PUBLIC NOTICE

Federal Communications Commission
445 12th St., S.W.
Washington, D.C. 20554

News Media Information 202 / 418-0500
Internet: http://www.fcc.gov
TTY: 1-888-835-5322

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INCENTIVE AUCTION TASK FORCE RELEASES INFORMATION
RELATED TO INCENTIVE AUCTION REPACKING

GN Docket No. 12-268
ET Docket No. 13-26

As stated in the Notice of Proposed Rulemaking, the incentive auction will have three major pieces: a reverse auction, a forward auction, and a reorganization or "repacking" of the broadcast television bands, which is likely to include the reassignment of some television stations to new channels.[1] The data and updated software we are releasing in connection with this Public Notice are relevant to the repacking component of the incentive auction. Specifically, the material being released represents the results of a staff analysis of whether a television station could be assigned to particular channels in the incentive auction repacking process, consistent with statutory and other requirements, based on certain preliminary assumptions. The assumptions are necessary for completing the analysis but are for illustrative purposes only; the Commission has made no decision on them yet. As discussed below, we anticipate that additional elements of the incentive auction repacking process, including details about how bids will be selected, how channels will be assigned, and algorithms for carrying out these and other elements of the repacking process, will be made public in the coming months. As is the case with the repacking component of the incentive auction, final decisions regarding these elements of the incentive auction will be made by the full Commission. We believe our action today is an important step in the process of designing a successful incentive auction.

In order to build a record on which Commission decisions can be based, and to improve the ability of interested parties to analyze issues on which the Commission has sought comment, we will be releasing in connection with this Public Notice updated software and two types of information related to repacking:

- Updated *TVStudy* computer software and supporting data for determining the coverage area and population served of each broadcast television station using the methodology described in OET Bulletin 69.[2]

- Data about Canadian and Mexican television allotments as well as domestic incumbent licensees in the broadcast television bands. These data are already publicly available, but not in a form that

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[1] Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, *Notice of Proposed Rulemaking*, 27 FCC Rcd 12357, 12359 ¶ 5 (2012) (NPRM).

[2] The Commission is required by statute to make "all reasonable efforts to preserve, as of February 22, 2012, the coverage area and population served of each broadcast television licensee, as determined using the methodology described in OET Bulletin 69 of the Office of Engineering and Technology." Middle Class Tax Relief and Job Creation Act of 2012 (Spectrum Act), Pub. L. No. 112-96, § 6403(b)(2), 125 Stat. 156 (2012). OET Bulletin 69 is available at http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet69/oet69.pdf.

is easy to use for purposes of this analysis or that is limited to relevant information. In order to facilitate analysis and comment by stakeholders, we have aggregated the data in a format that can be used more easily with the updated software.

- Descriptions of how one could pre-calculate which stations could be assigned to which channels in the repacking process, and which stations cannot operate on the same channels or adjacent channels because of their geographic locations (and links to data that were developed using certain preliminary assumptions).[3]

The information described in this Public Notice and the attached Technical Appendix could be used for a number of purposes in the incentive auction. For example, during the bidding in a reverse auction this material could be used to check the feasibility of assigning channels to a given set of stations without violating any statutory or other constraints. That is, the data could be used to determine whether channels could be assigned to all broadcasters remaining on the air in a manner consistent with the applicable constraints if a given set of reverse auction bids from broadcasters were to be accepted. Such a "feasibility check" could be conducted rapidly during the course of bidding in the reverse auction because it would only require determining whether a channel assignment is feasible for a set of stations, not that it represents the optimal channel assignment. Optimization analysis is time-consuming; conducting it during the course of bidding in the reverse auction would restrict the Commission's auction design options.[4] The same data also could be used to optimize channel assignments after the bidding is completed, however, without slowing down the bidding process. Such optimization analysis could consider, in addition to the applicable constraints, additional factors such as minimizing the number of channel changes and minimizing the estimated costs of repacking. Also, if the Commission chooses to use a sealed-bid auction design, then optimization could be used to determine which bids to accept in order to obtain a given amount of spectrum at minimum cost.

We are releasing the information described here and in the attached Technical Appendix in the interest of transparency and to give interested parties the opportunity to provide input regarding aspects of the repacking process. Releasing it at this time will enable interested parties to provide input regarding how permissible channel assignments might be determined and how that information might be used during the incentive auction. In addition, interested parties will be able to validate that the Commission's databases contain accurate information regarding their stations or facilities and that the staff has correctly identified all relevant constraints on repacking. Releasing this material also provides a common set of input values that interested parties may use to generate new analyses based on different assumptions, should they wish to do so.

This Public Notice and the attached Technical Appendix relate to the technical aspects of repacking and auction design, and are responsive to those commenters who have requested the opportunity for comment on such details. We emphasize that to participate in the reverse or forward auctions, bidders need not know or master the technical details discussed herein or in the attached Technical Appendix or in subsequent similar releases. The Commission has announced the principle that incentive auction participation, particularly for broadcasters, should be as simple as possible.[5]

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[3] Although some stations may be reassigned to a new channel as a result of the repacking process, the Commission has not proposed to require any station to change the location of its transmission facilities.

