive Mode," for example, Congress endorsed use of the existing ILLR model in copyright cases, 17 U.S.C. § 119(a)(2)(B) (emphasis added), based on the Commission's determination that the existing model already "accurate[ly]" predicts the presence or absence of Grade B signal intensity. SHVA Report & Order ¶ 71. Congress also directed that future Commission-approved modifications of that model be used under Section 119, but only if the modifications "*increase the accuracy* of that model." 47 U.S.C. § 339(c)(3) (emphasis added).

In other words, the SHVIA simply requires the Commission to *examine* possible changes and, *when suitable adjustments are available to increase the accuracy of the model*, to implement those adjustments. And, as discussed in detail below, the Commission must satisfy itself that any revised model actually enhances the accuracy of the model when compared to the results of *actual field measurements* of TV signals. The Commission is obviously neither

directed to, nor allowed to, implement changes simply for the sake of change or to expand the number of households that will be able to receive distant network stations.

The character of the compulsory license created by the SHVIA equally supports the conclusion that modifications to ILLR are permissible *only* if they empirically increase the model's accuracy in determining which households are unable to receive a Grade B signal. The SHVA was originally enacted to achieve two goals: (1) to make network programming available to the small number of households (typically in remote, rural areas) that otherwise lacked access to it, while (2) preserving the existing national network/affiliate television distribution system by preventing satellite delivery of network programming to other households. *See Satellite Home Viewer[] Act of 1988*, H.R. Rep. No. 100-887, pt. 2 at 20 (1988) ("The Committee intends [by Section 119] to . . . bring[] network programming to unserved areas *while preserving the exclusivity that is an integral part of today's network-affiliate relationship*") (emphasis added). To meet these two goals, Congress narrowly limited eligibility to receive distant network programming by creating the Grade B intensity standard.

In enacting the SHVIA, Congress again recognized that "it is acting in derogation of the exclusive property rights granted by the Copyright Act to copyright holders, and that it therefore needs to act as narrowly as possible to minimize the effects of the government's intrusion on the broader market in which the affected property rights and industries operate." Conference Report at H111792. Congress further acknowledged that:

> [a]llowing the importation of distant or out-of-market network stations in derogation of the local stations' exclusive right -- bought and paid for in market-negotiated arrangements -- to show

> the works in question undermines those market arrangements. Therefore, the specific goal of the 119 license, which is to allow for a life-line network television service to those homes beyond the reach of their local television stations, ***must be met by only allowing distant network service to those homes which cannot receive the local network television stations***.

Conference Report at H11792-11793 (emphasis added).[4]

Congress thus intended that satellite service of distant network programming be scrupulously limited to those homes that, in fact, are unable to receive a Grade B signal. Any model for determining presumptively who is and who is not eligible to receive distant network programming under the SHVIA must necessarily strive to accurately predict which homes can actually receive a Grade B signal, and may not simply attack supposed problems of overprediction by increasing errors of underprediction.

A. Accuracy Is Measured By Whether the Model Correctly Predicts the Existence or Nonexistence of a Grade B Signal from At Least One Affiliate of the Relevant Network

In assessing the accuracy of the ILLR model, it is crucial to appreciate the context in which that assessment takes place. The objective of the SHVA is to permit satellite delivery of distant signals – and thus override the exclusive rights of copyright owners – *only* to the small number of households that "cannot receive, through the use of a conventional, stationary, outdoor rooftop receiving antenna, an over-the-air signal of a primary network station affiliated with that network of Grade B intensity as defined by the Federal Communications Commission

[4] As discussed above, the Conference Report, as the final statement by both the House and Senate drafters of the bill, is entitled to "great deference." *See* supra note 3.

under section 73.683(a) of title 47 of the Code of Federal Regulations, as in effect on January 1, 1999." 17 U.S.C. § 119(d)(10)(A).

This statutory objective has two practical consequences for how the accuracy of a predictive model must be evaluated. *First*, the presence or absence of a Grade B intensity signal is a "yes or no" question, and the accuracy of a predictive model depends on whether it gets the right answer to that question, *not* on whether the specific predicted signal intensity is precisely correct. So, for example, if a location actually does receive a Grade B signal from Channel 2, ILLR's prediction of service with respect to that location is accurate so long as it equals or exceeds 47 dBu (the Grade B floor for a low-VHF channel). It is irrelevant for purposes of determining accuracy if the ILLR model estimates that the location receives a signal of 50 dBu, 75 dBu, or 100 dBu because the end result is the same -- the location is correctly predicted to be served by that network and therefore not to qualify as an "unserved household" under Section 119.

Second, because the Act looks to whether a household can receive *at least one* station affiliated with a given network, accuracy is measured by looking at the *aggregate* of nearby network stations affiliated with the same network. That result is mandated by Section 119 itself, which treats a household as "unserved" only if it cannot receive a Grade B signal from "*a* primary network station affiliated with [the relevant network]." 17 U.S.C. § 119(d)(10) (emphasis added). And by far the most important statement of legislative intent, the SHVIA Conference Report, confirms that a household is ineligible to receive distant network programming if it is "served by ***a*** *local affiliate* of the relevant network." Conference Report, 145 Cong. Rec. at 11796 (emphasis added). That conclusion is echoed by one of the chief

Senate sponsors of the SHVIA, Senator Patrick Leahy, who emphasized that the key inquiry is "whether a household is, or is not, capable of receiving a Grade B signal *from at least one affiliate of the network in question*." 145 Cong. Rec. S15022-23 (daily ed. Nov. 19, 1999) (emphasis added).

