

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

Office of Engineering and Technology Announces) ET Docket No. 13-26
Release of Updated OET-69 Software)
)
Expanding the Economic and Innovation) GN Docket No. 12-268
Opportunities of Spectrum Through Incentive)
Auctions)

To: Chief, Office of Engineering and Technology

**COMMENTS OF THE CONSUMER ELECTRONICS
ASSOCIATION**

Julie M. Kearney
Vice President, Regulatory Affairs
Brian E. Markwalter
Senior Vice President, Research and
Standards
Consumer Electronics Association
1919 S. Eads Street
Arlington, VA 22202
(703) 907-7644

March 21, 2013

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
I. THE NEW SOFTWARE IS CAPABLE OF SUPPORTING THE INCENTIVE AUCTION.....	2
A. <i>THE TVSTUDY SOFTWARE IS MUCH MORE ACCURATE THAN THE PREVIOUS IMPLEMENTATION OF OET-69</i>	3
B. <i>THE TVSTUDY SOFTWARE INCLUDES NEW FEATURES THAT ARE NECESSARY TO CONDUCT THE INCENTIVE AUCTION</i>	7
II. THE <i>TVSTUDY</i> SOFTWARE IS FAR BETTER SUITED THAN PREVIOUS OET-69 IMPLEMENTATIONS TO EFFECTUATE THE COMMISSION’S DECISIONS MADE IN THE RULEMAKING PROCEEDING AND THUS FURTHERS CONGRESS’S GOALS.....	8
A. <i>ACHIEVING THE SPECTRUM ACT’S OVERARCHING GOAL OF REALLOCATING SPECTRUM FOR BROADBAND REQUIRES THE ACCURACY AND FLEXIBILITY PROVIDED BY THE TVSTUDY SOFTWARE</i>	8
B. <i>THE TVSTUDY SOFTWARE WILL FACILITATE THE FCC’S “REASONABLE EFFORTS” TO PRESERVE BROADCAST COVERAGE AND POPULATION SERVED</i>	9
III. IN REPACKING, THE COMMISSION CAN EMPLOY THE <i>TVSTUDY</i> SOFTWARE TO USE “THE METHODOLOGY DESCRIBED” IN OET-69, AS REQUIRED BY THE SPECTRUM ACT.....	11
A. <i>UPDATING AND REFINING THE DATA TO BE ANALYZED DOES NOT CHANGE THE OET-69 METHODOLOGY</i>	11
B. <i>FILLING IN CERTAIN NECESSARY PARAMETERS NOT SPECIFIED IN THE OET-69 METHODOLOGY DOES NOT CHANGE THAT METHODOLOGY</i>	12
1. The Use of a Shared, Universal Grid is Consistent With the OET-69 Methodology..	12
2. The <i>TVStudy</i> Software Provides the Commission With Necessary Flexibility Where the OET-69 Methodology Does Not Establish How Flagged Cells are to be Treated	13
IV. CONCLUSION.....	17

EXECUTIVE SUMMARY

The Office of Engineering and Technology has provided an important piece of the incentive auction puzzle with its release of the new *TVStudy* software, and the Commission should move forward with its plan to use the software as a key part of the incentive auction repacking process.

- The *TVStudy* software is easier to use, more accurate, and more thorough than prior software implementing OET-69. It also adds critical functionality missing from the previous implementation that is essential to completing the repacking task the Commission faces.
- The use of the *TVStudy* software will further the ultimate goal of the Spectrum Act to reallocate broadcast spectrum to wireless broadband, by giving the Commission the flexibility and speed to rapidly evaluate a number of different scenarios.
- The software will also assist the Commission in meeting the “all reasonable efforts” statutory criteria for repacking broadcast stations. Before the Commission can preserve coverage and population served, as required by statute, it must first develop an accurate assessment of the area currently covered and the population currently served. The *TVStudy* software, with its increased accuracy and updated data, makes such an assessment possible.
- The *TVStudy* software is also fully consistent with the Commission’s obligation under the Spectrum Act to “us[e] the methodology described in” OET-69. It merely implements that methodology, using updated data that is more accurate and thorough and establishing certain parameters not specified in OET-69. In particular, the *TVStudy* software properly provides the Commission with the flexibility to treat cells flagged as “dubious or unreliable” by the Longley-Rice procedure in the manner that best serves the purpose of the Spectrum Act and the incentive auction to reallocate spectrum to wireless broadband use.

