Source of flooding and location	#Depth in feet above ground. *Elevation in feet (NGVD).
Approximately 475 feet downstream of confluence with Cottonwood Creek	*1,789
Approximately 600 feet upstream of confluence with unnamed tributary	*1,794
Approximately 1,100 feet downstream of confluence with Emanuel Creek	*1,798
Maps are available for inspection at the Ferry County Planning Department, 146 North Clark, Suite 7, Republic, Washington.	
Thurston County (Unincorporated Areas) (FEMA Docket No. 7258)	
Yelm Creek:	
4,300 feet upstream from the intersection of Crystal Spring and Canal Roads ...	*302
2,500 feet west of Clark Road	*302
At the junction of State Highway 507	*344
1,003 feet upstream of Bald Hill Road	*348
Maps are available for inspection at Thurston County Development Services, 2000 Lakeridge Drive, Southwest, Building 1, Olympia, Washington.	
Yelm (City), Thurston County (FEMA Docket No. 7258)	
Yelm Creek:	
Approximately 4,125 feet downstream of Crystal Springs Road	*302
Approximately 175 feet downstream of the Burlington Northern Railroad ..	*331
Approximately 2,400 feet upstream of 103rd Avenue ...	*343
Maps are available for inspection at the City of Yelm Planning Department 105 Yelm Avenue West, Yelm, Washington.	

[1] None.

(Catalog of Federal Domestic Assistance No. 83.100, ''Flood Insurance'')

Dated: February 6, 1999.

Michael J. Armstrong,

Associate Director for Mitigation.

[FR Doc. 99–3533 Filed 2–11–99; 8:45 am]

BILLING CODE 6718–04–P

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 73

[CS Docket No. 98–201; FCC 99–14]

Satellite Delivery of Broadcast Network Signals under the Satellite Home Viewer Act

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: In response to petitions for rulemaking filed by the National Rural Telecommunications Cooperative (NRTC) and EchoStar Communications Corporation (Echostar) in connection with the Satellite Home Viewer Act, this Report and Order amends the Commission's rules to provide a procedure for measuring television signal strength at an individual location, such as a household. The Report and Order also endorses a model to predict signal intensity at individual households. The intended effect is to better identify those households that are ''unserved,'' for purposes of the SHVA.

EFFECTIVE DATE: February 12, 1999.

FOR FURTHER INFORMATION CONTACT: Donnie Fowler at (202) 418–7200 or via internet at dfowler@fcc.gov.

SUPPLEMENTARY INFORMATION: This is a synopsis of the Commission's Report and Order, FCC 99–14, CS Docket No. 98–201, adopted February 1, 1999 and released February 2, 1999. The full text of this Notice is available for inspection and copying during normal business hours in the FCC Reference Center, 445 12th Street, SW, Washington, DC 20554, or may be purchased from the Commission's copy contractor, International Transcription Service (''ITS''), (202) 857–3800, 1231 20th Street, NW, Washington, DC 20036, or may be reviewed via internet at <http://www.fcc.gov/Bureaus/Cable/News__Releases/1999/nrcb8022.html>. For copies in alternative formats, such as braille, audio cassette or large print, please contact Sheila Ray at ITS.

Paperwork Reduction Act

The requirements adopted in this Report and Order have been analyzed with respect to the Paperwork Reduction Act of 1995 (the ''1995 Act'') and found to impose new or modified information collection requirements on the public. The Commission has requested Office of Management and Budget (''OMB'') approval, under the emergency processing provisions of the 1995 Act (5 CFR 1320.13), of the information collection requirements contained in this Report and Order.

OMB Approval Number: 3060–0863.

Title: Satellite Delivery of Network Signals to Unserved Households for Purposes of the Satellite Home Viewer Act.

Type of Review: Revision of a currently approved collection.

Respondents: Business and other for-profit entities.

Annual Number of Respondents: 848.

Estimated Time Per Response: 30 minutes.

Frequency of Response: On occasion.

Total Annual Burden to Respondents: 125,000 hours.

Total Annual Cost to Respondents: $12,500.

Needs and Uses: The information gathered as part of Grade B signal strength tests will be used to indicate whether consumers are ''unserved'' by over-the-air network signals. The written records of test results will be made after testing and predicting the strength of a television station's signal. Parties impacted by the test results will be consumers; parties using the written test results will primarily be the satellite and broadcasting industries.

Title: Satellite Delivery of Network Signals to Unserved Households for Purposes of the Satellite Home Viewer Act.

Synopsis of Report and Order

Introductory Background

1. In this proceeding, we address an issue involving the television broadcast industry, the direct-to-home satellite industry, and consumers who subscribe to satellite carriers for their video programming. Over nine million households subscribe to satellite carriers, and roughly one third of these subscribers pay an additional subscription fee to receive broadcast network programming via satellite. Broadcasters contend that many of these broadcast network subscribers, as well as many potential subscribers, are not eligible under the 1988 Satellite Home Viewer Act (''SHVA'') to receive such programming using their home satellite service.

2. The broadcast television industry has the right, through the Copyright Act and private contracts, to control the distribution of the national and local programming that it transmits. In 1988, Congress adopted the SHVA as an amendment to the Copyright Act in order to protect the broadcasters' interests while simultaneously enabling satellite carriers to provide broadcast programming to those satellite subscribers who are unable to obtain broadcast network programming over-the-air. (17 U.S.C. 119 (1998), the SHVA

is part of a copyright law.) Congress considered these subscribers to be ''unserved'' by their local stations (to be considered ''unserved,'' the SHVA also requires that the household not have subscribed to cable in the previous 90 days). A Miami federal district court has recently acted to enforce this law by issuing two nationwide injunctions requiring the satellite carriers to terminate network service to as many as 1 million subscribers by February 28, 1999 and to more than 1 million additional subscribers by April 30, 1999. Many satellite subscribers have contacted the Commission to express concern over this imminent termination of service and have asked for the Commission's assistance to reduce the impact of the court's injunctions. The broadcast industry has urged the Commission not to take any action that will undermine the court's decision or harm broadcasters and, consequently, the viewers who rely on local broadcast stations. Two satellite carriers, the National Rural Telecommunications Cooperative (''NRTC'') and EchoStar Communications Corporation (''EchoStar''), filed petitions for rulemaking with the Commission asking us to amend our rules to help those subscribers who face termination.

3. In response, the Commission issued a Notice of Proposed Rule Making, Satellite Delivery of Network Signals to Unserved Households for Purposes of the Satellite Home Viewer Act, (''NPRM'') on November 17, 1998 (63 FR 67439, December 17, 1998), and announced that it expected to complete this rulemaking before the first wave of satellite subscribers have their network programming via satellite terminated at the end of February, 1999. As stated in the NPRM, the Commission's statutory authority under the SHVA is limited so that, regardless of action by the Commission, most of the satellite subscribers affected by the injunction are likely to have their satellite-delivered network programming discontinued. The court has determined that the vast majority of subscribers are not within the scope of Congress' copyright authorization because they are able to receive broadcast network programming over-the-air.

4. The Commission's role in this matter originates in a provision in the SHVA that links the definition of ''unserved households'' to a Commission definition of television signal strength known as ''Grade B intensity.'' The critical question under the SHVA and in this rulemaking is whether a household is able to receive a television signal of this strength.

5. The goal of this rulemaking is to identify more accurately, and consistent with the SHVA, those consumers who can and cannot receive their local broadcast network stations over-the-air. The Commission's actions advance this goal, but cannot satisfy every consumer who wants to receive broadcast network stations via satellite. Congress has granted the Commission only limited authority to act in this area. We have also sought to promote competition among multichannel video programming distributors, to the extent possible under the SHVA, and we have considered the role that local broadcasters play in their communities. Increasing competition among MVPDs was not an express goal of Congress in enacting the SHVA however. Several members of Congress, however, have recently suggested that changes to the statute could help open markets and provide consumers with more choices. Through hundreds of e-mails, letters, and phone calls, consumers have expressed frustration at being unable to choose a satellite service that provides broadcast network stations, although it is unclear how many of these consumers do receive terrestrially delivered broadcast signals of Grade B intensity.

6. To give the satellite industry, broadcast industry, and consumers a uniform method for determining the signal strength a household actually receives, the Commission in this Order adopts a method for measuring Grade B signal strength at individual households. The measurement rule takes effect upon publication in the **Federal Register**. The expedited effective date for this rule is warranted in light of the permanent injunction scheduled to take effect on February 28, 1999, which will affect 700,000–1,000,000 satellite subscribers. To the extent parties may seek the court's permission to use the new measurement methodology promulgated in this Order, as well as the prediction model endorsed by the Commission, the expedited effective date will facilitate the court's review of such requests. The Commission has requested permission from the Office of Management and Budget for expedited clearance for the Paperwork Reduction Act. We expect that this rule will provide the uniformity and certainty needed to eliminate many of the controversies that currently surround compliance with the SHVA. We believe, consistent with what commenters on all sides of this issue have requested, that the measurement methodology is practical, reasonably accurate, and relatively inexpensive.

7. In this Order the Commission also endorses a computer model to predict whether a household is likely to be able to receive a signal of the required strength. Although the Commission does not have the authority to mandate use of this model in connection with the SHVA, this recommendation gives the broadcast and satellite industries, as well as consumers, a means of determining eligibility for satellite-delivered network service that minimizes the need for on-site testing. The predictive model is familiar to the broadcast and satellite industries and is publicly available for use at this time. It should provide a degree of dependability and assurance that will alleviate some of the confusion and cost that has contributed to consumer dissatisfaction.

8. This Order, therefore, addresses three major issues. First, we consider whether we can and should change the definition of a signal of Grade B intensity. We decline to do so in this proceeding. Second, we consider and adopt a standardized method for measuring the strength of television signals at individual locations. Third, we consider endorsing a method for predicting the strength of television signals at individual locations that could be used in place of actually taking measurements. The prediction method that we endorse could be used to create an accurate evidentiary presumption of acceptable television service or lack of service. Importantly, the effect of this Order is 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. Rather, we have developed measurement and prediction tools that more accurately identify those households that are truly unserved within the meaning of the SHVA.