In other words, if a location can receive an over-the-air signal from two network affiliates, a prediction that the location is served with respect to that network is accurate so long as it actually receives a Grade B signal from at least one of those two stations. For example, because of the close spacing of Baltimore and Washington, D.C., the offices of the FCC itself in downtown Washington may be predicted by the ILLR model to receive Grade B signals from both Baltimore and Washington network stations. Even if the prediction for the Baltimore stations were wrong, that error would be completely harmless, since the FCC's offices almost certainly receive Grade B signals from the local network stations in Washington, D.C.

B. Accuracy Cannot Be Increased By Trading One Type of Errors for Another

Crucially, in its Report & Order released last year, the Commission stressed that, in adopting a predictive model, the goal was "not to increase the number of unserved households that already exist, nor to reduce the size of local stations' markets by subtracting viewers who are able to receive their signal." SHVA Report & Order at ¶ 8. Rather, the Commission strived to develop "measurement and prediction tools that *more accurately identify those households that are truly unserved within the meaning of the SHVA*." *Id.* (emphasis added). As summarized by Senator Leahy:

> The FCC has properly recognized that reducing one type of errors, underprediction, while increasing another type of errors, overprediction, does not increase accuracy, but simply puts a thumb on the scale in favor of one side or the other. The issue under Section 119(a)(2)(B)(ii) is the overall accuracy of the model, as tested against available measurement data, with regard to whether a household is, or is not, capable of receiving a Grade B intensity signal from at least one affiliate of the network in question.

145 Cong. Rec. S15022-23 (daily ed. Nov. 19, 1999) (statement of Sen. Leahy). In short, accuracy means accuracy, not stacking the deck against broadcasters.

As recognized in the Commission's Report & Order: "[W]hen served households are deemed eligible for satellite-delivered broadcast network service, network affiliates are harmed and the SHVA's intent is also thwarted." SHVA Report & Order ¶ 65. The Commission succinctly identified the dangers of tipping the scale in favor of underprediction of service:

> A predictive model that includes truly served households in an unserved category, even temporarily, creates several undesired effects. First, consumers could be confused and frustrated. If the model overpredicts the number of unserved consumers, and those consumers subscribe to network service via satellite, they will face disappointment when the broadcaster forces termination of the broadcast network service. . . . Second, the SHVA protects network affiliates by making their served households off limits to satellite delivery of broadcast networks. . . . Third, if we endorse a model that underpredicts served households, broadcasters would have a great incentive to challenge the model's prediction by taking an actual measurement. . . . [T]his result would defeat our

> goal of endorsing a predictive methodology upon which all parties can rely.

Id. at ¶ 77.

Indeed, if the scales are to be tipped in one direction or another, they should be tipped in favor of *broadcasters*, not the satellite industry. It is broadcasters that own the exclusive rights to the copyrighted programming at issue. It is broadcasters that have invested billions of dollars in that programming. And it is broadcasters that have been forced to allow satellite companies to transmit their copyrighted programming "in derogation of the local stations' exclusive right -- bought and paid for in market-negotiated arrangements -- to show the works in question." Conference Report, 145 Cong. Rec. at 11792-93. It is for these reasons that Congress expressly and narrowly limited the right of satellite carriers to transmit network programming to only households that are unable to receive a Grade B signal over-the-air. So, when in doubt, the Commission should resolve any ambiguities in favor of concluding that households are served, not unserved -- a conclusion that, as discussed below, is supported by more than 1,000 actual field tests.

That logical conclusion makes even more sense in light of the enactment, as part of the SHVIA, of a new copyright compulsory license authorizing local-to-local satellite transmissions. Both DBS companies, DirecTV and EchoStar, now offer local stations by satellite in many major markets, eliminating any conceivable "need" for viewers in those markets to obtain distant stations in order to view network programming. DirecTV, for example, now offers network stations in Atlanta, Boston, Chicago, Cleveland, Dallas/Ft. Worth, Denver, Detroit, Houston, Los Angeles, Miami/Ft. Lauderdale, Minneapolis/St. Paul, New York City, Orlando/Daytona,

Philadelphia, Phoenix, San Francisco/Oakland/San Jose, Seattle/Tacoma, Tampa/St. Petersburg, and Washington, D.C. *See* DirecTV Web site, www.directv.com. And both companies have announced plans to continue to expand the number of cities in which they offer local stations. In this context, it would be particularly inappropriate for the Commission to destroy the rights of broadcasters by expanding the distant-signal compulsory license by an unscientific shrinkage of station's predicted coverage.

