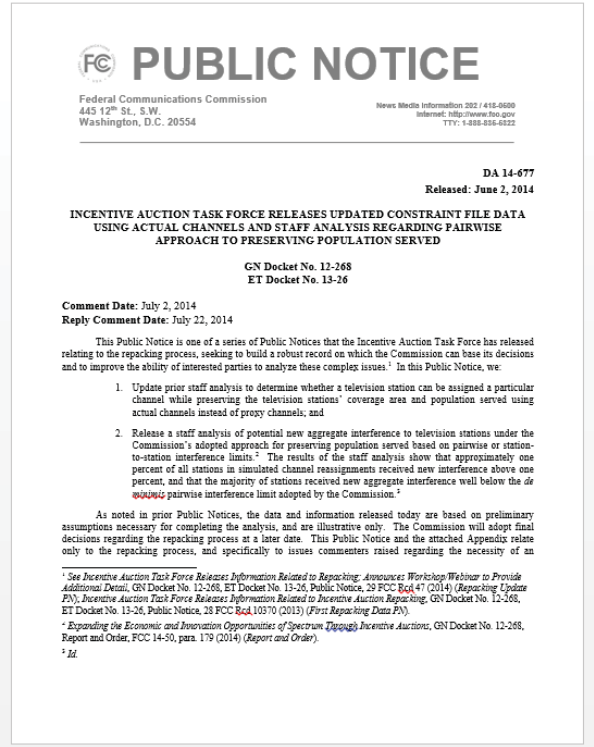
Preserving Population Served

Protecting TV Viewers Following Repacking

October 10, 2014

June 2nd Public Notice



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 UPDATED CONSTRAINT FILE DATA USING ACTUAL CHANNELS AND STAFF ANALYSIS REGARDING PAIRWISE APPROACH TO PRESERVING POPULATION SERVED

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

Comment Date: July 2, 2014
Reply Comment Date: July 22, 2014

This Public Notice is one of a series of Public Notices that the Incentive Auction Task Force has released relating to the repacking process, seeking to build a robust record on which the Commission can base its decisions and to improve the ability of interested parties to analyze these complex issues.[1] In this Public Notice, we:

1. Update prior staff analysis to determine whether a television station can be assigned a particular channel while preserving the television stations' coverage area and population served using actual channels instead of proxy channels; and
2. Release a staff analysis of potential new aggregate interference to television stations under the Commission's adopted approach for preserving population served based on pairwise or station-to-station interference limits.[2] The results of the staff analysis show that approximately one percent of all stations in simulated channel reassignments received new interference above one percent, and that the majority of stations received new aggregate interference well below the *de minimis* pairwise interference limit adopted by the Commission.[3]

As noted in prior Public Notices, the data and information released today are based on preliminary assumptions necessary for completing the analysis, and are illustrative only. The Commission will adopt final decisions regarding the repacking process at a later date. This Public Notice and the attached Appendix relate only to the repacking process, and specifically to issues commenters raised regarding the necessity of an

[1] *See Incentive Auction Task Force Releases Information Related to Repacking: Announces Workshop/Webinar to Provide Additional Detail*, GN Docket No. 12-268, ET Docket No. 13-26, Public Notice, 29 FCC Rcd 47 (2014) (*Repacking Update PN*); *Incentive Auction Task Force Releases Information Related to Incentive Auction Repacking*, GN Docket No. 12-268, ET Docket No. 13-26, Public Notice, 28 FCC Rcd 10370 (2013) (*First Repacking Data PN*).

[2] *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Report and Order, FCC 14-50, para. 179 (2014) (*Report and Order*).

[3] *Id.*

- Staff studied 100 repacking scenarios using calculations on actual channels, in part to look at impact of current approach on preserving service to current TV viewers
  - NAB commends FCC staff for releasing these scenarios
  - No plan analyzed involves new interference from any one station at greater than 0.5%
- NAB had suggested in initial comments (Jan. '13) capping all "aggregate" interference at 1%
- Staff analysis purports to show:
  - On average, only 1% of all stations receive interference above NAB proposed cap
  - No station received new aggregate interference above 2%

NAB Analysis

- NAB attempted to duplicate the FCC staff study results to examine whether viewers will lose additional service as a result of the auction
- The primary issue is NOT interference, but <u>population losses</u>
  - Capping interference only goes so far; the FCC must deal with disenfranchised viewers.
- NAB staff used the FCC's *TVStudy* software to evaluate population served for all UHF stations on new "repacked" channels
  - To date, NAB staff has completed analysis of 23 out of the 100 repacking simulations
  - 12 of the simulations recovered 84 MHz; 11 recovered 120 MHz
  - NAB used the definition of "population served" adopted in the May 2014 incentive auction order (para. 179)
  - NAB staff compared the population served of all stations on their new channel with the population served on their current channel (yielding aggregate population loss)
- Through this work, NAB staff discovered that the population losses were <u>greater</u> than the June 2nd Public Notice would lead the public to believe

Example: Repacking Profile 100

By way of example, below is a comparison of the aggregate losses as reported by the FCC staff versus the NAB results

FCC Staff Analysis

- Largest pop loss: **1.53%**
- Stations with pop loss at least 1%: **1.7%**

NAB Analysis

- Largest pop loss: **8.49%**
- Stations with pop loss at least 1%: **3.1%**

Scenario 100 does NOT represent "worst" case scenario

Additional Examples of TV Station Population Losses in Other Repacking Simulation Runs