OET’s release of this software is very timely. By seeking comment now, when the incentive auction is likely 18 months away, OET is wisely affording itself ample time before the auction to address any errors, unexpected behaviors, or anomalous results identified by interested parties who have run tests of the software. It also can make any appropriate changes to analytical elements that are raised on the record here. If any of these actions are necessary, they can and should be accomplished well before the auction begins. By releasing the software now, OET also is increasing certainty about the methods the Commission will use in the repacking process, which will help all parties better evaluate their potential participation.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

Office of Engineering and Technology Announces)	ET Docket No. 13-26
Release of Updated OET-69 Software)	
)	
Expanding the Economic and Innovation)	GN Docket No. 12-268
Opportunities of Spectrum Through Incentive)	
Auctions)	

To: Chief, Office of Engineering and Technology

**COMMENTS OF THE CONSUMER ELECTRONICS
ASSOCIATION**

The Consumer Electronics Association (“CEA”)¹ hereby responds to the above-captioned Public Notice, which seeks comment on the new “*TVStudy*” software designed to perform broadcast television interference analyses as part of the incentive auction, using the methodology described in OET Bulletin No. 69 (“OET-69”).²

The Office of Engineering and Technology (“OET”) has provided an important piece of the incentive auction puzzle with its release of the new *TVStudy* software, and the Commission should move forward with its plan to use the software as a key part of the incentive auction

¹ CEA is the principal U.S. trade association of the consumer electronics and information technologies industries. CEA’s more than 2,000 member companies lead the consumer electronics industry in the development, manufacturing and distribution of audio, video, mobile electronics, communications, information technology, multimedia and accessory products, as well as related services, that are sold through consumer channels. Ranging from giant multi-national corporations to specialty niche companies, CEA members cumulatively generate more than \$209 billion in annual factory sales and employ tens of thousands of people.

² Office of Engineering and Technology Releases and Seeks Comment on Updated OET-69 Software, Public Notice, DA 13-138 (rel. Feb. 4, 2013) (“Public Notice” or “Notice”); OET, FCC, *Longley-Rice Methodology for Evaluating TV Coverage and Interference*, OET Bulletin No. 69 (Feb. 6, 2004) (“OET-69”), available at http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet69/oet69.pdf.

repacking process. The software is easier to use, more accurate, and more thorough, and it offers more functionality than prior software implementing OET-69. Its use will further the ultimate goal of the Spectrum Act to reallocate broadcast spectrum to wireless broadband and will assist the FCC in meeting the “all reasonable efforts” statutory criteria for repacking broadcast stations. The *TVStudy* software also is fully consistent with the Commission’s obligation to use the methodology described in OET-69.

OET’s release of this software now is very timely. By seeking comment now, when the incentive auction is likely 18 months away, OET is wisely affording itself ample time before the auction to address any errors, unexpected behaviors, or anomalous results identified by interested parties who have run tests of the software. It also can make any appropriate changes to analytical elements that are raised on the record here. If any of these actions are necessary, they can and should be accomplished well before the auction begins. By releasing the software now, OET also is increasing certainty about the methods the Commission will use in the repacking process, which will help all parties better evaluate their potential participation.

I. THE NEW SOFTWARE IS CAPABLE OF SUPPORTING THE INCENTIVE AUCTION

In order to successfully conduct the incentive auction, the FCC needs more accurate and thorough coverage and interference analysis software than previously has been used to implement OET-69. The *TVStudy* software clearly meets this need. Not only does it take advantage of the monumental changes in technology since the last implementation of OET-69 was developed, it also uses much more current data on population and terrain, and more accurate information on beam tilt and geographic coordinates to produce more accurate results. Failing to incorporate such changes into the new implementation of OET-69 and ignoring technical lessons learned over the nine years since implementing software was last developed is bad engineering

and could undermine the success of the auction. In contrast, the use of more current and accurate data in the new *TVStudy* software is consistent with the Spectrum Act mandate that the Commission use “all reasonable efforts” to preserve broadcaster coverage and population served.³

A. *THE TVSTUDY SOFTWARE IS MUCH MORE ACCURATE THAN THE PREVIOUS IMPLEMENTATION OF OET-69*

The *TVStudy* software is capable of producing a much more accurate prediction of broadcast coverage and interference than the previous software because *TVStudy* uses better data and more accurate measurements, corrects implementation errors, and permits the most appropriate treatment of “flagged” (*i.e.*, “dubious” or “unreliable”) cells.