C. Claims of Increased Accuracy Must Be Concretely Established By Comparing Predictions With Actual Field Measurements

As Congress made clear, to warrant altering the Commission's existing ILLR model, the adjustments must be *proven* to make ILLR more accurate. A sincere hope that adding a fudge factor might improve accuracy is simply insufficient. Instead, "[t]he linchpin of whether particular proposed refinements to the ILLR model result in greater accuracy is *whether the revised model's predictions are closer to the results of actual field testing* in terms of predicting whether households are served by a local affiliate of the relevant network." Conference Report at 11796 (emphasis added). That directive in the Conference Report, which is entitled to "great weight," is further explained by Senator Leahy:

> Whether a proposed modification to the ILLR model makes it more accurate is an empirical question that the Commission should address by comparing the predictions made by any proposed model against actual measurements of signal intensity. The Commission's analysis should reflect our policy objective: to determine whether a household is -- or is not -- capable of receiving a signal of Grade B intensity from at least one station affiliated with the relevant network.

145 Cong. Rec. S15022-23 (daily ed. Nov. 19, 1999) (statement of Sen. Leahy). Absent valid research showing that modifications improve the accuracy of the existing ILLR model when tested against real-world measurements, the Commission must refrain from altering the model.

D. The Existing ILLR Model Already Accounts for Some Effects of Clutter

As the Affiliate Association Comments explain in detail, the Longley-Rice model was created in part by using data accumulated from actual field measurements. These field measurements necessarily include the effects of surrounding clutter. The Longley-Rice model thus *already* partially accounts for the effect of clutter on signal propagation. *See* Joint Comments of the ABC, CBS, Fox, and NBC Television Network Affiliate Associations in this proceeding (Feb. 22, 2000) ("Affiliate Association Comments") and authorities cited therein. Even if the SHVIA required the Commission to endorse a model that takes clutter into account, the Commission could fully comply with any such requirement simply by explaining that the existing ILLR model already does so.

II. The Existing ILLR Model Is Already a Highly Accurate Predictor of Whether Households Receive -- or Do Not Receive -- a Grade B Signal

A comparison of the prediction results generated by using the existing ILLR model with over 1,000 actual field measurements of signal intensity proves that the standard ILLR model is an ***excellent*** predictor of whether a location, in fact, receives a Grade B intensity signal. Indeed, to the extent the current ILLR model is inaccurate, it usually errs on the side of *under*prediction, rather than overprediction -- thereby harming local stations by erroneously treating many served viewers as unserved. By adding in a clutter loss factor that is not grounded in sound, empirically

tested science, the Commission would be likely to make the ILLR model *less*, rather than more, accurate, by aggravating the existing problem of underprediction.

To assess the accuracy of the existing ILLR model, Jules Cohen, a distinguished broadcast engineer with over 50 years experience, has compared approximately 1,000 field intensity measurements in five different geographic regions -- Miami, Baltimore, Pittsburgh, Raleigh/Durham, and Charlotte, North Carolina -- with the corresponding ILLR prediction results for those locations. The field intensity measurements include: (1) over 600 measurements taken near 500 randomly selected households for purposes of the *PrimeTime 24* litigation in federal court in Miami and North Carolina[5]; and (2) nearly 400 measurements taken at neutrally selected radial and grid points in the Charlotte area as part of the Grand Alliance DTV system field testing in the early 1990s.[6] Each of the measurements was taken in conformance with the Commission's standard measurement procedures set forth in 47 C.F.R. § 73.686.

These testing results were then compared with prediction results generated using the standard ILLR model (assuming a 30 foot antenna, the same height used in the field tests). ILLR was credited with a **correct** prediction where it accurately predicted that an over-the-air signal of

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[5] The *PrimeTime 24* litigation measurements were taken at approximately 100 randomly-selected households in each of the five markets listed above. The signals of the following primary network channels were measured: in Miami, Fox station WSVN (channel 7) and CBS station WFOR (channel 4); in Baltimore, CBS station WJZ (channel 13); in Pittsburgh, Fox station WPGH (channel 53); in Raleigh/Durham, ABC station WTVD (channel 11); and in Charlotte, CBS station WBTV (channel 3). Where a household was likely to receive an over-the-air signal from a second station of the same network, that station's signal was measured as well.

[6] These 400 measurements were taken at neutrally selected locations along radials, clusters, and grids.

at least Grade B strength was -- or was not -- received from the tested channel. In considering the 600 measurements conducted in the *PrimeTime 24* case, ILLR was treated as giving a correct prediction of service if it was predicted to receive a Grade B signal from at least one affiliate, and was actually measured to receive a Grade B signal from at least one affiliate. This is precisely the definition of accuracy that the SHVIA requires, as indicated by the authoritative Conference Report, which emphasizes that the issue is "whether households are served by *a local affiliate* of the relevant network." Conf. Report, 145 Cong. Rec. at H11796 (emphasis added); *see* supra Part I(A). ILLR was deemed to have made an **underprediction** when it predicted that a location could *not* receive a signal of at least Grade B strength, when the location in fact *did* receive a Grade B signal. Finally, it was charged with an **overprediction** when it predicted that a location *could* receive a signal of at least Grade B strength from at least one affiliate of the relevant network (or of the test channels in Charlotte), when the household in fact was measured *not* to receive a Grade B signal.[7]

The results of this comparison overwhelmingly prove that standard ILLR is an excellent predictor of whether an individual location in fact receives a Grade B intensity signal. The following table sets forth the complete results:

[7] Although the ILLR model takes into account predicted interference from other stations, the Commission has recognized that there is no procedure for testing the actual presence of unacceptable levels of interference. SHVA Report & Order, ¶¶ 57, 84. The ILLR analyses reflected in the following chart therefore do not take interference into account, because to do so would confound the analysis by adding a predictive element (interference) that could not be verified by real-world measurements. In any event, the addition of interference could not possibly add to the number of overpredictions, since the addition of that element can only result in a served household being treated as "unserved," and not vice versa.