A. The Satellite Home Viewer Act

9. In the SHVA, Congress created a limited exception to the exclusive programming copyrights enjoyed by television networks and their affiliates because it recognized that some households were unable to receive network station signals directly over the air. The exception is a narrow compulsory copyright license (17 U.S.C. 119(d)(2)) that direct-to-home (DTH) satellite video carriers may use to provide certain television network stations to subscribers who live in ''unserved households.'' The SHVA was originally adopted in 1988 to cover satellite service via C-Band before ''direct broadcast satellite'' (''DBS'') existed. Congress amended the SHVA in 1994 when DBS was just reaching the market. After DBS was introduced in

mid-1994, it gained 6.5 million subscribers in the first 32 months. Currently, direct-to-home (''DTH'') satellite services, which include C-Band, DBS, and medium power Ku-band services, have more than nine million subscribers. The success of the DBS industry benefits consumers by providing greater choice among multi-channel video programming distributors (''MVPD''). However, as the number of satellite subscribers has increased, so has the tension that is inherent in the SHVA regarding those who are eligible to receive network programming via satellite and those who are not.

10. The term ''unserved household,'' as relevant here, is defined by SHVA as a household that: ''cannot receive, through the use of a conventional outdoor rooftop receiving antenna, an over-the-air signal of grade B intensity (as defined by the Federal Communications Commission) of a primary network station affiliated with that network.'' (17 USC 119(d)(10(A)). The SHVA is enforced through private actions filed in the federal court system. In such actions, the satellite carrier has the burden of proving ''that its secondary transmission of a primary transmission by a network station is for private home viewing to an unserved household.''

11. The Satellite Home Viewer Act limits the compulsory copyright license to ''unserved'' households, reflecting Congress'' intent to protect the role of local broadcasters in providing free, over-the-air television to American families. Localism has been a central principle of broadcast policy since the Radio Act of 1927. Broadcasters must serve their communities by providing programming (e.g., news, weather, and public affairs) to meet the needs and interests of those communities. Congress was concerned that without some copyright protection, the economic viability of those local stations affiliated with national networks might be jeopardized, thus undermining one source of local information.

12. The SHVA has two purposes: (1) to make broadcast network programming via satellite available to those households beyond the reach of a local affiliate, and (2) to protect the integrity of the copyrights that make possible the existing free, over-the-air national network/local affiliate broadcast distribution system. This Order addresses, within the boundaries of the Commission's authority, the conflicts that arise between these dual purposes.

Grade B Contours and Signal Intensity

13. The Grade B signal intensity standard, which is the key to the SHVA's definition of ''unserved households'' in Section 119(d)(10)(A), is a Commission-defined measure of the strength of a given television station's over-the-air signal. This standard was developed in the early days of television as a key component of the Commission's channel allotment protocol. Generally, if a household receives a television signal of Grade B intensity, it should receive an acceptable television picture at least 90% of the time. More specifically, Grade B represents a field strength that is strong enough, in the absence of man-made noise or interference from other stations, to provide a television picture that the median observer would classify as ''acceptable'' using a receiving installation (antenna, transmission line, and receiver) typical of outlying or near-fringe areas.

14. The Grade B values (which represent the required field strength in dB above one micro-volt per meter) are defined for each over-the-air television channel in Section 73.683 of the Commission's rules. There are also Grade A and ''city grade'' field strength values, which represent stronger signals. Because they are stronger, Grade A contour and city grade service are generally found closer to a station's transmitter (47 C.F.R. 73.683 and 73.685):

	Grade B dBu	Grade A dBu	City Grade dBu
Channels 2–6	47	68	74
Channels 7–13	56	71	77
Channels 14–69	64	74	80

The Grade B values assume that the antenna used to receive the signal has a 6 db gain for channels 2–13 and an antenna with a 13 db gain for channels 14–83. Section 73.684 contains the Commission's ''traditional'' methodology for predicting station service coverage, and Section 73.686 describes a procedure for making field strength measurements to determine the likelihood that a signal is available in an area or community. Section 73.622(e) describes different values for evaluating field strength in connection with digital television (DTV) service.

15. The Commission developed the Grade B standard in the 1950s and has used it in a variety of contexts, many of which were not envisioned at the time it was created. The primary purpose for creating the Grade B standard was to estimate the extent of a television station's coverage area. Grade B service areas, or contours, are still used for this purpose and predict that the best 50% of locations along the outer edge of a contour should get an acceptable television picture at least 90% of the time. When a particular location receives a signal of Grade B intensity 50% of the time, it is, in fact, receiving a signal strong enough to provide an acceptable television picture 90% of the time. The use of the Grade B construct for determining whether an individual household is unserved under the SHVA was not at issue when the standard was created, although it is the primary issue in this rulemaking and related lawsuits.

The PrimeTime 24 Lawsuits

16. The most far-reaching lawsuit between satellite carriers and broadcasters over the unserved households definition is in the United States District Court for the Southern District of Florida. In that litigation, CBS, Inc. et al. v. PrimeTime 24 Joint Venture (9 F.Supp.2d 1333 (S.D. FL., May 13, 1998)), the plaintiff television networks (CBS and Fox) and several affiliates brought a copyright infringement action against PrimeTime 24, a satellite carrier, for retransmitting distant network programming to satellite dish owners in violation of the SHVA. The plaintiffs alleged that PrimeTime 24 distributed the signals of distant network-affiliated television broadcast stations by satellite to subscribers that were not ''unserved households'' within the meaning of the SHVA.

17. Finding that PrimeTime 24 willfully violated the SHVA, the court issued a preliminary and, later, a permanent injunction ordering PrimeTime 24 not to deliver CBS or Fox television network programming to any customer that does not live in an unserved household. The court concluded that ''the great majority'' of

PrimeTime 24's subscribers are capable of receiving at least a signal of Grade B intensity using a conventional outdoor rooftop antenna. According to the court, PrimeTime 24 has ''simply ignored'' the objective Grade B signal standard in signing up ''unserved'' customers and had failed to meet its statutory burden of proving that its subscribers were eligible for network service via satellite.

18. The court outlined methods for predicting and measuring signal intensity for identifying unserved households and required PrimeTime 24 to use them. Specifically, PrimeTime 24 was enjoined from providing CBS or Fox network programming ''to any customer within an area shown on Longley-Rice propagation maps, created using Longley-Rice Version 1.2.2 in the manner specified by the Federal Communications Commission (''FCC'') in OET Bulletin No. 69, as receiving a signal of at least grade B intensity of a CBS or Fox primary network station, without first either (i) obtaining the written consent of the affected station(s) * * * or (ii) providing the affected station(s) with copies of signal intensity tests showing that the household cannot receive an over-the-air signal of grade B intensity as defined by the FCC from any station of the relevant network.'' (See CBS et al. v. Primetime 24, Permanent Injunction, slip op. at 2.) The court ruled that the signal intensity test requires at least 15 days advance notice to each affected station and outlined a specific procedure that the tester must follow at each household within a station's area, as predicted by the Longley-Rice map. The court also imposed the SHVA's ''loser pays'' regime on the testing procedure, whereby the loser to a challenge of a subscriber's eligibility pays the costs of the test.

19. The preliminary injunction is scheduled to take effect on February 28, 1999, and the permanent injunction is scheduled for April 30, 1999. The preliminary injunction could result in the termination of network signals to the estimated 700,000 to one million subscribers nationwide who subscribed to PrimeTime 24 after the networks filed their lawsuit on March 11, 1997. The permanent injunction, which applies to the PrimeTime 24 customers who subscribed before March 11, 1997, could affect an additional 1.5 million subscribers nationwide. The total number of PrimeTime 24 subscribers affected could therefore reach 2.2–2.5 million.

20. In a similar lawsuit, a Raleigh, North Carolina, federal district court ruled against PrimeTime 24 and in favor of a local ABC affiliate (ABC, Inc. v. PrimeTime 24, 17 F.Supp.2d 467 (M.D. N.C., July 16, 1998)). The court issued a permanent injunction on August 19, 1998 that applies to all subscribers living within the affiliate's predicted Grade B contour of the affiliate's transmitting tower. The court found that the SHVA defines unserved households and Grade B using objective standards, and stated, ''PrimeTime's screening procedures have systematically substituted a subjective inquiry into the quality of the picture on a potential subscriber's television set for any signal strength showing. PrimeTime has ignored or turned a blind eye to the necessity of objective signal strength testing and thus willfully or repeatedly provides network programming to subscribers under SHVA.'' (See ABC, Inc. v. PrimeTime 24, 1998 WL 544297, *2.) The court found a ''pattern and practice of willful or repeated copyright infringement'' and therefore enjoined transmission within the ''locality or region'' as is provided for in the enforcement provisions of the statute. PrimeTime 24 has provided network services to as many as 35,000 households in the ABC affiliate's Raleigh/Durham market. At the time of the court's decision, PrimeTime 24 continued to serve more than 9,000 subscribers within the affiliate's Grade B contour.

21. Several other lawsuits have been filed by both broadcasters and satellite carriers. In Amarillo, Texas, an NBC affiliate has sued PrimeTime 24 in federal district court in a case that still awaits judgment. In Denver, Colorado, EchoStar filed suit against CBS, Fox, NBC, and ABC on October 19, 1998 in federal district court. EchoStar has asked the court to find that the Commission has never endorsed a particular model for predicting or measuring Grade B intensity for the purposes of the SHVA. Echostar wants the court to declare that a viewer's own opinion of the quality of his or her signal is adequate for determining whether that home is unserved under the SHVA, and asks the court to endorse a predictive model for identifying served households such that 95% of households receive a Grade B signal 95% of the time with a 50% degree of confidence. The networks followed EchoStar's action by countersuing in Miami. No decisions have been issued in either EchoStar case.