Newer census data. *TVStudy* uses 2010 census data instead of 1990 census data.⁴

Although 1990 U.S. Census data was the most recent population data available at the time the previous implementation of the OET-69 methodology was developed, the U.S. Census has released updated population data twice since then — once in 2000 and once in 2010.⁵ As the *Public Notice* recognizes, the most recent population data from the 2010 U.S. Census shows a population increase of about 24 percent between 1990 and 2010.⁶ Additionally, the 2010 U.S. Census data shows a change in population distribution during that period.⁷ Given these dramatic

³ Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6403(b)(2), 126 Stat. 156 (2012) (“Spectrum Act”).

⁴ *Public Notice* at 3-4.

⁵ *Census of Population and Housing – Publications*, U.S. CENSUS BUREAU, <http://www.census.gov/prod/www/decennial.html> (last accessed Mar. 17, 2013).

⁶ *Public Notice* at 3.

⁷ *Id.* at 3-4.

changes, continuing to use 20-year old population data from the 1990 U.S. Census would be unreasonable and poor engineering.⁸

Use of 1990 data also would violate the requirements of the Spectrum Act by hindering the Commission in making “all reasonable efforts” to preserve the population served by each TV broadcast licensee as of February 22, 2012 (the date the Spectrum Act was passed).⁹ The Commission cannot reasonably calculate populations served based on population data that fails to account for the significant growth in the U.S. population since 1990 and that fails to reflect the current distribution of that population. Instead, as *TVStudy* contemplates, the Commission should use the most recent and accurate population data to implement the OET-69 methodology.

More detailed terrain database. *TVStudy* uses a new one-arcsecond terrain database, which can more accurately predict actual coverage and interference for TV stations than the three-arcsecond terrain database used in the previous implementation of OET-69.¹⁰ First, the three-arcsecond digital terrain database is no longer supported; it no longer is being maintained by the U.S. Geological Survey, so any undiscovered errors may remain unnoticed and could reduce the accuracy of the Commission’s coverage and interference predictions compared to the new database. There is no justification to use an older, unsupported database when a newer, supported one is available. Moreover, the new one-arcsecond terrain database spaces elevation points approximately at every 100 feet, allowing for a more granular estimation of coverage and interference for TV stations than predictions based on the three-arcsecond terrain database, which spaces elevation points at three times the distance of the new database (*i.e.*, approximately

⁸ *Id.*

⁹ See Spectrum Act § 6403(b)(2).

¹⁰ *Public Notice* at 4.

at every 300 feet).¹¹ The more granular estimations made possible by the new database will predict coverage and interference for TV stations with increased accuracy. Using the new one-arcsecond terrain database also will avoid some errors contained in the older terrain database.¹²

In addition, by providing the one-arcsecond terrain database to all parties without charge, OET is ensuring that all parties will get consistent results from the software. If parties had to obtain their own one-arcsecond terrain data, the application of the very same methodology could lead to inconsistent results.¹³

Actual beam tilt data. The new software's use of actual beam tilt data, instead of an across-the-board assumed downtilt figure, will allow for a more accurate depiction of the estimated coverage of and interference from each TV station. As the *Public Notice* recognizes, the present OET-69 software uses the same assumed electrical beam tilt for every location, regardless of the actual beam tilt value, which can result in a coverage projection that may effectively "miss" some of the population served.¹⁴ In contrast, the *TVStudy* software uses the actual amount of electrical downtilt as specified in the Commission's Consolidated Database System ("CDBS"), generating a more accurate model of coverage and interference effects and therefore better implementing the methodology in OET-69.

Corrected depression angle calculations. The *TVStudy* software corrects the previous implementing software's error in calculating depression angles, increasing the accuracy of coverage area and interference calculations. The present OET-69 software erroneously

¹¹ *Id.*

¹² *Id.*

¹³ *Id.* (noting that some versions of the three-arcsecond terrain database that were released by various agencies contained errors).

