

2. The Longley-Rice Methodology Relied On By the *PrimeTime 24* Court is Not Bounded by The Commission's Grade B Predictive Contours, Unlike the Commission's DTV Methodology

Even in the DTV context, the Commission's use of the Longley-Rice predictive methodology is subject to a constraint that is absent from the variant presented to the Florida Court in *PrimeTime 24*. In the OET bulletin discussing the use of the Longley-Rice model for DTV allotments, the Commission explained that Longley-Rice calculations are bounded by the traditional Grade B predictive contour. That is, such calculations are to be conducted only *inside* the Grade B contour.³⁹ Thus, under the Commission's methodology, the area of predicted adequate intensity is by definition the narrower of the areas predicted by the Grade B *or* the Longley-Rice methodologies: if one method would predict a particular household as served and the other would indicate it as unserved, the Commission concludes that this household is likely *unserved*.⁴⁰ By contrast, under the Longley-Rice methodology as presented to the Florida Court, a household appears to be predicted as served if it is within the Longley-Rice area, no matter if it extends farther than the Grade B contours.⁴¹ Thus, by definition, many more households will be

³⁹ See OET Bulletin at 1 (“[C]omputations are made *inside* the conventional Grade B contour defined in Section 73.683 of the FCC rules. . . .”) (emphasis added); *id.* at 7 (“The area subject to calculation is divided into rectangular cells, and the Longley-Rice point-to-point propagation Model Version 1.2.2 is applied to a point in each cell to determine whether the predicted field strength is above the value found in Table 1 or Table 2, as appropriate.”).

⁴⁰ See *Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service*, Memorandum Opinion and Order on Reconsideration of the Sixth Report and Order, 13 FCC Rcd. 7418 (1998) (“DTV Reconsideration of Sixth Report”) (“We note that we generally assume service is available within the Grade B contour and *since only cells within the Grade B contour are investigated*, a presumption of service would appear to be reasonable in such cases.”) (emphasis added).

⁴¹ See Cohen Declaration at Appendix.

considered unserved under the methodology presented to the Florida Court than under the Commission's DTV Longley-Rice/Grade B contour-bounded methodology.

3. The Different Considerations Applicable Here Militate for Less-Inclusive Predictive Models Than In Other Contexts

In evaluating the appropriateness of a particular predictive model, the Commission should take into account the material difference between the policy considerations applicable here and those underlying the Commission's determination in the allotment context. Thus, in the *DTV* proceeding, the Commission's use of the Longley-Rice model was part of an attempt to achieve a specific policy objective not present in the SHVA context, namely, allotting DTV licenses so as to ensure non-interference. It is not surprising that, in allotting DTV licenses, the Commission would use a *prophylactic* model to establish service areas. In other words, the predictive model used by the Commission in the allotment context *must* be broad out of an abundance of caution – so broad as to minimize the possibility that a DTV station from one area would interfere with one in an adjacent area.⁴² Avoidance of electrical interference – particularly potential interference between adjacent broadcasters – is one of the Commission's paramount tasks; in resolving doubts in that regard, the Commission *must* err on the side of avoidance – *i.e.*, on the side of an over-inclusive predictive curve.

None of the policy objectives guiding the Commission in the allotment proceedings is present in the SHVA context. To the contrary, an examination of the policy concerns facing the FCC in the SHVA context shows that the Commission should eschew

⁴² See *DTV Sixth Report*, 12 FCC Rcd. at 14682.

overbreadth (contrary to its incentives in the allotment context) in ruling on the appropriateness of a particular predictive model.

Specifically, in the SHVA context the prospect of electrical interference is plainly not present: the satellite retransmission of a distant signal does not threaten to cause such interference into a local broadcaster. Rather, the policy implicated here is the Commission's fundamental statutory mandate to ensure network service for as many Americans as possible.