The NRTC and EchoStar Petitions

22. In its petition for rulemaking, the NRTC, a distributor of DirecTV DBS service, has asked the Commission to adopt, exclusively for purposes of interpreting the SHVA, a new definition of ''unserved'' that includes all households located outside a Grade B contour encompassing a geographic area in which 100 percent of the population receives over-the-air coverage by network affiliates 100 percent of the time using readily available, affordable receiving equipment. EchoStar, which is a provider of DBS service, urges the Commission in its petition to adopt a prediction model to locate unserved households. EchoStar endorses a model that predicts an area where 99 percent of households receive a Grade B signal 99 percent of the time with a 99 percent confidence level. EchoStar also urges adoption of a methodology for measuring signal strength that more closely reflects the signal that a viewer's television set actually receives. It argues that a number of flaws exist in the current measurement and prediction processes when they are used for purposes of the SHVA. After receiving comment on these Petitions, the Commission issued the NPRM in this proceeding.

Analysis

23. The SHVA's concern with adequate television signal intensity at individual households, rather than across broad areas, is central to this rulemaking. This important distinction leads us to consider measurement and prediction methodologies that have a different purpose from the methodologies for determining Grade B service areas. The definition of an unserved household as ''a household that cannot receive * * * a signal of Grade B intensity'' most logically refers to television signal reception at an individual household and reflects a concern for individual viewers that is not at issue in most applications of the Grade B standard. Moreover, when Congress created the limited compulsory license, it clearly intended to help individual consumers who are unable to receive an acceptable, over-the-air television picture. In a report accompanying the 1994 reauthorization of the SHVA, the House stated that ''households that cannot receive over-the-air broadcasts or cable can be supplied with television programming via home satellite dishes.'' The Senate, in its 1994 report, stated that the restriction on satellite delivery of network signals refers to ''subscribers [who] are unable to receive the signal of a particular network.'' And when originally adopted in 1988, the House stated, ''The distribution of network signals is restricted to unserved households; that is, those that are unable to receive an adequate over-the-air signal.''

The Commission's Role and Responsibility Under the SHVA

24. The NPRM raised issues regarding the scope of the Commission's authority to conduct this rulemaking and involve itself in matters related to the SHVA. The comments reflect a wide range of opinion regarding the Commission's authority to act.

25. Questions concerning the Commission's role and responsibility with respect to this matter arise on two levels. Several commenters assert the Commission should elaborate on the objectives of the SHVA or change its administration to help satellite carriers become more competitive with cable television systems. While increased competition among service providers is an important and longstanding goal of the Commission, we cannot make it a primary goal of this proceeding. The SHVA is a copyright law designed to balance owners' and users' rights. It is not a communications law with an express purpose of increasing competition among MVPDs. The SHVA is primarily administered by the Copyright Office and enforced by the federal courts, and contains the basic Congressional decisions regarding how and to whom satellite distributed network broadcast signals are made available. We may not change the policy behind the law, nor may we go beyond two terms Congress used in defining ''unserved households.'' First, Congress explicitly incorporated the Grade B standard into the definition, so only Congress may consider the use of another measure. Second, the law demands that a consumer be unable to receive a television signal ''using a conventional outdoor rooftop antenna'' before qualifying as unserved. We may not change that requirement, nor may consumers ignore it.

26. In addition, there are questions about the Commission's specific authority to interpret and amend the Grade B standard, whether for all purposes or only for the SHVA. We continue to believe, as the NPRM preliminarily concluded, that the Commission has the authority to change the definition of a signal of Grade B intensity as a general matter.

27. We conclude that Congress did not freeze the Grade B rules in place when it enacted the SHVA. Congress gave the Commission a continuing role when it defined ''unserved households'' as those that cannot receive ''an over-the-air signal of Grade B intensity (as defined by the Commission).'' When it incorporated Grade B into the definition of ''unserved households,'' Congress did not incorporate specific values, such as the dBu levels the Commission uses in section 73.683. Moreover, nothing in the SHVA itself or its legislative history indicates that Congress intended to freeze the value of Grade B when it passed the law in 1988 or when it renewed it in 1994. When Congress has chosen to freeze Commission regulations for other purposes, it has explicitly done so. For example, Congress expressly referenced rules ''in effect on April 15, 1976'' when it froze in place regulations relating to copyright compulsory licensing. No such reference exists here. Case law also supports the proposition that the meaning of ''signal of Grade B intensity'' was not frozen when the SHVA was enacted. For example, the Supreme Court has held that ''[i]t is of course not true that whenever Congress enacts legislation using a word that has a given administrative interpretation it means to freeze that interpretation in place.'' (Lukhard v. Reed, 481 U.S. 368, 379 (1989)). The Supreme Court reasoned that if legislation so constrained an agency's ability to conduct rulemaking under its enabling legislation, then ''the result would be to read into the grant of express administrative powers an implied condition that they were not to be exercised unless, in effect, the Congress had consented. We do not believe that such impairment of the administrative process is consistent with the statutory scheme which the Congress has designed.'' (Helvering v. Wilshire, 308 U.S. 90, 101 (1939).)

28. Although we conclude that the Commission has the authority to modify Grade B intensity values for all purposes, we believe that it is significant that Congress tied the SHVA compulsory license to the Commission's Grade B standard, which was and is used for a multiplicity of purposes. We think Congress' use of the widely used Grade B standard in the SHVA indicates that we should not adopt a separate Grade B intensity standard for purposes of the SHVA alone. Moreover, additional considerations also lead us to conclude that it would be inadvisable to adopt a separate Grade B standard for SHVA purposes. As discussed below, a second set of signal strength values, also called ''Grade B signal intensity,'' is likely to create confusion for the broadcast industry and others affected by Commission regulations.

Defining a Signal of Grade B Intensity

29. The SHVA uses an objective standard to determine whether a household is ''unserved'' and thus permitted to receive broadcast network signals via satellite. SHVA's criterion is whether the household can receive ''through the use of a conventional outdoor rooftop receiving antenna, an over-the-air signal [of a particular network station] of grade B intensity (as defined by the Federal Communications Commission).'' By incorporating the objective Grade B signal intensity standard into the SHVA, Congress declined to account for viewers' individual subjective opinions about the quality of their television reception, as well as the adequacy of the household's existing antenna. Use of the Grade B signal intensity standard in the SHVA both invites and limits the Commission's involvement with this statute. The reference to Grade B signal intensity ''as defined by the Federal Communications Commission'' brings the Commission's rules and our interpretations of our rules into play. But, by using Grade B signal intensity to define unserved, the SHVA also limits what the Commission can do to address any drawbacks to this standard. The Grade B signal intensity values were used in the SHVA as an available objective benchmark for determining whether a household is ''served.'' While those values may have proven difficult to apply in practice as the sole standard for determining whether a household is unserved, this is the standard in the statute and must be employed here when distinguishing served and unserved households.

30. The Commission's rules define values for Grade B signal intensity in connection with authorizing television stations and the stations' service areas or ''contours.'' It was not, however, created for evaluating picture quality in individual households. Rather, the system was developed to address the very different and difficult problem of creating station service areas and to determine the proper allocation of television channels in the early days of television. (See Television Broadcast Service, Third Notice of Further Proposed Rule Making, 16 FR 3072 (1951) and Sixth Report and Order, 41 FCC 148 (1952).) The Commission created two ''grades of service.'' The specifications for ''Grade A'' and ''Grade B'' service were established so that ''a quality acceptable to the median observer is expected to be available for at least 90 percent of the time at the best 70 percent of receiver locations at the outer limits of [Grade A] service. In the case of Grade B service the figures are 90 percent of the time and 50 percent of the locations.'' The service areas were established to effectuate the Commission's stated twofold purpose ''to provide television service, as far as possible, to all people of the United

States and to provide a fair, efficient and equitable distribution of television broadcast stations to the several states and communities.'' The signal intensity values (also referred to as ''field strengths'') were determined based on certain assumptions, which differ for the Grade A service area, which is urban and suburban, and the Grade B service area, which is rural. For example, the type of receiving antenna assumed for Grade A service is smaller than the receiving antenna assumed for Grade B, and the terrain assumed for Grade A differs from that assumed for B.

31. The ''acceptable quality'' contemplated in these early Commission Orders was based on quality levels developed by the Television Allocation Study Organization (''TASO''). TASO used data from actual viewers. These viewers were shown television pictures and were asked to rate them on a scale from 1 (excellent) to 6 (unusable). Level 3, on which the Grade B service level was based, was defined as ''(Passable)—The picture is of acceptable quality. Interference is not objectionable.'' Based on the results of viewer ratings, a specific signal (or carrier) to noise ratio at the television receiver was found to be associated with the grade 3 level—that is, a level of signal that the median observer identified as acceptable. In association with this level of acceptable quality, and with the primary goal of creating service areas with minimal interference and maximum coverage, the Commission developed assumptions, generally described as planning factors, regarding the environment in which viewing would take place. Assumptions were made as to the quality of the television receiver used focusing on the amount of electrical noise created in the tuner, the signal losses that take place in the wire connection from the receiver to the antenna, the nature (gain, directionality, and height) of the antenna to be used, and the amount of electrical noise in the environment that the signal would have to overcome to be viewable. Because radio signal propagation varies over time, certain statistical assumptions were built into the definitions used, including the assumption that the signal in question would be of acceptable quality to the median observer at least 90 percent of the time.

32. The comments submitted by the satellite industry and consumers urge vigorously that for many people the existing Grade B signal intensity values do not equate to truly acceptable picture quality. The first attack on the existing standards has to do with the possibility that viewers' expectations as to signal quality have increased over time. If this were the case, a stronger signal would be needed to produce a picture that would now be regarded as acceptable. Although there is some speculation in the comments that viewer expectations have indeed changed, no current study documents this or replicates the initial TASO study that correlated viewer judgments of television picture quality with specific signal levels. In response to contentions that the current values for Grade B signal intensity are erroneous because they were based on viewer evaluations of monochrome images, we note that the planning factors established in April 1952 (Doc. 8736) were revisited in 1959 by TASO, which was established in response to a Commission request to study the technical principles which should be applied in television channel allocations. TASO studied these issues for two years, used 21 inch monochrome and color television sets, and essentially confirmed the same carrier to noise ratio as was established earlier. Research on subjective evaluations of television pictures may show that viewers have raised their level of expected performance, but the results of any subjective testing are dependent on the testing methodology and conditions. Many of the recent tests were conducted by cable television sponsors using viewers who may have expected to pay for these better pictures.