¹⁴ *Id.*

calculates depression angles based on the antenna height above ground level, rather than above mean sea level, which, as the *Public Notice* recognizes, can cause the radiated power toward the cell under study to be incorrectly calculated.¹⁵ This can result in an incorrect representation of a station's coverage and interference areas, particularly for stations that have antennas atop tall mountains. Good engineering practice requires correction of this known error.

More precise geographic coordinates. Instead of continuing to truncate geographic coordinates to the nearest second as in previous implementations of OET-69,¹⁶ *TVStudy* uses full-precision location data in its coverage and interference projections. By increasing the precision of geographic coordinates, the software eliminates rounding errors that existed in the previous implementation and provides some three additional orders of precision. As the *Public Notice* recognizes, there is no reason to intentionally reduce the numerical precision of the coordinates used, and the *TVStudy* software appropriately uses full-precision location data.¹⁷

Flexible treatment of flagged cells. The *TVStudy* software provides the Commission with flexibility in the treatment of cells flagged as “dubious or unreliable” during the Longley-Rice (“L-R”) analysis at the core of OET-69. This flexibility allows the FCC to treat flagged cells in a manner that increases the accuracy of coverage and interference calculations. Under the current implementing software, which treats flagged cells as having coverage, the *Public Notice* correctly notes that some areas are considered covered even when the Commission has no real information about predicted coverage or interference.¹⁸ However, it may make more sense

¹⁵ *Id.* at 5.

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

to evaluate the predicted coverage in those flagged cells, rather than simply assume whether or not there is coverage within the cells. The *Public Notice* indicates that comparisons with other propagation models show that the L-R signal strength results in flagged cells is, despite the flagged state, “typically not unreasonable.”¹⁹ The *TVStudy* software provides the FCC with flexibility in the treatment of flagged cells and allows the FCC to adopt the approach that best serves the purposes of the Spectrum Act.

B. THE TVSTUDY SOFTWARE INCLUDES NEW FEATURES THAT ARE NECESSARY TO CONDUCT THE INCENTIVE AUCTION

The *TVStudy* software includes features that are missing from the current implementation of OET-69 and are necessary to conduct the incentive auction in accordance with the Spectrum Act. These new features will better enable the Commission to make “all reasonable efforts to preserve ... the coverage area and population served of each broadcast television licensee” as of February 22, 2012, as required in Section 6403.²⁰ Specifically, the *TVStudy* software enables the creation and maintenance of a database of interference status at the cell level, in part by using a single global calculation grid of cells common to all stations.²¹ As the *Public Notice* states, this feature is necessary for the Commission to evaluate the “daisy chain” effect of interference by seeing the overall effects of changes in the DTV Table of Allotments²² during the incentive auction, while still providing results in an effective and expedient fashion. In contrast, the present OET-69 software does not allow for analysis of global effects caused by a potential modification of a single station. Thus, *TVStudy* will improve the Commission’s ability to

¹⁹ *Id.*

²⁰ See Spectrum Act § 6403(b)(2).

²¹ *Public Notice* at 5.

²² See 47 C.F.R. § 73.622.

evaluate the overall effects of changes in the DTV Table of Allotments during the repacking process. Moreover, the *TVStudy* software executes much more quickly than the previous implementation, and its operating parameters can be modified easily – essential features for the time-constrained incentive auction.²³ Together, these features provide the flexibility and capabilities necessary to effectively analyze the repacking of broadcast stations, an essential requirement of the Spectrum Act.

II. THE *TVSTUDY* SOFTWARE IS FAR BETTER SUITED THAN PREVIOUS OET-69 IMPLEMENTATIONS TO EFFECTUATE THE COMMISSION’S DECISIONS MADE IN THE RULEMAKING PROCEEDING AND THUS FURTHERS CONGRESS’S GOALS

The *Public Notice* correctly recognizes that “us[ing] software with improved accuracy and that makes use of the best available data to compute estimates of the coverage area and population served of each broadcast television licensee consistent with the provisions of the Spectrum Act” is an “important objective.”²⁴ The *TVStudy* software achieves this objective in furtherance of the Spectrum Act’s overall goal of spectrum reallocation and is fully consistent with the legislation’s restrictions on repacking.