TELEVISION MARKET, CHANNEL, AND STATION	CORRECT PREDICTIONS (% of households)	UNDER-PREDICTIONS (% of households)	OVER-PREDICTIONS (% of households)
Miami, WFOR (Channel 4)	**100%**	**0%**	**0%**
Miami, WSVN (Channel 7)	**100%**	**0%**	**0%**
Baltimore, WJZ (Channel 13)	**91%**	**5%**	**4%**
Pittsburgh, WPGH (Channel 53)	**79%**	**4%**	**17%**
Raleigh/Durham, WTVD (Channel 11)	**96%**	**4%**	**0%**
Charlotte, WBTV (Channel 3)	**88%**	**11%**	**1%**
Charlotte,*[8] *(Test Channel 6)	***87%*** ***(lower bound of true figure)***	***8.5%*** ***(lower bound of true figure)***	***4.5%*** ***(upper bound of true figure)***
Charlotte, (Test Channel 53)	***81%*** ***(lower bound of true figure)***	***3.5%*** ***(lower bound of true figure)***	***15.5%*** ***(upper bound of true figure)***

[8] The Charlotte data from Channel 6 and Channel 53 understate the true coverage of comparable network stations because they were taken using test stations rather than real network stations. A real network station would likely enjoy the benefit of "spill-in" from neighboring markets – something that obviously does not exist with a test station that is not part of a national network.

As this table illustrates, the overall percentage of correct predictions was extremely high. Even the results for two high-UHF stations (Channel 53 in Pittsburgh and the same channel in Charlotte) were accurate in the overwhelming majority of cases.

Where ILLR did err, in most cases (including all of the VHF stations, which constitute the vast majority of network stations), it erred in favor of the satellite industry by tending to *under*predict the existence of a Grade B signal, thereby harming broadcasters. Indeed, in the case of Channel 3 in Charlotte, North Carolina, *11 times as many households were underpredicted (resulting in harm to local stations) as were overpredicted*. In the case of three of the VHF stations tested (WFOR and WSVN in Miami and WTVD in Charlotte), there was *no problem whatsoever of overprediction*, although the model did err (against *against* broadcasters) by incorrectly labelling some served viewers as unserved. And for every VHF station tested, broadcasters are *already* harmed more by errors of underprediction than they are "helped" by errors of overprediction. Only the data for two different stations broadcasting on Channel 53 – a high-UHF channel – suggest even a modest problem of overprediction, and there is no basis for generalizing those results to low-UHF stations, much less to VHF stations. Any across-the-board downward adjustment to the ILLR model (such as the clutter value adjustment proposed by the Commission) is likely to further *increase* the number of underpredictions, skewing the results even further in favor of the satellite industry and against broadcasters.

As explained above, making the model *less* accurate by adding to underprediction errors is unacceptable both from a statutory and policy perspective. The SHVIA requires modification to ILLR to make the model more "reliabl[e]" (47 U.S.C. § 339(c)(3)), and the Commission has recognized that, to increase reliability, a modification must "not . . . increase the number of

unserved households that already exist, nor . . . reduce the size of local stations' markets by subtracting viewers who are able to receive their signal." SHVA Report & Order at ¶ 8. Instead, a reliable modification must "*more accurately identify those households that are truly unserved within the meaning of the SHVA*." *Id.* (emphasis added). Senator Leahy specifically endorsed the Commission's views on this vital point: "The FCC has properly recognized that reducing one type of errors, underprediction, while increasing another type of errors, overprediction, does not increase accuracy, but simply puts a thumb on the scale in favor of one side or the other." 145 Cong. Rec. S15022-23 (daily ed. Nov. 19, 1999) (statement of Sen. Leahy).

III. The Modifications Proposed By the Commission Are Not Supported by Relevant Scientific Research

In the NPRM, the Commission tentatively proposes a procedure to account for vegetation and buildings in the ILLR model. The Commission's proposal would require that the results of the existing ILLR model be reduced by fixed dB values based on a generic classification of the receiving location's environment through use of 20-or-more-year-old data about land clutter.

The Commission's proposed procedure begins with the determination of the location's propagation path loss using the ILLR model. Next, a determination is made as to whether the location has Fresnel Zone clearance. If the location does not have Fresnel Zone clearance, the ILLR field strength prediction is (appropriately) left unmodified. If the location has Fresnel Zone clearance, the Commission proposes reducing the ILLR field strength prediction by a pre-determined "clutter loss value," derived in part from an article by Thomas Rubinstein in which Mr. Rubinstein attempted to study the effects of clutter on propagation in three geographic regions and to categorize those effects based on the U.S. Geological Survey's "Land Use and Land Clutter" ("LULC") database. For purposes of the NPRM, the Commission recategorized

the existing LULC categories into ten reception point environment classes and organized Mr. Rubinstein's values according to the recategorization. In areas with Fresnel Zone clearance, the Commission proposes that the clutter loss value associated with the location's environmental class be deducted from the location's ILLR field strength prediction.