33. In addition to suggesting that viewer expectations are different, it is also argued that radio frequency noise in outlying areas has increased so that rural areas are today more akin to urban areas of the 1950's, that the typical household now has multiple television receivers necessitating antenna lead splitters that increase line loss, and that antenna gain figures (particularly in the UHF frequencies) should be re-evaluated. We believe that the technology of receivers and antennas has kept pace with changing consumer expectations and with increased noise. Thus, it is necessary to consider the totality of changes that have taken place over the past fifty years. In the 1950s low cost electronic technology at television frequencies was hard to find. Therefore, the planning factors had to be set low enough to ensure that television sets could be affordable by the public. The noise figure used in the planning factors serves as a good example. The noise figure is a measure of the amount of electronic noise produced by the components in the television. This must be added to the signal budget just like man-made noise and must be overcome to produce a passable picture. In the 1950s, the television tuner technology consisted of low cost noisy tubes and attached components. Today, this technology has progressed to modern solid state components that produce lower set noise. Thus, although many developments have taken place since the standards were first adopted, it is not clear that increases in the values involved are warranted.

34. We conclude that the record in this proceeding provides an inadequate basis for changing the Grade B signal intensity values either generally or for purposes of the SHVA specifically. First, the evidence in the record suggests that some of the environmental and technical changes that have taken place trend in opposite directions and tend to cancel each other out. The Commission has examined the adequacy of the Grade B standard on several occasions since it was adopted in the 1950s, and in each case has decided not to make changes.

35. Second, we do not believe that we have the authority to create a special Grade B solely for the purpose of the SHVA, nor do we believe this is an advisable approach to take. Establishing another set of values, also called Grade B, is likely to create confusion for the broadcast industry. It would risk harm to the network/affiliate relationship by creating an implication that another, different Grade B definition might be more suitable for other situations that are not contemplated in this proceeding. In addition, raising the values for Grade B such that they would equal or exceed the Grade A values may require reevaluation of the Grade A values, as well. The significant and widespread ramifications of changing these definitions demand that we have a more complete and conclusive record, and more time to evaluate the record, than we have in this rulemaking.

36. Finally, some commenters raise concerns regarding the ability of the existing standard to address interference and other signal impairments. Although we are not changing the Grade B values, it is important to note that as a matter of general policy we agree that the Grade B standard incorporated by Congress into the SHVA implicitly includes within the definition a signal that is, in fact, viewable and not one so impaired by interference as to be degraded below the ''acceptable to the median'' observer level. While such problems can be identified by qualified engineering personnel through actual observations, this is not a matter, as satellite commenters in this proceeding acknowledge, that can be resolved by simply adjusting the dBu levels involved. No readily usable mechanism

for addressing this matter through changed definitions has been identified in the comments.

Measuring Television Signal Intensity at Individual Locations

37. For the SHVA to function more effectively, a relatively low cost, accurate, and reproducible methodology for measuring the presence of a Grade B intensity signal at an individual household is especially important. Individual testing is the key mechanism under the SHVA for proving that a specific household is unserved and, therefore, eligible to receive satellite delivery of network affiliated television stations. The Commission's rules include a method for measuring signal intensity for describing a station's service area or for propagation analysis, but they have not included a method for measuring signal intensity at a discrete location, such as an individual household. The method created in this Order and included in the Commission's rules balances accuracy, affordability, and simplicity.

38. The Commission's current signal measurement method, requiring a so-called 100-foot mobile run, is inadequate for the purposes of the SHVA. The method typically involves a truck with a 30-foot antenna that takes continuous measurements as it travels a distance of 100 feet (47 CFR 73.686(b)(2)). Under Commission rules, the antenna must be rotated to the best receiving position, and engineers must record factors that might affect signal intensity, such as topography, height and type of vegetation, buildings, obstacles, and weather conditions. If overhead obstacles prevent a 100-foot run, a cluster of five measurements may be taken at locations within 200 feet of each other. Testing can cost several hundred dollars each time it is performed—an expensive proposition for a satellite company or a consumer who wants to prove that a household is unserved by over-the-air signals. When multiplied over hundreds of households in a station's service area, the cost may become prohibitive and may preclude many truly unserved consumers from receiving broadcast network service. Mitigating the costs of the procedure, without sacrificing the integrity of the testing results, is an important goal of the new signal measurement methodology.

39. In addition to the difficulties inherent in the existing measurement test, many of its assumptions do not hold in individual situations. The purpose of the procedure currently specified in the rules is not to determine the receivability of a signal at a single spot, but to determine, through measurements at a series of grid intersections over a community, the nature of service to the community. Thus, the current procedure has limited use in measuring signal intensity at individual locations. For example, many homes do not have antennas 30 feet above the ground, especially if they are one-story homes. The definition of unserved household only describes reception over a conventional outdoor rooftop receiving antenna, so requiring measurements on a 30-foot antenna may not reflect what is ''conventional'' at all locations around the country. Finally, requiring tests and a 100-foot mobile run ignores the fact that homes are stationary and that reception may vary considerably over a mobile run on a nearby street.

40. Because the SHVA is concerned with adequate television signals at individual households, it is entirely proper that the Commission, as the originator of the Grade B standard, develop an objective way to measure whether or not that standard exists at a particular location. In short, the methodology requires a tester to make at least five measurements in a cluster as close as possible to the location being tested. The median value of the measurements will be the signal intensity at the location. In deciding on which measurement methodology to adopt, we examined the following factors, discussed in detail below—the type of testing antenna and equipment, where and how many measurements should be taken, the effect of time and weather on signal strength, the height the testing antenna should be raised, the orientation of the testing antenna, and what information should be recorded. (See rule section, 47 CFR 73.686(d).)

41. Regarding the preparation for measurements, we considered the kind of testing antenna that should be used and conclude that a tuned half-wave dipole is the best choice. (A dipole is a wire or telescoping metallic antenna consisting of two straight collinear conductors of equal length separated by a small gap where the transmission line is attached. The ''rabbit ears'' on a television set are a type of dipole.) The dipole is widely available, inexpensive, and simple to use. In situations where definite readings are required, it has advantages over gain antennas that are difficult to characterize (calibrate) over a wide range of frequencies. Although dipole antennas are susceptible to interference from signals other than the one being measured, the cluster measurements that we require will mitigate those effects.

42. We considered where the signal measurements should be taken—on the roof, in the yard, as close as possible to the house, in the driveway, or at the nearest public road. We conclude that the measurements should be taken in a cluster as close as possible to a reasonable and likely spot for the receiving antenna. In doing so, we do not require testers to climb up to the roof or trespass on property where they are denied permission to enter. Although we recognize, as the satellite carriers argue, that measurements taken at the television receiver would most accurately reflect the picture that a consumer watches, such an approach would be inconsistent with the intent of the SHVA, which requires the use of an outdoor rooftop antenna. Measurements at the television receiver are inappropriate for determining the ambient signal intensity available at a household's roof.

43. We considered how many measurements are necessary and conclude that at least five measurements must be taken, each at a pre-determined spot. Multiple readings are necessary because a single reading may give misleading results. Reflections from surrounding objects could cause a reading to be either higher or lower than normal. Multiple readings will tend to mitigate these effects. The spots must be chosen before measurements are taken to prevent gaming of the results. They must be a minimum distance of three meters from each other, an appropriate spacing to enable reasonably accurate results. To help ensure the objectivity of the tests, we suggest that, if possible, the first testing point should be chosen as the center point of an imaginary square whose corners are the four other spots. The tester shall calculate and report the median of the measurements (in units of dBu) as the measurement results. For purposes of the SHVA, this median measurement will determine whether a household is unserved. If signals of more than one transmitter (e.g., more than one television station) are being tested, the tester shall use the same spots for all the measurements.

44. Regarding measurement procedure, we believe that a one-time measurement is sufficient to determine the signal intensity at individual locations. Satellite carriers and broadcasters appear to agree with this conclusion. We recognize that several measurements over time may determine even more accurately the actual signal intensity at individual locations, but we have sought to create a testing methodology that is both accurate, practical, and relatively inexpensive.

45. We require the tester to measure the field strength of the visual carrier with a calibrated instrument with a bandwidth of at least 450 kHz, but no greater than one megahertz. The tester must perform an on-site calibration of the instrument in accordance with the manufacturer's specifications. The instrument must accurately indicate the peak amplitude of the synchronizing signal. The tester must use a shielded transmission line between the testing antenna and the field strength meter. The tester must match the antenna impedance to the transmission line, and, if using an unbalanced line, employ a suitable balun. Finally, the tester must account for the transmission line loss for each frequency being measured.

46. We considered the effect that time and weather have on signal strength. Generally, neither time nor steady-state conditions of weather have an appreciable effect on broadcast television frequencies. However, in inclement weather or when major weather fronts are moving through the measurement area, some noticeable consequence may result. The tester should not take measurements at such times.

47. We considered the effect that signal interference has on the strength of the primary signal being measured. We have not found an easily reproducible, practical or cost-effective objective process for measuring interference that impairs reception. Adding expense and complication to the testing methodology would be inconsistent with our goal of creating a practical and economical measurement method. While we recognize that interference can make signals unviewable at a given location, and thus ideally issues of this nature should be reviewed as part of the standard measurement process, the only current way to include these factors is for all interested parties to undertake a common subjective evaluation at the test site and make a common judgment on the issue. In the absence of a common subjective judgment, it remains necessary to rely on the standard process that does not take this factor into account. Because common testing cannot be required and because it would add expense to the testing procedure, we believe it would be highly desirable for the parties to develop procedures to address these concerns through waivers or impartial testing personnel. This is especially desirable in those situations where interference is predicted or expected to exist. As discussed below, because all sides acknowledge that interference affects picture quality and because the Longley-Rice prediction model is capable of considering interference in its predictions, we include interference in the version of Longley-Rice that we endorse in this proceeding. In situations where interference is predicted, it is not illogical to give some precedence to the prediction involved since interference can be reliably predicted and should be confirmable by on-site observation, even if not recordable using the standard test procedure. Moreover, where local broadcasters are aware of interference, we expect they will be willing to acknowledge its effects. We believe that the intent of the SHVA will be better realized if parties consider interference when classifying households as served or unserved, and we encourage the engineering community to focus on this issue to improve objective measurement techniques.