A. *ACHIEVING THE SPECTRUM ACT’S OVERARCHING GOAL OF REALLOCATING SPECTRUM FOR BROADBAND REQUIRES THE ACCURACY AND FLEXIBILITY PROVIDED BY THE TVSTUDY SOFTWARE*

The accuracy and flexibility of the *TVStudy* software is critical to an effective repacking process, which, in turn, is crucial to reallocating as much spectrum as possible to wireless broadband use. The new software is thus essential to further the primary purpose of the Spectrum Act. Using the old implementation of OET-69, if it even were technically possible, would certainly inhibit (if not outright eliminate) the FCC’s ability to repack TV stations into a

²³ *Public Notice* at 1, 3.

²⁴ *Id.* at 3.

useful configuration that would maximize the amount of spectrum reallocated to broadband. Repacking stations is a challenging technical and logistical task. The FCC needs tools that are accurate and are sufficiently flexible to allow many different scenarios to be evaluated in a relatively brief time period. The previous implementation of OET-69 was designed for processing individual applications, one at a time, rather than for the concurrent study of complete, nationwide assignments; it thus is not an appropriate tool for calculating the coverage and interference characteristics of many stations simultaneously.²⁵ Because the *TVStudy* software specifically is designed for making these types of calculations rapidly and accurately,²⁶ it is well-suited to facilitating repacking in a manner that would preserve stations' coverage areas and populations served, while maximizing the amount of spectrum reallocated to broadband.

B. THE TVSTUDY SOFTWARE WILL FACILITATE THE FCC'S "REASONABLE EFFORTS" TO PRESERVE BROADCAST COVERAGE AND POPULATION SERVED

In addition to furthering the primary reallocation goal of the Spectrum Act, the *TVStudy* software also can help the Commission achieve the Spectrum Act's requirement that it make "all reasonable efforts to preserve... the coverage area and population served of each broadcast television licensee."²⁷ In fact, the more accurate coverage and interference calculations made possible by the *TVStudy* software are essential to meeting this goal.

Before the Commission can *preserve* coverage and population, it must first develop an accurate assessment of the area currently covered and the population currently served. As detailed above, the *TVStudy* software empowers the FCC to build a model of broadcast coverage

²⁵ *Id.*

²⁶ *Id.*

²⁷ Spectrum Act § 6403(b)(2).

and interference that far better reflects the real world than does the previous implementation of OET-69.²⁸ The updated census and terrain data used by *TVStudy*, as compared to the outdated data used by the previous implementation, more accurately represents the coverage area and population served of each broadcast television licensee as of February 22, 2012. Census data from 2010 is a far better reflection of the population figures and distribution as of the date of the Spectrum Act’s passage than is the 23-year old 1990 census data. Additionally, the other enhancements noted above – using actual beam tilt data, correcting an error in the calculation of depression angles, and relying on more precise geographic coordinates – all increase the ability of the software to accurately reflect the coverage and interference experienced in the real world.²⁹ Likewise, *TVStudy*’s global grid feature that enables interference “daisy chain” analysis – which, again, is not even possible under the old implementation – will enable the FCC to develop a more accurate model of TV station coverage. The FCC should rely on the *TVStudy* software’s more accurate model to preserve the existing coverage and population served, as required under the Act.

Conversely, relying on outdated data and tools would undermine the FCC’s ability to accurately preserve broadcast coverage and population and would fall short of the Spectrum Act’s requirements. Relying on population data more than two decades old, less accurate terrain maps, and less precise geographical coordinates, and ignoring a known flaw in the calculations by the previous implementation would mean knowingly basing repacking decisions on an out-of-date and inaccurate model of broadcasting coverage. Doing so would be inconsistent with Congress’s requirement that the FCC use “all reasonable efforts” to preserve the *existing*

²⁸ *Supra* § I(A).

²⁹ *Id.*

broadcast coverage and population served as of February 22, 2012. Indeed, it would be *unreasonable* to use an out-of-date and inaccurate broadcast coverage model when a more accurate and updated model is available. The FCC therefore should adopt and use the *TVStudy* software as an important part of its efforts to preserve the existing broadcast coverage and population served.