The importance of network television to Americans is beyond question. As the Supreme Court noted recently, "[b]roadcast television is an important source of information to many Americans. Though it is but one of many means for communication, by tradition and use for decades now it has been an essential part of the national discourse of subjects across the whole broad spectrum of speech, thought and expression." *Turner Broadcasting System, Inc. v. FCC*, 117 S.Ct. 1174, 1188 (1997). The Commission has referred to the networks' "unique position in the video marketplace of the 1990's," as they have "by far the greatest hold over the nationwide television audience and those who seek to reach it."⁴³ In discussing the place of network television in American society, a former FCC Commissioner remarked:

[T]he networks, despite the declining role of broadcast television, are still the culture-shaping institutions in the video industry. The culture tends to be formed by network television – by its power to command the mass audience. That power is still there, even though it may be declining. . . . Another metaphor that I might use is this: no matter how affluent I become, no matter how many vacation and travel choices I may have, I will always maintain a primary home. Something will always cause me to come home, even if I have all the time in the world to travel. The networks are the home that the viewer always seems to return to, even in this

⁴³ *Evaluation of the Syndication and Financial Interest Rules*, 6 FCC Rcd. 3094, 3109 (1991).

new world of video abundance. It will only be through a colossal act of malfeasance and incompetence on the part of their leadership that they will sacrifice that franchise.⁴⁴

The referral to the FCC's expertise in the "unserved households" definition in the SHVA was crafted so as to allow those who cannot receive adequate signals from their local broadcast station to receive network programming through satellite retransmission.⁴⁵ However, to the extent that a model "predicts" Grade B coverage for a household that does not in fact receive such coverage, that household will receive *neither adequate broadcast service nor satellite service* – an intolerable result in light of the Commission's policies. Thus, while in the *DTV* proceeding the Commission had incentives to use a predictive model resulting in an overbroad "prediction area" so as to minimize the possibility of interference, here the Commission has precisely the reverse incentives – to ensure that as many households as possible have access to at least some network service. In light of the fundamentally different policy that should guide the Commission here, even the "Grade B or Longley Rice, whichever is narrower" approach taken by the Commission in the *DTV* proceeding is unjustifiably overbroad, even though it is in turn narrower than the method presented to the Florida Court.

⁴⁴ Commissioner Ervin S. Duggan, Address before the International Radio and Television Society (Feb. 19, 1993).

⁴⁵ Certainly, the "unserved households" restriction was also intended to serve other purposes, including the desire to avoid disruption of the network-affiliate relationship. That consideration was not implicated in the SHVA's specific referral to the Commission's expertise and does not lie within that expertise; rather, it can be appropriately considered and weighed by the Copyright Office or the courts. On the other hand, even if the Commission were to weigh itself the desire to avoid disruption of the network-affiliate relationship, the overriding consideration would still be ensuring that network service is available to as many Americans as possible.

D. The Commission Should Develop a SHVA-Appropriate Predictive Methodology Based on the Pertinent Considerations – Ensuring to the Extent Possible, That All Americans Receive Same Network Service

In developing a SHVA appropriate predictive model, the Commission must take into account the purpose to be served – again, ensuring that as many Americans as possible receive network service, either off the air or by satellite. This goal should affect all the key characteristics of any predictive model – the probabilities, confidence factor and other assumptions on which it is based. The characteristics of all predictive methodologies developed by the Commission to date are simply not calibrated to achieve that purpose – or indeed even to take that purpose into account.

1. A SHVA-Appropriate Predictive Model Must Make Allowances for Obstructions

Neither Grade B contours nor the terrain-dependent Longley-Rice model takes into account the effects of buildings, vegetation and many other morphological characteristics on the strength of received signals. Even according to the conservative testimony submitted by the defendant in the *PrimeTime 24* Florida proceeding, the magnitude of signal loss from such obstructions can range from 5.0 dB at low-VHF frequencies in suburban or rural areas with a thin tree cover to more than 30.0 dB at UHF frequencies at locations surrounded by tall trees. Nor do such models necessarily account for all interference from other television or radio transmitters. Indeed, in the recent DTV proceeding, one party submitted that a Longley-Rice calculation in Los Angeles ignored possible interference to over 1.1 million persons within the

relevant DTV service area.⁴⁶ Many households “predicted” by the Grade B contour or Longley-Rice to receive Grade B service will in reality receive no service.