Call Sign	City	State	% Pops Loss
KAPP	YAKIMA	WA	6.95
KREZ	DURANGO	CO	8.49
KNAZ	FLAGSTAFF	AZ	6.75
KSBB	SANTA BARBARA	CA	6.95
KBAK	BAKERSFIELD	CA	10.1
KAEF	ARCATA	CA	5.48

Number of Repacking Simulations (of 23 studied) Where These Stations Gained or Lost Population Served

Call Sign	City	State	Number of repacking Simulations	
			% Pops Gained	% Pops Lost
KAPP	YAKIMA	WA	3	20
KREZ	DURANGO	CO	7	16
KNAZ	FLAGSTAFF	AZ	8	15
KSBB	SANTA BARBARA	CA	13	10
KBAK	BAKERSFIELD	CA	16	7
KAEF	ARCATA	CA	11	12

Why the Discrepancy?

- The FCC's constraint files and repacking method completely ignore the effect of channel changes; acts as if there is no repacking
  - The only way the FCC has addressed channel moves is to suggest that, b/c it believes stations will move down, losses will be mitigated (R&O, para. 174)
  - But a quick look at the 100 repacking profiles shows that well over 20% of stations will likely move upwards during the repacking process.
- Specifically, the constraint files consider only interference on a station's existing (pre-auction) channel and ignore the common situation where service is lost due to a channel change in the repacking process
- As a result, the FCC's aggregate interference analysis considers losses due solely to interference and thus fails to account for many losses in population served
- Ultimately, repacking will result in significantly greater viewer losses than predicted by the FCC's aggregate interference analysis

Alternative Approach(es)

- There certainly are reasonable alternatives to the FCC's current interference-only approach to protecting population served
- There are three in particular that, taken together, would meet the Spectrum Act's requirements to make "all reasonable efforts to preserve. . . the . . . population served of each broadcast television licensee."
  - Even any one of the below approaches on its own would be an improvement over the current approach, which weighs no alternative means to reasonably protect today's viewers
- The FCC's duty, both under the Spectrum Act and as part of its public interest mandate, should strive to maintain service for all current television viewers.

Reasonable Alternative #1

- FCC could pre-calculate population of every station on every channel, and determine whether a particular channel assignment will result in population losses over 1%
- This exercise should take approximately one week
- Then the FCC would augment the existing domain file to prohibit assignments to channels resulting in losses over 1%
- This work is done *in advance of the auction* – no delay – and uses the same software, constraint files, and processes

Reasonable Alternative #2

- Enhancement to first option – also considers aggregate interference from co- and adjacent-channels.
- For each station, FCC could identify other stations that cause limited interference, but might be assigned co-channel without violating the 0.5% constraint on a pairwise basis
- For each of the other stations, ensure there are no pairs that violate the 0.5% constraint – for any pairs that violate, eliminate one station from each pair so that the remaining set of stations satisfied the 0.5% limit on a pairwise basis
- Assume all of the remaining stations are assigned co-channel to the station under consideration and determine the aggregate interference to that station
- Each arrangement will cause some total amount of interference to the station under consideration that can be compared with a "cap" value, such as 1%. To the extent that an arrangement exceeds the "cap" value, that arrangement would be disallowed by adding it to a newly-created combinatorial interference constraint file
- Can reduce the size of the constraint file and minimize the number of permutations by excluding stations that cause only a small amount of interference such as 0.05% on a pairwise basis
- Again, these computations can be completed *prior to the start of the auction* and would not adversely affect the auction process and timing

Reasonable Alternative #3

- The FCC could include a single mid-auction optimization run, identifying and mitigating instances where repacking results in population losses of more than 1% for any reason
- At or near the conclusion of the Reverse Auction, but before the Forward Auction commences, analyze, using the OET-69 methodology, the tentative channel plan developed by the satisfiability solver
- Identify stations predicted to suffer population loss of greater than 1%
- Extract all stations within neighborhood (clique or culling distance) of each station predicted to lose more than 1% and run optimization software to rearrange the assignments to achieve a more favorable arrangement of channels *without affecting the amount of spectrum recovered*
- The more favorable arrangement is then reinserted into the tentative plan and the corresponding stage of the Forward Auction would then proceed as planned
- This effort does not alter the Commission proposal to conduct a final optimization of channel assignments at the conclusion of the Forward Auction or the closing conditions
- Adds a one-time delay of hours, not days, prior to closing reverse auction.

Summary

- The data in the June 2nd Public Notice does not represent the true impact of repacking on broadcasters and their millions of viewers
- NAB still supports capping the amount of aggregate interference; otherwise staff has unfettered, unreviewable discretion to harm TV stations and their viewers
- The FCC must institute a meaningful aggregate cap on population losses in order to meet its obligation under the Spectrum Act to make "all reasonable efforts" to preserve broadcasters' populations served
- There are better alternative channel/repacking solutions available
- We need greater transparency. The release of the 100 profiles helped enormously – far more than the R&O to figure out the effect of the auction on repacking.
  - The FCC has not yet released the "constraint file generator" (i.e., the software that takes the *TVStudy* output and decides which stations can coexist on which channels); or
  - The repacking software
  - These things are needed to permit stakeholders to understand why broadcasters are assigned to particular channels
  - The constraint file generator has existed for a long time, since the FCC used it to generate the files themselves. Some version of the repacking software also exists since it was used to generate the profiles.