III. IN REPACKING, THE COMMISSION CAN EMPLOY THE *TVSTUDY* SOFTWARE TO USE “THE METHODOLOGY DESCRIBED” IN OET-69, AS REQUIRED BY THE SPECTRUM ACT

The *TVStudy* software is fully consistent with the Commission’s obligation under the Spectrum Act to “us[e] the methodology described in” OET-69.³⁰ It merely implements that methodology, using updated data that is more accurate and thorough and establishing certain parameters not specified in OET-69.³¹

A. *UPDATING AND REFINING THE DATA TO BE ANALYZED DOES NOT CHANGE THE OET-69 METHODOLOGY*

Consistent with the statute, the *TVStudy* software follows the methodology described in OET-69 – it uses as inputs to that methodology updated and more accurate data. Each of the improvements described above (updated population and terrain data; more precise geographic coordinates; actual antenna beam tilt data; etc.) is consistent both with the methodology of OET-69 and with the greater purposes of the Spectrum Act. By providing more accurate inputs to the OET-69 methodology, the *TVStudy* software increases the accuracy of the predictions that emerge from using the OET-69 methodology.

³⁰ Spectrum Act § 6403(b)(2), 126 Stat. at 226.

³¹ *See generally*, Letter from Julie M. Kearney, Consumer Electronics Association, to Marlene H. Dortch, Federal Communications Commission, ET Docket No. 13-26; GN Docket No. 12-268 (filed Mar. 18, 2013).

Furthermore, the *TVStudy* software fixes an error in the previous implementation's calculation of depression angles.³² The previous implementation incorrectly calculated coverage based on the antenna height above ground level rather than the height above mean sea level. Correcting this error means the *TVStudy* software implements the OET-69 methodology more accurately than did the previous implementation, particularly for TV stations that have antennas atop tall mountains.

B. FILLING IN CERTAIN NECESSARY PARAMETERS NOT SPECIFIED IN THE OET-69 METHODOLOGY DOES NOT CHANGE THAT METHODOLOGY

The Commission needs to fill in certain missing parameters in order to use the methodology described in OET-69 for repacking in the incentive auction. While the Spectrum Act requires the FCC to follow the methodology described in OET-69, it does not specify how the FCC must act with regard to certain unspecified parameters. The L-R algorithm, upon which the OET-69 methodology is based, requires several parameters that OET-69 itself does not specify. The *Public Notice* seeks comment on two such parameters and the *TVStudy* software's approach taken with respect to those parameters.

1. THE USE OF A SHARED, UNIVERSAL GRID IS CONSISTENT WITH THE OET-69 METHODOLOGY

TVStudy's use of a single global grid of cells provides an essential function for the incentive auction while remaining consistent with the OET-69 methodology. As the *Public Notice* describes, the OET-69 methodology (and the L-R algorithm underlying it) evaluates broadcast service by dividing the geographic area under consideration into a grid of cells.³³

OET-69 does not specify any particular grid; it simply states that “[t]he area subject to

³² *Public Notice* at 5.

³³ *Id.*

calculation is divided into rectangular cells....”³⁴ The previous implementation of OET-69 created a new grid for each evaluation of a station, so there was no guarantee that the grids used to analyze two different stations would actually line up, even if the coverage areas for those stations overlapped. In contrast, the *TVStudy* software uses a single, coordinated global grid for coverage analysis. As discussed above, this feature is essential to the repacking analysis for which Congress intended the FCC to use the methodology described in OET-69. Since the use of a universal grid is actually required to complete the necessary analysis, and OET-69 does not specify any particular type of grid to be used in the analysis, the *TVStudy* software’s use of a global grid is consistent with OET-69 and with the Spectrum Act.

2. THE *TVSTUDY* SOFTWARE PROVIDES THE COMMISSION WITH NECESSARY FLEXIBILITY WHERE THE OET-69 METHODOLOGY DOES NOT ESTABLISH HOW FLAGGED CELLS ARE TO BE TREATED

The *TVStudy* software properly provides the FCC with the flexibility to treat flagged cells in the manner that best serves the purpose of the Spectrum Act and the incentive auction to reallocate spectrum to wireless broadband use. As the *Public Notice* describes, certain cells may be “flagged” by the L-R analysis as “dubious or unreliable” due to a lack of data about specific terrain types.³⁵ OET-69 does not specify how implementing software should treat cells flagged by the L-R algorithm, and the FCC has used different approaches in the past, depending on the objective at hand. The Commission should determine how to treat flagged cells in repacking based on which method best fulfills the objectives of the proceeding, and *TVStudy* provides the flexibility necessary for the Commission to experiment with different approaches.

³⁴ OET-69 at 5.

³⁵ *Public Notice* at 5.