Reducing ILLR predictions to account for clutter is not a new concept, but it is one that has created multiple varied approaches as to the appropriate reduction. The Commission's Rubinstein-based clutter values result in vastly higher adjustments than many of the alternative approaches. Based on many years of first-hand experience, Jules Cohen observes that clutter losses in heavily-built-up urban areas are generally about 6 dB -- well below the 10 to 18 dB reduction proposed by the Commission for urban areas. Cohen Eng. Statement, ¶ 19. The Commission itself has acknowledged the paucity of available data for determining clutter loss and the lack of scientific consensus on the appropriate numbers. In the NPRM, the Commission recognized that, even using the Rubinstein data, "the available data for assigning [clutter loss] values to these parameters is limited" and that "it is reasonable to assign values only in situations for which measurement data have been analyzed and published, or for which [it has] some confidence in deriving such values." NPRM at ¶ 11.

As explained below, application of the Rubinstein data – gathered largely for land-mobile purposes using extremely low, vertically polarized antennas – would likely result in a *decrease* in accuracy in comparison to the existing ILLR model. Because of this likely decrease in accuracy, it is not only inadvisable from a theoretical perspective to incorporate the Commission's proposed clutter loss values, but it would be impermissible under the SHVIA to do so.

A. Rubinstein's Clutter Values Were Derived Using Procedures That Make Them Inapplicable To Rooftop Antennas Receiving TV Signals

The central focus of Mr. Rubinstein's article is to provide data relevant to the land-mobile industry. (Mr. Rubinstein himself is an employee of Motorola.) His article does not provide specifics about the procedure and equipment used to obtain his data, but at a minimum it is clear that his data cannot be applied for purposes of the SHVIA. The fundamental problems with applying Rubinstein's data to TV broadcast signals are detailed below.

1. The Antennas Used By Rubinstein Are Inappropriate for Purposes of Measuring Broadcast Television Propagation

a. Rubinstein's Antennas Were Far Too Low For SHVIA Purposes

Because Mr. Rubinstein collected data using antennas very close to the ground, where the effects of clutter are far greater than at 20 or 30 feet above ground where a rooftop antenna is assumed to be located for SHVIA purposes, his measurements of the effect of clutter cannot validly be applied to the SHVIA context.

In conducting his measurements, Rubinstein used three antennas mounted on the roof of a station wagon. Cohen Eng. Statement, ¶ 3 (based on conversation with Rubinstein). With this configuration, the radiation center of his test antennas was approximately 6 ½ feet. The presumed height under the ILLR (and the SHVIA) for a rooftop antenna, however, is either 30 feet for a two-story residence or 20 feet for a one-story residence. In other words, Mr. Rubinstein's antennas were only at around 1/3 to 1/5 the height of the rooftop antennas assumed for SHVIA purposes.

This height differential is likely to make a very substantial difference. Clutter loss is likely to be reduced at greater heights because fewer objects protrude into the propagation path. To put this in common sense terms, an antenna placed at a height of 30 or 20 feet is likely to be higher than many of the objects that might cause clutter, such as trees, bushes, or nearby houses. Conversely, a much lower antenna (such as those used by Rubinstein) is likely to be affected much more by low-lying clutter.

This common sense result is applicable even where the clutter only partially blocks the signal to the antenna. When a transmission path is partially obstructed, a signal reaches the receiving antenna by diffraction. The angle of diffraction for a lower receiving antenna is greater than for antennas placed at higher elevations. Because diffraction loss increases as the angle of diffraction increases, the lower antenna will suffer a greater signal loss than the higher antenna. In addition, lower antennas are more likely to have signal loss created by reflections of the signal off the ground (multipath).

The impact of the antenna height differential results in a major discrepancy between Rubinstein's work (in the context of land-mobile transmissions) and the SHVIA context. One of the creators of the Longley-Rice model has quantified the effect of raising an antenna from 3 to 10 meters, and has found that, although the antenna height gain depends on frequency and surface features, it can range from 7 to 9 dB for television frequencies. A.G. Longley, *Radio Propagation in Urban Areas*, Conf. Rec. 28th IEEE Vehicular Tech. Conf. 503, 504 (Denver, Colo., Mar. 22-24, 1978). Similarly, the antenna height gain caused by raising an antenna from 3 to 6 meters has been quantified as approximately 4 to 5 dB, depending on frequency. *See* Affiliate Association Comments.

b. The Type of Antenna Used by Rubinstein Is Inappropriate For Purposes of the SHVIA

The SHVIA is premised on use of a "conventional outdoor rooftop receiving antenna," 17 U.S.C. § 119(d)(10), which means a horizontally polarized, directional antenna. Because the Rubinstein data were collected using a completely different type of antenna, which is much more susceptible to the effects of clutter, the Rubinstein data cannot validly be applied in the SHVIA context.

Specifically, Rubinstein gathered his data using *vertically* polarized monopole antennas -- the type of antennas typically used in the land mobile context. These land mobile antennas were omnidirectional in the horizontal plane (except for the pattern distorting effect of nearby antennas). Cohen Eng. Statement, ¶ 8. Television antennas, on the other hand, are typically directional antennas and horizontally polarized. Again, this difference is likely to be very substantial.