[4] Given that the Commission has not yet decided on an auction design, it is possible that the Commission will pick a design that would allow for the use of optimization analysis during the auction.

[5] *See* NPRM, 27 FCC Rcd at 12361-62 para. 10.

The NPRM explained that information about the feasibility of channel assignments will play a direct role in the reverse auction as part of the determination of which bids to accept.[6] Although the information we are releasing in connection with this Public Notice does not reflect how the Commission will select bids in the reverse auction or assign broadcast television licensees to specific channels in the repacking process, it is a critical element in the auction design process. We anticipate that additional elements of the repacking process, including details about how the Commission will select bids, how it will assign channels, and algorithms for carrying out these and other elements of the repacking process, will be made public in the coming months. Consistent with the Commission's expectation in the NPRM, we also anticipate that interested parties will have an opportunity to provide input on these elements before the Commission reaches a final decision on a repacking methodology.[7]

Updated Computer Software

The updated computer software we are releasing for determining the coverage area and population served of each broadcast television station using the methodology described in OET-69 will allow parties to analyze potential interference on a station-to-station, or "pairwise," basis.[8] OET released an earlier version of this software on February 4, 2013.[9] The version of the software being released at this time (*TVStudy* v.1.2) operates in the same way as the earlier version (*TVStudy* v.1.1.2), but has an improved user interface and enhanced capabilities for pairwise analysis.[10] In using this software to generate preliminary data for the restrictions on channel assignments discussed below, we set various parameters incorporated in the software to implement the updates on which OET sought comment in its Public Notice, with the exception of a proposed change in the default assumption of signal coverage for certain areas.[11] We emphasize that the Commission has made no decision on the proposed updates, and that whether to implement them in the repacking is subject to a final Commission decision. The setting of the switches is for illustrative purposes only, but will help to ensure that interested parties are working with the same software settings and input values in analyzing the information we release in connection with this Public Notice.

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[6] *See* NPRM, 27 FCC Rcd at 12390 ¶ 98, 12397 ¶ 113.

[7] *See* NPRM, 27 FCC Rcd at 12376 ¶ 50.

[8] The second and third of the approaches proposed in the NPRM for making all reasonable efforts to preserve population served in the repacking process are based on "pairwise" analysis of data. *See* NPRM, 27 FCC Rcd at 12394 ¶¶ 106-107.

[9] Office of Engineering and Technology Releases and Seeks Comment on Updated OET-69 Software, *Public Notice*, 28 FCC Rcd 950 (rel. Feb. 4, 2013). OET also released a minor update of the software on April 26, 2013. *See* Office of Engineering and Technology Releases Updated TVStudy Software, *Public Notice*, DA 13-865 (rel. Apr. 26, 2013).

[10] Among other things, *TVStudy* v.1.2 makes it possible to conduct pairwise studies more easily, add or remove stations to a repacking scenario at runtime , run the software without a command line, choose which output files to create, including a new "summary" that condenses the outputs of multiple scenarios into a single file, and add additional information to the output cell file, such as the coordinates of the study point in a cell.

[11] *See Public Notice*, 28 FCC Rcd at 952 ("In developing the *TVStudy* software, we have identified various parameter choices consistent with but not specified in OET-69 that we believe are necessary for improved accuracy in our modeling and analysis. We incorporated "soft-switches" into the *TVStudy* software to permit the user to evaluate the effects of the different choices. We note that the different parameter choices may yield results for both coverage and interference different from legacy versions of software that have been used in the past."). A list of the settings we used to create the preliminary data files is included in the attached Technical Appendix. As with the previous version of the software, this version of the software allows users to set the switches in various ways to evaluate the effects of the different parameter choices.

Data about incumbent licensees in the broadcast television bands

We have culled relevant data from FCC databases and aggregated it in a format that can be used to run on the updated computer software. The data include information about domestic broadcast television stations and Canadian and Mexican allotments. Again, the information reflects assumptions that are intended for illustrative purposes only so that interested parties can conduct an analysis of the technical aspects of repacking and auction design. As such, the data are subject to a final decision by the Commission. In particular, the inclusion or exclusion of certain domestic broadcast facilities does not indicate which facilities the Commission will ultimately make all reasonable efforts to preserve in the repacking.[12] Interested parties may add facilities to, or subtract facilities from, the data we are releasing to analyze different preservation assumptions using the process described in the attached Technical Appendix, and we invite submissions based on such analyses.