48. We considered the height of a ''conventional outdoor rooftop antenna'' so that the tester would know how high to raise the testing antenna. There is evidence that signal intensity varies at different heights above the ground, so the height of the testing antenna could affect whether a household is deemed unserved. Because the SHVA relates to actual ambient signal intensity at individual households, we believe that the height of the individual home is significant and, therefore, relevant when dictating the height of the testing antenna. In the interest of simplicity and consistency, we do not require the tester to raise the antenna to 5 feet above the height of the roof, which would result in measurements taken at an endless variety of heights and would increase dramatically the complexity of the testing and predictive models. We also decline to require that the measurement be taken at 30 feet in all circumstances, primarily because many American homes are one-story households that do not, and would not, erect a 30-foot antenna. We conclude that the tester should raise the testing antenna 20 feet (6.1 meters) above the ground for one-story buildings and 30 feet (9.1 meters) above the ground for buildings taller than one-story. This accounts for most households in the country, while maintaining an easy-to-administer standard. For example, testers will not be required to measure the height of each individual household and they will not have to raise an unwieldy testing antenna that is higher than 30 feet. The 20 foot/30 foot rule is also consistent with at least one agreement between the broadcasters and satellite carriers regarding measuring methodology. We recognize that many households are part of multiple dwelling units (MDUs) that present special problems. We believe that where households have access to a master antenna on the MDU's roof, the test should be made there, if possible. If the MDU has no master antenna, then the test should be made at the household (outside if possible, on a balcony or patio) where the consumer might place a conventional antenna. In some instances, particularly in MDUs taller than three stories, the signal strength may be adequate inside the unit, as with ''rabbit ears'' on the television itself. If the signal intensity is stronger inside the unit, in these cases, the measurement should be taken inside, near the television and using the prescribed testing antenna. We note that MDU residents may require specialized attention due to the differences inherent in large or tall multi-unit buildings. The rulemaking record is largely directed to issues affecting individual homes and does not contain sufficient detail on the MDU issue to address every circumstance here.

49. We considered how the testing antenna should be oriented. The maximum gain of the testing antenna (over an isotropic antenna) should face the strongest signal coming from the transmitter whose signal is being tested. If more than one station's signal is being measured, the testing antenna should be oriented separately for each station. This orientation is consistent with good engineering practice, with the technique required by the Commission's signal measurement rules, and with the PrimeStar/Netlink Agreement on determining eligible households. It is also consistent with the Copyright Act, which defines an unserved household in relation to an individual television station rather than to all network affiliates in a market. Section 119(d)(10) defines unserved household ''with respect to a particular television network'' and states that such a household must be unable to receive the signal of ''a primary network station affiliated with that network.'' Based on this distinction, we believe that signal testers should focus on individual stations. Because one of the primary purposes of this Order is to provide a practical and reliable measurement methodology, we include in the testing procedure the proper orientation, which is essential to ensure the validity and integrity of the signal intensity test.

50. Finally, we considered how to ensure the integrity of the signal tests simply and with as little burden as possible. The tester shall make and maintain a written record of the measurements that includes several items—(i) a list of calibrated equipment

used in the field strength survey, which for each instrument, specifies the manufacturer, type, serial number and rated accuracy, and the date of the most recent calibration by the manufacturer or by a laboratory; (ii) a detailed description of the calibration of the measuring equipment, including field strength meters, measuring antenna, and connecting cable; (iii) for each spot at the measuring site, all factors which may affect the recorded field, such as topography, height and types of vegetation, buildings, obstacles, weather, and other local features; (iv) a description of where the cluster measurements were made; (v) time and date of the measurements and signature of the person making the measurements; (vi) for each channel being measured, a list of the measured value of field strength (in units of dBu and after adjustment for line loss and antenna factor) of the five readings made during the cluster measurement process, with the median value highlighted. We note that slight, unintentional departures from these written procedures will not invalidate a test if there is no basis to believe they affected the outcome.

Predicting Television Signal Intensity at Individual Locations

51. Although the SHVA appears to require actual signal measurements when determining whether households are unserved, broadcasters and satellite carriers often use a predictive model to avoid the costs and difficulties associated with such on-site measurements. However, they do not always agree on which model is most appropriate. Even when parties use the same model, they often disagree on the factors that are considered in that model. For example, different predictive models may or may not account for the effects on signal strength of receiving antenna height, vegetation, ground clutter, buildings, signal interference, or multipathing. Additionally, predictive models may account differently for variability in signal strength over time and location, and may predict signal strength with varying levels of confidence. Also, values for these parameters may be varied within some predictive models.

Usefulness of Predictive Models

52. In the NPRM, we asked whether we could mandate a model for SHVA purposes or merely endorse one. We conclude that predictive models can be effective and helpful proxies for individual household measurements and that we have the authority to develop and endorse a model for making predictions of signal strength at individual locations. The Commission has developed and used predictive models for determining signal intensity in other contexts (e.g., determination of stations' DTV service areas). Two prominent examples are the newer Longley-Rice models and the procedure set forth in Section 73.684 of our Rules for determining traditional Grade B contours using the radio propagation curves for broadcast television set forth in Section 73.699. We believe our position as the originator of the Grade B criterion qualifies us to determine the effectiveness and accuracy of predictive models that relate to it.

53. The difference in taking actual measurements at individual households and using predictive models is significant, because measurement requires time, money, and other resources that often outweigh the benefits. For example, it may cost more for a satellite company to take a measurement than it can recover through subscriber and advertising fees. To avoid these costs, satellite providers may have refused or terminated service to consumers who are actually unserved. Additionally, satellite providers, broadcasters, and consumers have often turned to predictive models that erroneously permit some served households to receive satellite network service, or, conversely, prevent some unserved households from being eligible to receive network stations via satellite. When truly unserved households are deemed ineligible for broadcast network service via satellite, consumers are hurt and the SHVA's intent is thwarted. Likewise, when served households are deemed eligible for satellite-delivered broadcast network service, network affiliates are harmed and the SHVA's intent is also thwarted. We believe the Commission's endorsement of a prediction model will address some of the problems that consumers, as well as the broadcast and satellite industries, encounter when following the SHVA. We expect our endorsement to reduce conflicts regarding which model satisfactorily predicts a household's true status as served or unserved, and we hope that a single model makes it easy for consumers to determine their eligibility for satellite-delivered broadcast network service at the time they subscribe to a DTH satellite service (at the point of sale).

54. We recognize that we speak only as the expert agency on the Grade B construct, not as the primary enforcer of the SHVA. That role belongs to the courts. We also acknowledge that we cannot change satellite carriers' burden under the SHVA of proving that a household is unserved, and use of the predictive model we endorse is discretionary with the parties. While our predictive model need not replace actual measurement, it could serve as a presumption of service or lack of service for purposes of the SHVA. A presumption should make administration of the unserved household rule easier and more cost-effective for both consumers and the industries. Broadcasters and satellite providers should be able to rely on a Commission-endorsed model when deciding whether individual consumers are presumed to be eligible to receive satellite-delivered network signals. Moreover, we recommend that courts accept the model's predictions as sufficient to show that a satellite service provider has carried its statutory burden of showing that a household is unserved. We believe that such an approach is consistent with the Miami federal court's use of one variation of the Commission's Longley-Rice predictive methodology in its injunctions. (CBS v. PrimeTime 24, Final Ruling, slip op. at 49 and Permanent Injunction, slip op., at 2.) Finally, we recommend that the rebuttable presumptions created by our model will be combined with in-court and out-of-court ''loser pays'' mechanisms to help the SHVA operate more smoothly. Such a loser pays scheme would require the loser of any challenge to a predictive model's presumption to pay the costs of an on-site test following the challenge.

Inadequacy of the Traditional Grade B Contour Methodology

55. In the NPRM, we sought comment on the application of existing predictive models in the SHVA context, including our ''traditional'' Grade B contour methodology and the Longley-Rice predictive model. We tentatively concluded that the Commission's traditional predictive methodology for determining a Grade B contour is inappropriate for predicting signal strength at individual locations. Our rules state that this methodology is for three purposes only: (1) estimation of coverage resulting from the selection of a particular transmitter site, (2) problems of coverage related to 47 CFR 73.3555 (ownership restrictions), and (3) determination of compliance with section 73.685(a) concerning minimum field strength over the principal community. The traditional methodology predicts signal strength on the basis of average terrain elevation along radial lines extending only ten miles from a television station's transmitter. The traditional methodology does not accurately reflect

all the topographic differences in a station's transmission area, and explicitly does not account for interference from other signals. These omissions make it an imperfect methodology for predicting whether an individual household can receive an adequate signal.

Longley-Rice Point-to-Point Model for Digital Television

56. We noted in the NPRM that the Commission recently adopted, in the digital television (DTV) proceeding, rules for analyzing TV service areas using a point-to-point prediction method based on version 1.2.2 of the Longley-Rice propagation model. (See 47 CFR 73.622(e) and Advanced Television Systems: Sixth Report and Order (''DTV Sixth Report and Order''), 12 FCC Rcd 14588, 14672–76.) The Longley-Rice model used for analysis of DTV and analog TV service in the DTV proceeding is described in ''Longley-Rice Methodology for Evaluating TV Coverage and Interference,'' OET Bulletin 69, Federal Communications Commission (July 2, 1997) <http://www.fcc.gov/oet/info/documents/bulletins/#69>. Longley-Rice is the Commission's designated methodology for determining where service is provided by a DTV station. We proposed that this variation of Longley-Rice be used to determine Grade B service at individual households. The Longley-Rice propagation model is the most widely-used private means of predicting the existence of a signal of Grade B intensity for SHVA purposes. Although it is similar to the traditional method for determining a Grade B contour, Longley-Rice improves the traditional model by adjusting the predictions for changes in terrain (e.g., hills and valleys between the transmitter and the house) along the entire path from the transmitter to the specified receive site. Thus, while the Commission's traditional contour method often results in smooth concentric circles surrounding a transmission tower, the Longley-Rice method produces rougher outlines that more precisely depict areas of coverage.