The use of an omnidirectional antenna increases the effect of multipath (essentially scattering or reflections of the direct signal off of objects, including the ground). This, in turn, causes an increase in the apparent signal loss. A directional antenna properly oriented in the direction of maximum signal gain, on the other hand, discriminates against signals from other directions, thereby decreasing the effect of multipath. Cohen Eng. Statement at ¶ 8.

Vertical polarization also increases signal loss for an additional reason: trees, buildings, and many other types of clutter are predominantly vertical. Cohen Eng. Statement at ¶ 8. As a result, antennas that are horizontally polarized are likely to be less affected by these obstacles

"because of the cross polarization with the dominant obstructions." *Id.* Longley quantified the effect of polarization on signal reception:

> In shadow regions at VHF the effect of reflections on vertically polarized signals is often sufficient to seriously distort FM reception, while they have little effect on horizontally polarized signals. It was noted that at 100 MHz the average loss from nearby trees was 5 to 10 dB with vertical polarization and only 2 to 3 dB for horizontally polarized signals. Such polarization differences were not observed at frequencies from 300 to 500 MHz. But even at 900 MHz small sector signal variations are greater for vertical polarization than for either horizontal or circular polarization.

A.G. Longley, *Radio Propagation in Urban Areas*, CONf. Rec. 28th IEEE Vehicular Tech. Conf. 503, 504 (Denver, Colo., Mar. 22-24, 1978), 504.

To summarize: the use of incorrectly polarized antennas makes Mr. Rubinstein's data unusable in the SHVIA context.

2. Rubinstein's Data Are Confounded by Lack of Fresnel Zone Clearance

Mr. Rubinstein's data cannot be applied in the SHVIA context for another reason: they include signal losses resulting from lack of "Fresnel zone" clearance, although Mr. Rubinstein incorrectly claims to have eliminated such losses. His figures for clutter effects are thus contaminated by Fresnel zone effects that are already taken into account by the ILLR model.

In his paper, Mr. Rubinstein claims to evaluate only locations with Fresnel Zone clearance. Rubinstein at 287. Based on the estimated height of his receiving antennas and the

fact that the antennas were mounted on a station wagon, however, it is impossible that his receiving locations had Fresnel Zone clearance at the lower frequencies measured (162 MHz or 460 MHz) and unlikely that they had Fresnel Zone clearance at even the higher 860 MHz frequency. Cohen Eng. Statement, ¶ 4.

A Fresnel Zone is an elliptical area above and below (and to the sides of) the direct line of transmission; the size of the area depends on both frequency and distance between transmitter and receiving site. To have Fresnel Zone clearance, that area must be free of obstacles. At a height of 2 meters (the height of Rubinstein's antennas), however, the ground itself would intrude into the Fresnel Zone for the lower frequencies and prevent Fresnel Zone clearance. Even at the higher frequency, cars passing Rubinstein's vehicle would intrude into the Fresnel Zone and prevent clearance.

Because Rubinstein likely did not have Fresnel Zone clearance for any of the locations tested (or had clearance only for a few high-frequency measurements), a loss factor is introduced in the Commission's proposed clutter values that is not present for a television receiving antenna. Specifically, the lack of Fresnel Zone clearance on Rubinstein's measurements likely distorted the clutter values he derived by several dB. And because ILLR already takes lack of Fresnel zone clearance into account, using the Rubinstein "clutter" factors would be a plainly improper form of double-counting.

To be clear: NAB and MSTV agree with the Commission that no clutter loss figure could properly be applied to any location that does *not* have Fresnel zone clearance (even if the proposed ILLR modification were permissible, which it is not). However, the Commission should not use the Rubinstein figures for clutter, because (among many other reasons) those

figures improperly include Fresnel zone effects that Mr. Rubinstein incorrectly claims to have eliminated.

3. Rubinstein Started With Okumura's Propagation Algorithm -- Not the Longley-Rice Model -- and His Results Are Therefore Limited to the Okumura Model

Because Mr. Rubinstein's *base* predictions were not based on the Longley-Rice model, but on an entirely different model (generally used for land-mobile purposes), it does not make sense to treat his proposed modifications as applicable to Longley-Rice absent proof -- of which none has been offered -- that it is scientifically valid to do so.

In particular, Rubinstein's point of comparison in deriving his clutter loss values were not predictions derived from Longley-Rice, but rather predictions derived from the Okumura algorithm. Applying these clutter loss values to Longley-Rice is like analyzing the characteristics of orange peels and applying the results to apples: Longley-Rice would not produce the same base predictions as the Okamura algorithm, and this "disparity alone would be sufficient reason to avoid use of the Rubinstein conclusions unless an analysis could be made showing the differences to be of little consequence." Cohen Eng. Statement at ¶ 7. Logically, if the Commission is aiming to improve the accuracy of Longley-Rice by taking clutter into account, it should base its modification on studies and empirical evidence regarding Longley-Rice predictions.