2. A SHVA-Appropriate Predictive Model Must Be Based on Realistic Probabilities of Receiving an Adequate Signal

The use of *any* predictive model based on attenuated probabilities of receiving service and a low confidence factor may serve well the goal of avoiding any prospect of interference. Such a model, however, is inconsistent with the goal of ensuring service for as many households as possible. Both the traditional Grade B contours and the Longley Rice model are based on such low probabilities: 50% of the locations, 50% of the time, with 50% confidence. By definition, a substantial percentage of the households predicted as receiving a Grade B intensity signal in fact do not; a household predicted as receiving a Grade B intensity signal may in fact not receive such a signal for a substantial part of the day; and there is only a 50% confidence that a household predicted as receiving the signal will actually receive such a signal at any given time.

Use of the median in these distributions may be both convenient and appropriate. However, few would argue, even setting aside the unrealistic propagation assumptions discussed above, that ensuring service to 50% percent of households 50% of the time with 50% confidence would provide any comfort to the remaining households within these areas – those that are precluded from distant signals even though they cannot receive any signal at any time; those that are precluded even though they cannot receive a signal of the requisite intensity for a substantial

⁴⁶ See Comments of H&E and KPDX in DTV Reconsideration of Sixth Report at ¶ 179.

part of the time. When an announcement of “only” 3% unemployment is certainly not reassuring to each of the unemployed, the cut-off of unemployment benefits based on a finding of “only” 50% unemployment would be a non-sensical travesty.

Equally important is the question of the confidence factor. For Longley-Rice maps, “[t]he percent confidence is set at 50%, indicating that [the Commission] is interested in median situations.” OET Bulletin at 6. The same is the case for the Commission’s conventional model. *See* North Carolina Order at 2 (“At [the Grade B contour] boundary, fifty per cent of the households are estimated with fifty per cent accuracy to receive a broadcast signal of Grade B intensity fifty per cent of the time.”). A 50% confidence factor means that, of every 100 measurements of the signal intensity that a given household at the contour receives at a given time, 50 will likely be below Grade B intensity. In other words, whether the household receives an adequate signal, even at a given time, is literally a toss of a coin. The Commission should seek to moderate this problem by setting the confidence factor higher than this unacceptably low 50%. More generally, every percentile point under 100% used in a predictive model represents households that will be disenfranchised by the use of an overly-broad predictive model. While failure of a particular household to receive a Grade B signal for a very small part of the day, or a very slight risk of not receiving an adequate signal at any given time every once in a while, may be acceptable sacrifices, they are just that – sacrifices. The use of the three medians, unguided by any relevant principle, is an obviously inappropriate way to determine the maximum extent that lack of network over one may be tolerable.

Indeed, a brief look at other instances where the Commission *does* use its existing Grade B predictive contours reveals that in *not one* of them will the use of the attenuated-probability curves disenfranchise viewers from all network service (as such use would threaten

to do here). For the Commission's multiple ownership rules and its main studio rules, the use of "broad" contours has no effect on viewers – only on the owners of television stations.⁴⁷ By definition, viewers within a network nonduplication contour – regardless of how broadly drawn – can receive at least one network station.⁴⁸

Again, SHVA referred the "Grade B intensity" issue to the Commission's expertise to ensure that those households that could not receive an adequate Grade B network signal would be able to receive network retransmissions from satellite providers. However, if 50-50-50 predictive models are used to determine "unserved households," and the other factors discussed in this petition are not taken into consideration, then *by definition* large percentages of those *who cannot receive a Grade B signal* will fall within the "prohibited area" and will thus be unable to receive either network broadcast transmission or network satellite retransmission.