A Predictive Model for Individual Locations

57. The model we endorse is a version of Longley-Rice 1.2.2 that we have adapted for predicting signal strength at individual locations. Called ''Individual Location Longley-Rice'' or ''ILLR,'' it is similar to the point-to-point predictive model we established for digital television (DTV) allocations. We believe ILLR is an accurate, practical, and readily available model for determining signal intensity at individual locations. ILLR has several characteristics, discussed in detail below, which make it unique:

- the time variability factor is 50% (when the time variability factor for the predicted field strength is 50%, an acceptable quality picture should be available 90% of the time) and the confidence variability factor is 50%;
- the model is run in individual mode;
- terrain elevation is considered every 1/10 of a kilometer;
- receiving antenna height is assumed to be 20 feet above ground for one-story buildings and 30 feet above ground for buildings taller than one-story;
- land use and land cover (e.g., vegetation and buildings) shall be included when an accurate method for doing so is developed;
- where error codes appear, they shall be ignored and the predicted value accepted or the result shall be tested with an on-site measurement;
- locations both within and beyond a station's Grade B contour shall be examined.

58. We believe the ILLR can be used for predicting signal strength for purposes of the SHVA as well as for other purposes that require information about signal intensity at discrete locations. The model would not supplant currently-existing approaches for depicting a field strength contour or for describing a station's service area. Specifically, the ILLR will not replace the current Commission rules for field strength contours (47 CFR 73.683) or prediction of coverage for non-SHVA purposes (47 CFR 73.684). In fact, the ILLR should not affect a station's Grade B contour or service area, because areas are irrelevant when predicting what signals exist at a particular location. As both satellite carriers and broadcasters have recognized, a predictive model for individual locations might identify unserved households that lay within a station's Grade B contour or, likewise, might identify served households outside a Grade B contour. Importantly, our model should not increase or decrease the number of truly unserved households. The ILLR model, like the on-site measurement, will consider the signal of either the affiliate station or its translator, as appropriate, to determine whether a household is receiving adequate signal strength. The number of unserved households remains finite under any single definition of Grade B intensity, and we do not change that definition here. If a household is unserved in reality, the ILLR prediction model will not change that situation. Likewise, if a household is currently served, the prediction model will not change it to an unserved household. A predictive model of any sort simply reflects reality without actually testing or observing it, and some are better than others at painting the most lifelike picture. The ILLR corrects for the mistakes of less-appropriate and less-accurate models by more precisely identifying households as served or unserved.

Time, Location, and Confidence Factors

59. Predictive models are inherently imperfect because they seek to replicate reality without actually measuring or observing it. These imperfections can be mitigated through statistical means and by varying the ''ingredients,'' or factors, included in any particular model. For example, although signals of Grade B intensity are defined as discrete values measured in dBu, the intensity of broadcast signals at particular locations and at particular times cannot be precisely determined, regardless of the predictive method used.

60. One way to account for these factors is to build them directly into signal strength values. The Grade B intensity levels are actually median signal strengths—i.e., 50% of locations in a particular area should receive a Grade B signal or higher at least 50% of the time. However, this does not mean that 50% of the locations will receive an acceptable picture only 50% of the time. The Grade B values have a built-in time factor so that an acceptable picture is predicted at least 90% of the time. For example, a signal strength of 41 dBu equals an acceptable picture for channels 2–6. To ensure that a location receives such a signal 90% of the time, the Grade B value for those channels, 47 dBu, includes an extra time factor of 6 dBu. Thus, although a location receiving a Grade B signal of 47 dBu will only get that signal 50% of the time, that same location will receive a 41 dBu signal 90% of the time.

61. Time, location, and confidence factors can also be built into predictive models. However, it is often unnecessary to build an additional factor into a predictive model to get the desired results. For instance, the Grade B values already predict the existence of an acceptable television picture at least 90% of the time, so the model need only predict that a signal of Grade B intensity exists at least 50% of the time. Use of a higher time factor, such as 90%, would amount to unnecessary double-counting. The Longley-Rice model used for DTV allocations recognizes this and, therefore, incorporates the 50% time factor into its calculations. Both broadcasters and satellite carriers agree that this is also appropriate for purposes

of the SHVA. We therefore see no reason to change the number when adapting Longley-Rice to the individual location context.

62. Although the parties generally agree that the time factor should be 50%, they do not agree on the appropriate level for the confidence factor. Confidence, in this context, is a way of expressing how certain the model is that the predicted signal value is at least that high. Importantly, it is not a reflection of how accurate the model is. Longley-Rice has generally incorporated a 50% confidence factor in its calculations. ''Confidence'' does not mean, as the word might imply, that the model is more accurate. We believe that increasing the ''confidence'' factor above 50% decreases errors of one type and increases errors of another type. For example, if we use a confidence factor of 90%, the model will ''search'' for a predicted signal value at a particular location in which it has 90% confidence that the value would, in reality, be that value or higher. The model could predict a particular signal value, say 47 dBu, and be 85% confident that the signal would be 47 dBu or higher in reality. Such a high level of confidence means it would be very likely that the location would get a 47 dBu signal. However, because the model is searching for a value in which it has 90% confidence, it would not predict 47 dBu and would continue searching. Eventually, the model would find a signal value in which it has 90% confidence, say 45 dBu, and deliver that as the result. Taking the example one step further, consider a ''served'' household under the SHVA to be a household that receives a signal of at least 47 dBu (the appropriate value for channels 2–6). If the model predicts with 90% confidence that a signal of at least 45 dBu exists, the 45 dBu household would be classified as ''unserved,'' even though it is very likely (85% confidence) that it receives a signal of at least 47 dBu. We believe it would be inconsistent with the SHVA to classify a household as unserved when a model could predict it to be served with such a high degree of confidence. Therefore, a confidence variability factor of 90% is unsuitable for purposes of the SHVA because it overpredicts the number of truly unserved households.

63. 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. Conversely, if the model underpredicts the number of unserved consumers, they would be unjustly deprived of broadcast network service via satellite. Second, the SHVA protects network affiliates by making their served households off limits to satellite delivery of broadcast networks. A 90% confidence factor for served households would make many truly served households eligible for satellite-delivered network service, contrary to the intent of the SHVA. 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. Satellite carriers would pursue testing when models consistently underpredict unserved households. Either result would defeat the goal of endorsing a predictive methodology upon which all parties can rely.

64. We have chosen to incorporate a 50% confidence factor in the ILLR model because it neither overpredicts nor underpredicts served households. A 50% confidence factor does not create a statistical bias in favor of either satellite carriers or broadcasters. Rather, it provides a median result that does not predictably err in one direction or the other. We have sought to endorse a confidence factor that is fair to both sides. Importantly, broadcasters have accepted the 50% confidence factor in their pleadings and in their endorsement of the DTV Longley-Rice model in the Miami court case. Similarly, SBCA's engineering experts, Hatfield and Dawson, propose using a 50% confidence factor in the TIREM model that they endorse. They explain that when the confidence factor is 50%, the model predicts the median situation and ''the user has no control over this statistical variable.''

Individual Mode

65. The ILLR will operate in a so-called ''individual mode,'' reflecting an observer's point-of-view at a single location. In the ILLR, location variability becomes effectively irrelevant because only one location (e.g., a single household) is considered. The individual mode merges location variability (the measurable or observable differences between dissimilar locations) and so-called situational variability (the small, often hidden, differences between similar or identical locations) into the statistical confidence factor. One expert on the issues, George Hufford, states:

> In the *individual mode,* situation and location variability are combined so that there remain this combined variability and time variability. Here, the typical user would be the individual receiver of a broadcast station for whom reliability means the time availability, and confidence means the combined situation/location variability.

Compare the ''broadcast mode,'' in which the DTV Longley-Rice model operates, but which is inappropriate for the purposes of the SHVA. That mode reflects the broadcaster's point-of-view when it is determining a service area that includes many locations. The DTV allotment proceeding utilized the broadcast mode because it was predicting the service areas of the new DTV stations, not the status of individual households as served or unserved by analog (NTSC) signals.

Terrain Elevation

66. Because the model seeks to predict signal intensity at individual locations, the model we endorse considers terrain elevation every 1/10 of a kilometer. This distance is as precise as current technology allows. It contrasts with the DTV Longley-Rice model that considers terrain elevation every kilometer.

Antenna Height

67. The ILLR model approximates the height of the household whose signal is being predicted. Current models presume an antenna height of 30 feet. The model we endorse, when used for purposes of the SHVA, shall incorporate an antenna height of 20 feet for one story buildings and 30 feet for buildings taller than one story, including MDUs. This requirement is generally consistent with our conclusions about the height a tester must raise a testing antenna when making actual, on-site signal measurements. MDU residents may require specialized attention due to their unusual circumstances, which will vary from person to person and building to building.

Land Use and Land Cover

68. Satellite carriers and some other commenters argue that vegetation and buildings affect signal intensity. Some broadcasters agree that vegetation and buildings affect signal propagation, but assert that the Longley-Rice model, as well as the Grade B planning factors, already account for these effects.

69. We conclude that land use and land cover affect signal intensity at individual locations and shall be used in the ILLR when an appropriate application develops. The United States Geological Survey maintains a Global Land Information System (''GLIS'')

database on land use and land cover indicating features such as vegetation and man-made structures. (See <http://edcwww.cr.usgs.gov/Webglis/glisbin/glismain.pl>.) We believe that this information is both credible and useful. We acknowledge that larger buildings are usually found in urban areas and Congress expected that the SHVA would primarily benefit rural consumers, but the definition of ''unserved'' is not explicitly limited to those consumers. The statute does not impose a mileage limitation or distinguish between urban and rural households. While we expect the model to include land use and land cover, we are not aware of a standard means of including such information in the ILLR that has been accepted by the technical and scientific community. When an appropriate application has been developed and accepted, this information will be included in the ILLR. We challenge interested parties to develop such an application that more accurately reflects the signal intensity at an individual location.