4. Rubinstein Measured Land Mobile Frequencies, Not Television Frequencies, and <u>Did Not Collect Any Data In the Low VHF Range</u>

Rubinstein's measurements were taken at 162, 460, and 862 MHz. None of these is a television broadcast frequency. The television band frequency ranges are as follows:

Low VHF (Channels 2-6)	54 to 88 MHz
High VHF (Channels 7-13)	174 to 216 MHz
UHF (Channels 14-69)	470 to 806 MHz

Rubinstein's measured frequencies fall short of the low end of the high VHF range (channel 7) and of the low end (channel 14) and high end (channel 69) of the UHF range. Moreover, as the Commission recognized (NPRM ¶ 12), none of his measurements comes close to the low VHF range.

The Commission proposes to compensate for the complete lack of any data regarding frequencies near the low VHF range by "using clutter loss values for low band channels that are derived by applying frequency trend data [observed by Okumura] to the Rubinstein clutter loss values for high band VHF." NPRM ¶ 12. This approach piles speculation on speculation. *First*, as the Commission candidly recognized, this extrapolation would require it to "introduc[e] an exception to [its] principle of not assigning values unless measurement data have been analyzed and published for matching situations." *Id.* *Second*, because the method of deriving this extrapolation is not described, it is impossible to scrutinize the resulting figures. *Third*, as the Affiliate Association Comments explain, the Okumura trends were derived based on tests of frequencies far above the low VHF range and, as a result, the trends observed by Okumura cannot be generalized for VHF predictions. *See* Affiliate Association Comments; R. Grosskopf,

Comparison of Different Methods for the Prediction of the Field Strength in the VHF Range, 35 IEEE Trans. on Antennas and Propagation 852, 857 (July 1987).

5. Rubinstein Did Not Obtain a Representative Sample of Differing Types of Land Use and Land Cover

Rubinstein's clutter values were based on measurements taken in four locations: San Diego, Los Angeles, Atlanta, and Whatcom County, Washington. This short list of geographic regions is not necessarily representative of the many varied types of land use and land cover environments that exist within the United States. To obtain a representative view of the country, at a minimum, "[t]he Northeast, with its high population densities and irregular terrain, the Gulf Coast area with its typically high humidity, and the Midwest with its extensive plains" would also need to be considered. Cohen Eng. Statement at ¶ 6.

6. Rubinstein Himself Identifies Many Potential Data Discrepancies in His Work

Rubinstein candidly catalogues numerous shortcomings of his study that cast doubt on the usefulness of his results. As summarized in the Cohen Engineering Report, these shortcomings include:

- In some LULC categories, little data was available so the potential for error is great.
- Receiver calibration may have drifted.
- Some grid categorization may be in error.
- Errors may have occurred because the terrain data and LULC data were originally sampled on a Universal Transverse Mercator grid whose "crossings do not precisely register with the Latitude/Longitude crossings used by the prediction algorithm . . . ."

- "The automated test setup depends on a constant speed to make its measurements." Small increases or decreases in speed may have resulted in varying the sampling intervals between subsamples.

- The proportional amounts of samples for each subcategory within each main category cannot, as a practical matter, be determined. The example cited is that the "Residential" category includes single family dwellings, apartment buildings, barracks, shacks etc.

- Narrow local streets are underrepresented.

- Insufficient room was available on the roof of the vehicle to space the antennas outside the near fields of other antennas.

- The Okamura model could not be followed precisely.

- Some vertical errors affecting the existence of shadowing may have been made.

- Pattern distortions in the transmitting antennas were not taken into account.

Cohen Eng. Statement at ¶ 9 (quoting Rubinstein).

B. The LULC Database Is Outdated and Lacks Sufficiently Fine Resolution

The U.S. Geological Service Land Use and Land Clutter ("LULC") database was created through "[m]anual interpretation of aerial photographs acquired from NASA high-altitude missions and other sources." EDCwww.cr.usgs.gov/glis/hyper/guide/1_250-lulc (visited Feb. 11, 2000). Many of these photographs were taken as early as the 1970s and thus fail to reflect the many land use and land cover changes that have occurred in the past several decades. The satellite industry's most candid acknowledgment of this problem appears in a federal court filing by EchoStar of an engineering statement by Robert A. Mercer of HAI, Inc. *See* Mercer

Aff. (filed on May 21, 1999 as Exhibit B to NAB filing in Dkt. No. 98-201). As Mr. Mercer (for EchoStar) acknowledged (at ¶ 11), "[c]lassification of land areas [in the LULC database] is based on rather dated information -- aerial photographs dating from the 1970s and 1980s." The outdated character of the ILLR photographs is important "because of the profound changes in land use across the United States over the past two decades." *Id.* at ¶ 13. To take just one local example, in Prince William County, Virginia, alone, builders filed more than 3,500 residential permits last year and received the "go-ahead" to build 40,000 new homes. Lisa Rein, *Builders Mount Attack on Prince William Plans*, The Washington Post (Feb. 13, 2000) at C01. As urban sprawl spreads, forests are cleared to make way for new homes, businesses, and recreational facilities. Yet many of these changes are not reflected in the LULC database.

The coarse resolution of the LULC database provides an independent reason why the data is insufficient for purposes of the SHVIA. The minimum resolution of the geographic areas considered in the database are 10 acres for urban areas and 40 acres for non-urban areas. EDCwww.cr.usgs.gov/glis/hyper/guide/1_250-lulc (visited Feb. 11, 2000). In such large parcels of land, many different land use and land cover conditions may be present.