The FCC has treated flagged cells in various ways when using the L-R analysis, depending on its objective. In the previous implementation of OET-69, which OET uses primarily to evaluate proposed changes to the DTV Table of Allotments, flagged cells are assumed to be covered by the broadcast signal. This is consistent with the Commission's standing presumption that service is available within the Grade B contour of a station, as the Commission has noted.³⁶ This approach makes sense in the DTV Table of Allotments context because such decisions weigh the interests of broadcasters, and this simplifying assumption with regard to flagged cells would not, on average, advantage one broadcaster over another.

In other cases, OET has not assumed coverage for flagged cells.³⁷ In OET Bulletin Nos. 72 and 73, which use the L-R model to estimate the intensity of digital television signals at specific locations to comply with the Satellite Home Viewer Improvement Act of 1999 ("SHVIA") and the Satellite Television Extension and Localism Act of 2010 ("STELA"), the Commission treats flagged cells as if they were not flagged at all, and relies on the calculated field strength within those cells to determine coverage.³⁸ This difference in treatment is due to different objectives of OET-72 and OET-73 as compared to OET-69. When using the L-R analysis for SHVIA purposes, if a household is deemed served by a station, it will be deemed

³⁶ See *Review of the Commission's Rules and Policies Affecting the Conversion to Digital Television*, 16 FCC Rcd 5946, 5972 n.121 (2001).

³⁷ Public Notice at 5-6.

³⁸ FCC, *The ILLR Computer Program*, OET Bulletin No. 72, at 3 (July 2, 2002) ("OET-72"), available at http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet72/oet72.pdf ("The parameters to be used in a computer implementation of the ILLR model for SHVIA purposes are mostly the same as were used for DTV purposes, with only a few exceptions, stemming from their somewhat different objectives."); OET, FCC, *The ILLR Computer Program for Predicting Digital Television Signal Strengths at Individual Locations*, FCC/OET-73, at 5 (Nov. 23, 2010) ("OET-73"), available at http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet73/oet73.pdf.

ineligible to receive satellite carriage of certain other stations. In that situation, assuming coverage of flagged cells (as the previous implementation of OET-69 did) could eliminate access to service for some consumers.

Therefore, in determining how to treat flagged cells, the FCC should determine what method will best serve its objectives in this proceeding. In the incentive auction context, the primary objective is the clearing of spectrum for wireless broadband, provided “all reasonable efforts” are taken to preserve service area and population served. If the FCC concludes that a specific approach to flagged cells would lead to a more accurate model of broadcast coverage and populations served in the context of repacking, such a decision would be fully consistent with the methodology of OET-69. The *TVStudy* software therefore properly allows the FCC to adjust the treatment of such cells to best achieve its goal of accurately calculating coverage and population served.

Further, the Commission has full authority under the Spectrum Act to make reasonable choices in determining broadcast coverage and population served, including how to treat flagged cells. Rather than imposing a strict replication condition on the Commission’s repacking methodology, the Spectrum Act is unambiguous in using the term “reasonable” to describe the efforts required to preserve coverage area and population served, thereby granting flexibility for the Commission to determine, in context, what is reasonable.³⁹ The Commission correctly concluded in the NPRM that “reasonable” efforts are those that are “‘suitable under the circumstances ... and appropriate to the end in view.’”⁴⁰ The text of Section 6403 explicitly

³⁹ See Reply Comments of CEA, GN Docket No. 12-268, at 12-13 (filed Mar. 12, 2013).

⁴⁰ *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions* Notice of Proposed Rulemaking, 27 FCC Rcd 12357, 12393 n.163 (2012) (quoting Black’s Law Dictionary at 1265 (6th Ed. 1990)).

describes the purpose of channel reassignments – the “end in view” – as “making available spectrum to carry out the forward auction.”⁴¹ Thus, in clearly laying out a standard of “all reasonable efforts,” Congress expected the Commission to consider the goal of spectrum reallocation while executing its efforts to repack broadcasters. As is clear from OET’s treatment of flagged cells under OET-72 and OET-73 (which was supported by broadcasters), treating flagged cells as covered is not the only reasonable approach. Therefore, the Commission is authorized by the Spectrum Act to take whichever approach is most consistent with the goal of spectrum reallocation. The *TVStudy* software provides the FCC with flexibility on the treatment of flagged cells to achieve that goal.

⁴¹ Spectrum Act § 6403(b)(1).