Interference

70. The Longley-Rice model as used in the DTV Allotment proceeding is capable of predicting interference from nearby television stations. We believe that the model we endorse, ILLR, should include signal interference so that it will more accurately predict picture quality. We acknowledge that interference is not formally included in the measurement methodology we have established in this Order, primarily because of the difficulties that would be created if we required testers to attempt to measure for it. However, all sides have acknowledged that interference affects picture quality, and we believe that, in contrast to the measurement methodology, interference can be reliably included in the predictive model, and so it is included to provide more accurate results.

Error Codes

71. Some satellite carriers have argued strongly for alleviation of the problems presented by error codes (KWX=3) that the Longley-Rice model sometimes presents after analysis of signal intensity at particular locations. Error 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. We conclude that a party should either accept the prediction by ignoring the error code or test the result with an on-site measurement. If the result is accepted and is high enough to predict service, the household shall be classified as served. If the result is low enough to predict lack of service, the household shall be classified as unserved.

TIREM

72. Several satellite carriers have asked the Commission to endorse the TIREM predictive model instead of Longley-Rice. The TIREM methodology, jointly developed by the National Telecommunications and Information Agency (NTIA) and the Joint Spectrum Center of the Defense Department to test specific paths with complex geometry. We believe that TIREM shows promise as a tool for predicting signal intensity at individual locations, but we decline to endorse it at this time for several reasons. NTIA has confirmed the concerns raised by some commenters concerning the public availability of a standardized and useful version of TIREM. For example, the NTIA states that the latest version of TIREM may not be readily available outside of eligible government agencies due to federal export restrictions. These impediments to access and use would severely impede TIREM's usefulness to the industries and to consumers. Further, there is not enough information regarding which, if any, version would work best in the SHVA context. We are unaware of any empirical information demonstrating that publicly available applications of TIREM are substantively more accurate than the ILLR. Indeed, the NTIA has run tests comparing the publicly available version found on its Internet site with both the Commission's traditional Grade B contour projections and a version of Longley-Rice similar to ILLR. The NTIA created a chart of sample contours for 16 designated market areas and accompanying maps that suggest that, in many cases, TIREM Version 3 predicts a station service area larger than the Commission's traditional Grade B contour.

73. In contrast to TIREM, the Commission has many years of experience using and evaluating the Longley-Rice model. TIREM and Longley-Rice consider the same factors: ''frequency, atmospheric conditions, the electrical parameters of the earth, and the shape of the terrain between the two points.'' The difference between the models is the algorithm used to consider the factors. Neither model's source code accounts for vegetation or buildings, but both models could be run including this data, as ILLR will be. Further, we are increasing the accuracy of the Longley-Rice model for the purpose of predictions for individual locations by requiring that terrain elevations be examined every one-tenth kilometer. In light of the significance and weight conveyed by the Commission's endorsement of a particular model, we believe that the ILLR model will provide most, if not all, of the same benefits claimed for TIREM by its proponents while avoiding its current potential flaws.

Loser Pays

74. The SHVA contains a ''loser pays'' mechanism that allows a party to recover the cost of conducting a signal measurement at a subscriber's household. (17 U.S.C. 119(a)(9).) At the present time, the loser pays mechanism only applies when parties are in litigation. Under the current law, if a broadcast network station questions whether a subscriber is unserved, an actual measurement at the subscriber's household may be conducted by either the satellite carrier or broadcaster to determine eligibility. If a measurement shows that the household is unserved, the broadcaster must pay the cost of the test. Similarly, if the test shows that the household is served, the satellite carrier must assume the cost of the test. From 1994 to 1996, the SHVA had ''transitional rules'' that included a ''loser pays'' mechanism different from the one currently in effect. This ''loser pays'' mechanism was not confined to the context of civil litigation.

75. In light of the Miami and Raleigh court findings that satellite carriers have signed up millions of people who are served, it appears that the loser pays mechanisms have not been effective in discouraging the enrollment of ineligible subscribers. The record is unclear on the reason for this failure, but anecdotal evidence suggests that both satellite carriers and broadcasters are disinclined to conduct tests, even when they are likely to win, because the tests could annoy their customers and generate ill-will.

76. The loser pays mechanism is part of the SHVA, and the Commission has no authority to change this mechanism or to promulgate regulations that conflict with it. We believe that the Commission's endorsement of a more reliable predictive model in this Order will allow the existing loser pays mechanism in the SHVA to work more effectively in civil actions.

Future Options

77. The resolution of the issues surrounding delivery of broadcast network signals over satellite should not end with this Order. There are several, often competing, public policies involved in the future actions that we discuss below. The value of local broadcasting in this country has been recognized time and again by Congress

and the Commission. Local television stations play a vital role in delivering news, weather, and public affairs information to their local communities. The growing competition between DBS and cable, however, benefits consumers by giving them more choices to watch what they want and by creating new and higher-quality services. DTH satellite carriers have proven to be the most successful competitors to incumbent cable companies, but they still serve only 9 million households, which is only between 10% and 15% of the multichannel video programming market. One significant reason consumers give for not considering satellite programming service is the difficulty of getting seamless broadcast network service. Congress has informally asked for our opinion on options to improve the SHVA and Communications Act to better serve consumers. In response to these requests, we identify some possible changes Congress could consider. This list is not meant to be exhaustive.

Local-into-Local

78. Congress could consider changes to copyright law to allow satellite companies to provide local television stations to local markets. Cable companies already do this, to their distinct advantage vis a vis the satellite carriers. Broadcasters support local-into-local legislation because they do not fear losing their audiences—and the advertising dollars that follow. Some satellite carriers accept local-into-local legislation because it gives them a limited right to provide their subscribers with services those subscribers want. Local-into-local satisfies consumers' demands for broadcast network service via satellite without harming localism. Local-into-local also makes satellite carriers more attractive to consumers, thus increasing their competitive standing with cable companies. However, local-into-local cannot provide the solution for every community in the immediate future, due to limitations in the satellites' capacity to carry every local channel. EchoStar recently predicted that with new spectrum, and without full must-carry requirements, it will only be able to serve 20 major cities within the next three years. Those cities cover about half the United States' population. Smaller cities would not be able to receive service, even under the best scenario, for about 5 years. Viewers who live in communities where local-into-local service is unavailable will need other solutions, including DirecTV's practice of selling over-the-air antennas with their satellite dishes. However, for those that can receive local network stations via satellite, local-into-local provides a partial solution that should address the needs of consumers and the broadcast and satellite industries, as well as promote competition to cable.

Change from the Grade B Signal Intensity Standard

79. We have noted that the Grade B signal intensity standard was originally designed to depict a television station's service area, and that it may not address all the factors that determine the quality of a consumer's television picture. This is especially true if one assumes that consumers have higher expectations for their television picture than they did in the 1950s and that environmental changes increase the effects of the factors that Grade B cannot easily address, such as ghosting and signal interference. Although we believe that the Grade B standard is still useful for determining signal strength and signal intensity, there may be a better, but still objective, standard that could be developed for identifying unserved households. The SHVA, however, prevents the Commission from exploring an alternative standard because it explicitly requires the use of Grade B to measure signal intensity and determine whether a household is unserved. This undertaking would demand considerable time and significant government and industry resources.

90-Day Waiting Period

80. Before receiving satellite-delivered broadcast networks, the SHVA requires an unserved consumer who subscribes to cable to terminate that service and wait for 90 days. Once the cable service ends, the consumer then would face 90 days with no acceptable network service—nothing over cable, unattainable over-the-air, and not yet available via satellite. This requirement discourages a potential satellite consumer from terminating his or her cable service. We believe that elimination of the waiting period should be considered.

Predictive Model and Loser Pays Mechanism

81. The ''loser pays'' mechanism in the SHVA holds promise for helping to resolve or avoid the disputes that arise under the law, but it currently applies only when the parties are engaged in civil litigation over the eligibility of subscribing households to receive broadcast network programming via satellite. We believe the loser pays mechanism would be more effective if it also applied before litigation commences and if used in conjunction with a predictive model. Initially, we suggest that clear statutory acceptance of prediction models for creating rebuttable presumptions of service or lack of service would add certainty to the entire SHVA process. The ILLR prediction model that we endorse in this Order will reduce mistakes when predicting a household's status as served or unserved and will therefore allow parties to be more confident in the predicted result and less inclined to conduct or demand a test. A broadly applied loser pays mechanism that allocates the cost of testing on the party in error, in conjunction with this more reliable prediction model, would likely give satellite carriers an economic incentive to avoid enrolling consumers who are predicted to be served, and to discourage broadcasters from challenging subscribers who are predicted as unserved. Less testing means less burden and inconvenience for the industries and consumers. Fewer challenges and disputes would reduce the number of consumers who are angered and inconvenienced by the operation of the SHVA.

Procedural Matters

82. To minimize possible confusion in connection with the injunction scheduled to take effect on February 28, 1999, which will affect more than 700,000 satellite subscribers, this Report and Order will become effective upon publication in the **Federal Register**. We find good cause exists under the Administrative Procedure Act (''APA'') to have the rule adopted in this Report and Order take effect upon publication in the **Federal Register** pursuant to section 553(d)(1) and (3) of the APA. (See also 47 CFR 1.427(b).) We believe that making the Report and Order and rule effective upon publication in the **Federal Register** will eliminate any confusion should the court in CBS et al. v. PrimeTime 24 wish to issue a supplemental order in light of the conclusions in this Order.

Final Regulatory Flexibility Analysis

83. As required by the Regulatory Flexibility Act (''RFA'') an Initial Regulatory Flexibility Analysis (''IRFA'') was incorporated into the Notice of Proposed Rulemaking (''NPRM'') in this proceeding. The Commission sought written public comment on the possible impact of the proposed policies and rules on small entities in the NPRM, including comments on the IRFA. This Final Regulatory Flexibility Analysis (''FRFA'') in this Report and Order (''Order'') conforms to the RFA.

Need for and Objective of the Rules

84. In this Order, the Commission responds to Petitions for Rulemaking filed by the National Rural Telecommunications Cooperative and EchoStar Communications Corporation requesting that the Commission address the methods for determining whether a household is ''unserved'' by network television stations for purposes of the 1988 Satellite Home Viewer Act (17 U.S.C. 119). Legal Basis

85. This Order is authorized under Sections 1, 4(i), 4(j) of the Communications Act of 1934, as amended, 47 U.S.C. 151, 154(i), and 154(j) and Section 119(d)(10)(a) of the Copyright Act, 17 U.S.C. 119(d)(10)(a).