Again on this point, EchoStar's Mr. Mercer candidly acknowledges the inappropriateness of using the LULC database. Specifically, EchoStar's expert witness admitted in federal court that "the *USGS database is not sufficiently detailed to allow the accurate modeling of signal*

propagation along paths to individual households." Mercer (EchoStar) Aff. at ¶ 10 (emphasis added).[9]

Rather than mandating use of the outdated and highly grainy LULC database, the Commission should wait until a more accurate, detailed, and up-to-date database is developed.

C. **Error Codes Should Result in a Presumption of *Service***

In the NPRM, the Commission, without any explanation, proposes an abrupt and inexplicable about-face from its sound prior position about error codes. Whereas the Commission previously concluded that "a party should either accept the prediction by ignoring the error code or test the result with an on-site measurement," SHVA Report & Order at ¶ 85, Appendix A to the NPRM now states "where error codes indicate a severe error, the field strength is deemed inadequate for TV service." Table 1 further directs: "Accept the field strength prediction when KWX equals 0 or 1, otherwise (KWX = 2, 3, or 4) presume the field is inadequate for TV reception."

This unexplained new position is completely contrary to the reasoning set forth in the prior Report & Order. In that Report & Order, the Commission recognized that "[e]rror codes result when the model makes a prediction of signal intensity, but essentially rejects the prediction for a reason that *may or may not be significant*." SHVA Report & Order at ¶ 85 (emphasis added). It further acknowledged that SBCA's engineers, Hatfield & Dawson, recommended that

[9] As Mr. Mercer conceded, the "USGS Land Use and Land Cover Data . . . are quite general and do not include significant geographical detail concerning either vegetation or manmade structures." *Id.*, at ¶ 11; *see also id.* (" [L]and areas are classified by irregular polygons of at least 10 (10) acres in area . . . . Classification codes in rural and outlying areas . . . are even less precise than those for urban areas."). Mercer concluded that, at present, "land use databases reflecting current conditions with any degree of precision are not available." *Id. at* ¶ 9.

error codes be ignored as if they were "false alarms." *Id.* The Commission concluded: "If we change the model's assumption of service so that it assumes no service, we risk shifting the satellite carriers' burden of proving [through actual testing] that a household is 'unserved' in such a way that appears to contravene the statute." *Id.* at n.219.

Not only is the Commission's new position contradictory to its prior stance and wholly unsupported by any rationale, it is (as the Commission previously recognized it would be) completely contrary to SHVIA policy and common sense. The SHVIA extends the protection afforded under the original statute to copyright owners by renewing the Grade B standard; under both the original statute and the amended SHVIA, satellite carriers may provide distant network programming only to households that are truly unserved by a local network affiliate. The Grade B standard was chosen to protect the copyright interests of broadcasters who have invested billions of dollars in their programming and to safeguard the network/affiliate system that has served this country exceptionally well. Any presumption that a household is *unserved* would deal a blow to the vital interests the SHVA was intended to protect. The Commission recognized as much when it stated that changing the assumption to one of service would "risk shifting the satellite carriers' burden of proving that a household is 'unserved' in such a way that appears to contravene the statute." Report & Order at n.219.

Further, only a tiny percentage of homes, mostly in rural areas, truly cannot receive an over-the-air signal of Grade B strength; the overwhelming majority of homes are served by network stations and ineligible for satellite transmission of network programming. (For VHF stations, more than 700 measurements at randomly selected locations show that only very small percentages -- often 0%, and never more than 5% -- are not served by a local station affiliated

with the relevant network. *See supra* Part II.) Any presumption that a household is unserved merely because an error code pops up would thus be wrong in the majority of cases: it would be like assuming that if an adult's height is unknown, the individual must be under five feet tall.

The impact of incorporating this erroneous presumption would be vast. In Comments previously filed with the Commission, Hammett & Edison estimated that ILLR would result in an error code of 3 (a "severe error" as defined by the Commission) for an average of one-fifth of the population. Comments of Hammett & Edison, Inc., CS Docket No. 98-201 (filed Dec. 11, 1998), at 7. Presumably, the overwhelming majority of these households, like the overwhelming majority of the population in general, can in fact receive a Grade B signal. Thus, the Commission would be, in effect, administratively overruling the statutory placement of the burden of proof on the satellite industry, a result that the Commission has correctly strived to avoid. *See* Report & Order at n.219. If a presumption is to be drawn from the existence of an error code, it should be presumed that the household is *served*, not unserved. This would both comport with SHVA policy and be far more consistent with reality.

Conclusion

The Commission should *not* rush to change its existing, highly accurate ILLR model for the sake of changing it. Rather, the Commission should do what Congress has directed: perform careful empirical studies to determine whether any proposed changes to the ILLR model (whether relating to clutter or otherwise) will increase its ability to successfully predict whether particular households are capable of receiving a signal of Grade B intensity from at least one station affiliated with the relevant network. NAB and MSTV will be pleased to work with the Commission in performing such empirical studies. In the meantime, the

Commission should not adopt the modifications described in the NPRM, which have not been tested (as the SHVIA requires) against actual measurements and are likely to worsen, rather than enhance, the accuracy of the existing ILLR model.

Respectfully submitted,

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