Restrictions on channel assignments

The repacking process will involve assigning channels to broadcasters who will remain on the air following the voluntary incentive auction.[13] The permissibility of channel assignments in the repacking process will be constrained by statutory and other requirements. The assignment of channels must take into account all incumbents in the TV band: domestic full power and Class A television stations, Canadian and Mexican television allotments protected by treaty, certain land mobile and radio astronomy facilities, and wireless medical telemetry devices. The assignment of channels is subject to the statutory mandate to "make all reasonable efforts to preserve, as of the date of the enactment of this Act [February 22, 2012], the coverage area and population served of each broadcast television licensee, as determined using the methodology described in OET Bulletin 69."[14] To illustrate how the FCC could determine what channel assignments are permissible for every domestic television station in the repacking process, we used the updated software and the incumbent data from FCC databases identified above to create a data set or "constraint files" for each station, comprised of what we call a "domain file" and an "interference_paired file." A "domain file" is a list of the television channels to which a given station could be assigned in each of three bands—low and high VHF and UHF—considering fixed constraints, that is, incumbents in the band that are entitled to protection other than domestic television stations.[15] For example, the domain file for a specific station might reflect that Channels 2, 3, and 4 in the low VHF band, Channels 7, 8, and 9 in the upper VHF band, and Channels 21 through 30 in the UHF band are

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[12] *See* NPRM, 27 FCC Rcd at 12397 ¶ 113 (proposing to interpret the statutory mandate to seek to preserve coverage area and population served "as of the date of the enactment of this Act" to require preservation only with regard to facilities that were licensed, or for which an application for license to cover authorized facilities already was on file with the Commission, as of February 22, 2012, but not to prohibit the Commission from granting protection to additional facilities where appropriate). Specific assumptions that the staff applied in conducting the analysis are set forth in the Technical Appendix.

[13] Non-participating stations and stations whose bids are ultimately rejected will be assigned channels in their pre-auction bands – Low VHF, High VHF or UHF. A participating station may be reassigned from a UHF to a VHF channel in the repacking only if it prevails in its reverse auction bid to voluntarily relinquish UHF spectrum usage rights in exchange for assignment to a VHF channel and a share of the incentive auction proceeds. *See* Spectrum Act § 6403(b)(3) (prohibiting involuntary reassignment from a UHF to a VHF channel).

[14] Spectrum Act § 6403(b)(2).

[15] These incumbents are Canadian and Mexican TV stations and certain land mobile, radio astronomy and wireless telemetry devices. The assumptions regarding Canadian and Mexican TV stations are generally conservative with respect to interference potential, as explained in more detail in the attached Appendix, and we may be able to use different assumptions in the future based on negotiations with Canada and Mexico.

permissible channel assignments for the station, not considering where other domestic television stations are assigned. An "interference_paired file" is a list of the domestic full power and Class A television stations that could <u>not</u> be assigned to operate on the same channel or on an adjacent channel[16] to the station in question in each of the three bands, based on the second of three proposals in the NPRM for making all reasonable efforts to preserve population served in the repacking.[17] So, the interference file for that same station would list any and all stations that could not be on the same channel as the station or on an adjacent channel to the station in the low VHF band, in the upper VHF band, and in the UHF band, based on given interference protection criteria.

We are releasing at this time preliminary data sets or constraint files for domestic broadcast television licensees that may be protected in the repacking process. Again, the constraint files we release at this time are *for illustrative purposes only*, and necessarily reflect certain assumptions that are subject to a final decision by the Commission. In particular, as stated above, the constraint files reflect staff application of the second of three proposals in the NPRM for making all reasonable efforts to preserve population served in the repacking process. We also are including a detailed description of how the staff generated the constraint files.

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This Public Notice is being issued pursuant to sections 0.31, 0.51, 0.61, and 0.131 of the Commission's rules by the Office of Engineering and Technology and the International, Media, and Wireless Telecommunications Bureaus, members of the Incentive Auction Task Force.[18] Comments may be filed using the procedures for *ex parte* submissions in permit-but-disclose proceedings set forth in section 1.1206 of the Commission's rules.[19] When filing comments, please reference GN Docket No. 12-268. The constraint files will be accessible via a link on the FCC's LEARN website under the Repacking Section, which can be found at http://wireless.fcc.gov/incentiveauctions/learn-program/repacking.html.

For further information, contact Sasha Javid at 202-418-2392, or via e-mail at Sasha.Javid@fcc.gov. For further information regarding data about domestic broadcast television licensees, please contact Hossein Hashemzadeh at 202-418-1658, or via e-mail at Hossein.Hashemzadeh@fcc.gov, or Kevin Harding at 202-418-7077, or Kevin.Harding@fcc.gov.

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[16] We list the adjacent channels above and below the station in question (N+1 and N-1) separately because the interference relationships are different.

[17] NPRM, 27 FCC Rcd at 12394 ¶ 106 ("Under this approach, no individual channel assignment, considered alone, could reduce another station's specific population served on February 22, 2012 by more than 0.5 percent.").

[18] 47 CFR §§ 0.31, 0.51, 0.61, 0.131.

[19] *See* 47 CFR § 1.1206(b)(2).