Summary of Significant Issues Raised by the Public Comments in Response to the IRFA

86. Small Cable Business Association (SCBA) filed comments regarding the possible impact of this proceeding on small cable operators. SCBA contends that since small cable and satellite carriers draw from the same customer base, any Commission action broadening the ''unserved'' household definition could adversely affect small cable operators. SCBA contends that its members represent an important link in the distribution of local programming, especially in rural areas, and should not be overlooked in this proceeding. SCBA does not object to satellite delivery of broadcast network signals, so long as satellite providers are required to provide carriage of all broadcast signals within a single community. National Association of Broadcasters (NAB), and others, maintain that any expansion of unserved viewers could have a substantial impact on television broadcast stations serving smaller markets. The ability of these stations to purchase programming and to serve their viewers would be impacted by lower advertising revenues should the Commission's actions dramatically expand the numbers of unserved households in their market place. National Rural Telecommunications Cooperative urges the Commission to revisit the conclusion in its IRFA that because small businesses do not have the financial resources necessary to become DBS licensees, none will be affected by the proposed action.

Description and Estimate of the Number of Small Entities To Which the Rules Will Apply

87. The RFA directs the Commission to provide a description of and, where feasible, an estimate of the number of small entities that will be affected by the proposed action. The RFA defines the term ''small entity'' as having the same meaning as the terms ''small business,'' ''small organization,'' and ''small business concern'' under Section 3 of the Small Business Act (5 U.S.C. 604(a)(3). Under the Small Business Act, a small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA (15 U.S.C. 632). The action taken in this Order will affect television broadcasting licensees and DTH satellite operators.

88. Television Stations. The rules in this Order will apply to television broadcasting licensees, and potential licensees of television service. The SBA defines a television broadcasting station that has no more than $10.5 million in annual receipts as a small business. Television broadcasting stations consist of establishments primarily engaged in broadcasting visual programs by television to the public, except cable and other pay television services. Included in this industry are commercial, religious, educational, and other television stations. Also included are establishments primarily engaged in television broadcasting and that produce taped television program materials. Separate establishments primarily engaged in producing taped television program materials are classified under another SIC number. There were 1,509 television broadcasting stations operating in the nation in 1992. That number has remained fairly constant as indicated by the approximately 1,579 operating full power television broadcasting stations in the nation as of May 31, 1998. In addition, as of October 31, 1997, there were 1,880 low power television broadcasting (''LPTV'') broadcasting stations that may also be affected by our proposed rule changes. For 1992 the number of television broadcasting stations that produced less than $10.0 million in revenue was 1,155 establishments.

89. DBS and other DTH satellite operators. The Commission has not developed a definition of small entities applicable to geostationary or non-geostationary orbit fixed-satellite or DBS service applicants or licensees. Therefore, the applicable definition of small entity is the definition under the SBA rules applicable to Communications Services, Not Elsewhere Classified. This definition provides that a small entity is one with $11.0 million or less in annual receipts. The number of employees working for a ''small entity'' must be 750 or fewer. According to Census Bureau data, there are 848 firms that fall under the category of Communications Services, Not Elsewhere Classified that could potentially fall into the DTH category. Of those, approximately 775 reported annual receipts of $11 million or less and qualify as small entities. The proposed action in this Order applies to entities providing DTH service, including licensees of DBS services and distributors of satellite programming. There are four licensees of DBS services under Part 100 of the Commission's rules. Three of those licensees are currently operational, and each of those licensees has annual revenues in excess of the threshold for a small business.

Description of Projected Reporting, Record-keeping, and Other Compliance Requirements

90. The rules adopted today impose no requirement to file any information with the Federal Communications Commission. Parties who choose to conduct individual household measurements are required to reduce to memorialize their test observations and results.

Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

91. We believe that the rules we adopt today will have minimal impact on small television stations' ability to serve the public. The rule we adopt today has no impact on the number of viewers who are ''unserved'' or unable to receive the relevant television broadcast stations' signals, thus mitigating any economic impact in the market place. The rule will primarily affect DTH satellite operators, carriers and distributors, as well as full power commercial stations that are affiliates of national networks. The latter businesses generally do not fall into the category of small entities. Any adverse effect on the satellite industry is primarily the result of SHVA itself, and the actions we take represent our efforts to maximize competition including competition by small businesses consistent with faithfully interpreting the Act.

Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rule Changes

92. None.

Ordering Clauses

93. It is ordered, pursuant to Sections 1, 4(i), 4(j) of the Communications Act of 1934, as amended, 47 U.S.C. 151, 154(i), and 154(j); and Section 119(d)(10)(a) of the Copyright Act, 17 U.S.C. 119(d)(10)(a), the terms and rule

of this Report and Order are adopted. The amendments to 47 CFR 73.686 shall become effective upon date of publication of this Report and Order in the **Federal Register**.

94. *It is further ordered* that the Commission's Office of Public Affairs, Reference Operations Division, shall send a copy of this Report and Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration in accordance with paragraph 603(a) of the Regulatory Flexibility Act, Pub. L. 96–354, 94 Stat. 1164, 5 U.S.C. 601 et seq. (1981).

List of Subjects in 47 CFR Part 73

Antenna, Measurement, Satellite, Signal, Television.

Federal Communications Commission.

Shirley S. Suggs,

Chief, Publications Branch.

Rule Changes

Part 73 of Title 47 of the Code of Federal Regulations is amended to read as follows:

PART 73—[AMENDED]

1. The authority citation for Part 73 continues to read as follows:

Authority: 47 U.S.C. 154, 303, 334, 336.

2. Section 73.686 is amended by adding paragraph (d) to read as follows:

§ 73.686 Field strength measurements.

* * * * *

(d) Collection of field strength data to determine television signal intensity at an indvidual location—cluster measurements.

(1) *Preparation for measurements.*

(i) *Testing antenna.* The test antenna shall be a standard half-wave dipole tuned to the visual carrier frequency of channel being measured.

(ii) *Testing locations.* At the location, choose a minimum of five locations as close as possible to the specific site where the site's receiving antenna is located. If there is no receiving antenna at the site, choose the minimum of five locations as close as possible to a reasonable and likely spot for the antenna. The locations shall be at least three meters apart, enough so that the testing is practical. If possible, the first testing point should be chosen as the center point of a square whose corners are the four other locations. Calculate the median of the five measurements (in units of dBu) and report it as the measurement result.

(iv) *Multiple signals.* If more than one signal is being measured (i.e., signals from different transmitters), use the same locations to measure each signal.

(2) *Measurement procedure.* Measurements shall be made in accordance with good engineering practice and in accordance with this section of the Rules. At each measuring location, the following procedure shall be employed:

(i) *Testing equipment.* Measure the field strength of the visual carrier with a calibrated instrument with a bandwidth of at least 450 kHz, but no greater than one megahertz. Perform an on-site calibration of the instrument in accordance with the manufacturer's specifications. The instrument must accurately indicate the peak amplitude of the synchronizing signal. Take all measurements with a horizontally polarized dipole antenna. Use a shielded transmission line between the testing antenna and the field strength meter. Match the antenna impedance to the transmission line, and, if using an unbalanced line, employ a suitable balun. Take account of the transmission line loss for each frequency being measured.

(ii) *Weather.* Do not take measurements in inclement weather or when major weather fronts are moving through the measurement area.

(iii) *Antenna elevation.* When field strength is being measured for a one-story building, elevate the testing antenna to 6.1 meters (20 feet) above the ground. In situations where the field strength is being measured for a building taller than one-story, elevate the testing antenna 9.1 meters (30 feet) above the ground.

(iv) *Antenna orientation.* Orient the testing antenna in the direction which maximizes the value of field strength for the signal being measured. If more than one station's signal is being measured, orient the testing antenna separately for each station.

(3) Written Record shall be made and shall include at least the following:

(i) A list of calibrated equipment used in the field strength survey, which for each instrument, specifies the manufacturer, type, serial number and rated accuracy, and the date of the most recent calibration by the manufacturer or by a laboratory. Include complete details of any instrument not of standard manufacture.

(ii) A detailed description of the calibration of the measuring equipment, including field strength meters, measuring antenna, and connecting cable.

(iii) For each spot at the measuring site, all factors which may affect the recorded field, such as topography, height and types of vegetation, buildings, obstacles, weather, and other local features.

(iv) A description of where the cluster measurements were made.

(v) Time and date of the measurements and signature of the person making the measurements.

(vi) For each channel being measured, a list of the measured value of field strength (in units of dBu and after adjustment for line loss and antenna factor) of the five readings made during the cluster measurement process, with the median value highlighted.

[FR Doc. 99–3464 Filed 2–11–99; 8:45 am]

BILLING CODE 6712–01–P

DEPARTMENT OF TRANSPORTATION

Office of the Secretary

49 CFR Part 24

[FHWA Docket No. FHWA–98–3379]

RIN 2125–AE34

Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Final rule.

SUMMARY: This final rule implements several amendments to the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act), 42 U.S.C. 4601–4655, that were made by Public Law 105–117, enacted on November 21, 1997. Those amendments provide that an alien not lawfully present in the United States shall not be eligible to receive relocation payments or any other assistance provided under the Uniform Act unless such ineligibility would result in exceptional and extremely unusual hardship to the alien's spouse, parent, or child and such spouse, parent, or child is a citizen or an alien admitted for permanent residence. A notice of proposed rulemaking (NPRM) concerning these amendments was published for comment on June 12, 1998.

EFFECTIVE DATE: This rule is effective March 15, 1999.

FOR FURTHER INFORMATION CONTACT: Marshall Schy, Office of Real Estate Services, HRE–10, (202) 366–2035; or Reid Alsop, Office of the Chief Counsel, HCC–31, (202) 366–1371, Federal Highway Administration, 400 Seventh Street SW., Washington, DC 20590. Office hours are from 7:45 a.m. to 4:45 p.m., e.t., Monday through Friday, except Federal holidays.