In that connection, the language of the statute provides useful guidance on the development of a model for predicting it. Fairly read, the SHVA's reference to Grade B intensity is meant as a measurement of the *actual minimum* intensity that a particular household can receive. The interpretation of Grade B intensity as denoting a minimum is supported by the

⁴⁷ The Multiple Ownership rules limit television station ownership on an aggregated national audience basis, *see* Telecommunications Act of 1996, Pub. L. No. 104-104 § 202(c), 110 Stat. 56 (1996) (requiring amendment of 47 C.F.R. § 73.3555), and generally prohibit ownership of more than one television station in the same market, *see* §73.3555. Thus, the utilization of broad contours in this context would affect *who can own* television stations, but would not affect *whether viewers can receive* television stations. Similarly, the Main Studio Location Rule generally requires television station to maintain a main studio within a principal community contour. *See* 47 C.F.R. § 73.1125. Therefore, using Grade B contours to predict minimum field strength over the principal community contour, *see* 47 C.F.R. 73.683(c)(3) affects the location of studios, not station viewership.

⁴⁸ *See* 47 C.F.R. § 76.92(d).

placement of the term in the context of the statutory definition. Unserved households are those that “cannot receive, through the use of a conventional outdoor rooftop receiving antenna, an over-the-air signal of grade B intensity.” The definition distinguishes between (a) those who can receive a Grade B intensity *or better* signal; and (b) those who cannot receive such a signal. The phrase “cannot receive . . . an over the air signal of Grade B intensity” should therefore be given its natural meaning – “cannot receive Grade B intensity or better.”⁴⁹ Conversely, it would be absurd to read that phrase as meaning “cannot receive Grade B intensity at any time” – as if the ability of a household to receive a Grade B intensity signal for half an hour every day mattered or provided any comfort for that household’s members. Congress cannot have intended such a nonsensical reading, which would render ineligible for any network service households that clearly lack any meaningful ability to receive a local signal. Thus, Grade B intensity necessarily denotes a *minimum*. In turn, its use as a minimum demonstrates the irrelevance of predictive models based on probability distributions where, by definition, 50% of the measurements at a given household at various times are below Grade B intensity, and 50% of the measurements at a given household at any particular time are also below Grade B intensity.

⁴⁹ Similarly, all uses of the Grade B signal strength by the Commission are based on that standard as a minimum.

E. The Commission Should Also Develop a Methodology to More Accurately Measure Signal Strength in the Home

The Commission's current methodology for measuring signal-strength fails to take into account real-life factors preventing many of those "measured" as receiving an adequate signal from actually receiving such a signal. *First*, signal intensity from a rooftop antenna loses strength as it travels through the cable connecting the antenna with a television set. A signal equal to 47 dB at the roof would not be adequate *at the television*. If a rooftop antenna is connected to several television sets through the use of splitters, this attenuation problem is much worse. Thus, even if a multiple-TV household in a Grade B or Longley-Rice contour is lucky enough to be one of the 50% of those who actually receive an adequate signal 50% of the time, that household may well be unable to enjoy adequate reception on its television sets.

Second, the current field-strength measurements assume that rooftop antennae will be placed at thirty feet above ground.⁵⁰ This height may not be attainable for the consumers living in one-story single family residences that typically wish to subscribe to satellite offerings of distant signals. Fully 54.14% of new single-family homes constructed between 1975 and 1997 are only one story⁵¹ – corresponding to a height of less than 20 feet. This means that, in light of the considerations guiding the Commission here, the Commission should set the assumed rooftop antenna height at less than 30 feet. Again, the assumption of 30-foot height would provide little comfort to all who have the bad luck to live in single-floor dwellings who cannot receive an adequate signal from *their* rooftop, and are unfairly deprived of service.

⁵⁰ See 47 C.F.R. § 73.686(b)(2).

⁵¹ See NAHB Webpage, <<http://www.nahb.com/sf.html>> (visited July 23, 1998).

Third, the measurement methodology of Section 73.686 assumes that the antenna has been oriented for maximum gain with respect to each station, which is not possible without an actuated antenna.⁵² The American consumer should not be required to purchase actuators, in line amplifiers and other exotic features at possibly substantial cost in order to obtain a Grade B intensity signal; nor would such equipment meet the SHVA standard of a “*conventional* outdoor rooftop receiving antenna.” The current rules also require measurements at “accessible roads” and a 100-foot “mobile run” along the street (where of course trees, buildings and other obstructions tend to be much less of a problem than would be the case with reception at the home).⁵³

These real-life factors further demonstrate the difference between the Commission’s responsibilities in the SHVA area from its responsibilities in other contexts. When the Commission uses the **measurement** rules of 47 C.F.R. § 73.686 in other areas, one of its primary concerns is interference protection. Thus, there is little need for the Commission to delve into questions of antenna-to-television signal attenuation and actual rooftop antenna height. Indeed, to ensure that broadcast stations do not interfere with one another, it is most prudent for the Commission to ignore these factors. Where, however, as here, the question is not one of broadcast interference but of viewer disenfranchisement, the Commission needs to look at these factors to ensure that its models accurately predict whether viewers *actually receive adequate signals*, rather than whether they might receive them some of the time. The measurement should be at the home, not the street, using truly “conventional” antenna, as required by the SHVA,

⁵² See 47 C.F.R. § 73.686(b)(2).

⁵³ See *id.*

without special non-interference parts, actuators, pre-amplifiers or amplifiers. Thus, the measurements should not require the antenna to be optimally oriented for each station, since that would require an actuator or rotator. Rather, to closely replicate real life, the antenna should be positioned for maximum gain on the station watched the most by the particular household. Measurements of intensity for all stations should be taken with the antenna in that same position. Furthermore, the rules should measure intensity at the television set, so as to account for standard line loss for a typical home, plus standard splitters.

III. CONCLUSION

One of the Commission's most fundamental responsibilities is to ensure that communications services are available to all Americans. Therefore, the Commission should institute a rulemaking to determine the appropriateness of particular predictive models and to develop such a model for the purposes of SHVA, as well as to develop a truer-to-real-life measurement methodology for the same purposes. The Commission should specify that for SHVA purposes, only the narrowest predictive models and the most realistic measurement methodology should be used. Given the importance of ensuring that all Americans have access to network programming with an adequate signal strength, EchoStar believes that a 99-99-99 model (*i.e.*, a model that predicts the outermost boundary at which 99% of households receive a Grade B signal 99% of the time with 99% confidence) would be appropriate. Further, EchoStar submits that the Commission's methodology for measuring Grade B signal strength should, at the very least, come closer to reflecting the signal that a viewer actually receives at his/her television set.

The same model, or a model guided by the same or even more stringent principles, should apply for digital television. That model should ensure that a consumer qualifies for distant network if he/she cannot receive a local digital signal 99% of the time.

EchoStar recognizes that the SHVA implicates many issues that the Commission might consider outside of its competence, including balancing the need to provide all Americans with adequate network service, and the desire of some broadcasters to preserve the network-affiliate relationship. However, EchoStar urges the Commission not to allow its apprehension to prevent it from acting *within* its core competence, as defined by the SHVA itself. The SHVA is explicitly constructed around the Commission's definition of Grade B signals. The Commission should therefore institute a rulemaking by which it can ensure that its predictive models will be used in an appropriate manner and develop a SHVA-appropriate predictive model that will avoid disenfranchising hundreds of thousands of subscribers.

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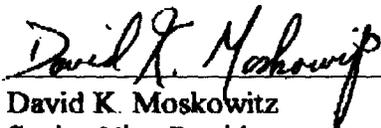
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DECLARATION

I, David K. Moskowitz, hereby declare under penalty of perjury that the foregoing is true and correct.



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