

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions)	GN Docket No. 12-268
)	
Office of Engineering and Technology Releases and Seeks Comment on Updated OET-69 Software)	ET Docket No. 13-26
)	
Office of Engineering and Technology Seeks To Supplement the Incentive Auction Proceeding Record Regarding Potential Interference Between Broadcast Television And Wireless Services)	ET Docket No. 14-14
)	

**REPLY COMMENTS OF THE
NATIONAL ASSOCIATION OF BROADCASTERS**

The National Association of Broadcasters (“NAB”)¹ submits these comments in response to the Commission’s Further Notice of Proposed Rulemaking in the above proceedings.² Commenters agree that the complexity of inter-service interference

¹ The National Association of Broadcasters is a nonprofit trade association that advocates on behalf of free local radio and television stations and broadcast networks before Congress, the Federal Communications Commission and other federal agencies, and the courts.

² *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, Office of Engineering and Technology Releases and Seeks Comment on Updated OET-69 Software, Office of Engineering and Technology Seeks to Supplement the Incentive Auction Proceeding Record Regarding Potential Interference Between Broadcast Television and Wireless Services, Second Report and Order and Further Notice of Proposed Rulemaking, GN Docket No. 12-268, ET Docket No. 13-26, ET Docket No. 14-14, FCC 14-157 (rel. Oct. 17, 2014) (“ISIX NPRM”).*

increases uncertainty for forward auction bidders, but many failed to address the FCC's variable band plan, which is the source of the problematic interference. The Commission should reject suggestions that wireless carriers be allowed to solve the interference problem by causing more inter-service interference to broadcasters as contrary to the Spectrum Act, harmful to television viewers and counterproductive.

NAB also agrees with the Consumer Electronics Association that the FCC has not sufficiently considered the potential for intermodulation interference to DTV reception. We urge the Commission to promptly study this issue to determine the scope of potential harm to consumers.

I. THE FORWARD AUCTION SHOULD BE AS SIMPLE AND TRANSPARENT AS POSSIBLE FOR BIDDERS, WHILE STILL PROTECTING LICENSED SERVICES FROM INTERFERENCE.

In its original comments, NAB noted that the Commission's insistence on establishing a variable band plan could sow substantial uncertainty in the forward auction.³ The complex task of predicting inter-service interference makes bidding problematic. Bidders must consider the value of licenses categorized by broad scopes of impairments, and the FCC measures those impairments by a methodology distinct from the one that will actually be used to calculate interference after the auction. As a result, bidders must be wary during the forward auction; they cannot know the extent to which they will actually be able to deploy service using licenses that they spend tens of billions of dollars to acquire.

³ Comments of the National Association of Broadcasters at 2-4, GN Docket No. 12-268, ET Docket No. 13-26, ET Docket No. 14-14 (filed Jan. 21, 2015).

CTIA also perceives this risk. In its comments, CTIA expresses concern that the Commission might market “unimpaired” licenses that will, in fact, turn out to be subject to significant impairments.⁴ According to CTIA, this would “create significant uncertainty for forward auction bidders, and would undermine the Commission’s efforts in this proceeding to clearly communicate to incentive auction stakeholders their respective rights and responsibilities.”⁵ Uncertainty in the forward auction will inevitably depress bidding, which means less revenue for the auction – and increased risk of failure.

NAB disagrees with CTIA, however, on how to address this uncertainty. CTIA, unsurprisingly, would attempt to provide wireless carriers certainty in the forward auction by allowing more harmful interference to broadcast services. Accordingly, CTIA asks the Commission to: (1) adjust the proposed interference threshold upwards from zero percent; and (2) abandon the proposed requirements that wireless licensees conduct interference analyses prior to deploying base stations and on an ongoing basis. The Commission should reject both of these self-serving and unlawful proposals.

First, despite CTIA’s wishes to the contrary, the Spectrum Act sets out a balanced approach to conducting the incentive auction. Congress provided that the incentive auction should be *voluntary*, and that, as a corollary, broadcasters that elect not to participate in the auction or did not have their bids accepted should not be harmed by the auction or repacking process. CTIA would abandon this approach, turning a market-based, voluntary auction process into a spectrum grab. Moreover, the FCC’s proposal to

⁴ Comments of CTIA – The Wireless Association at 5, 8, GN Docket No. 12-268, ET Docket No. 13-26, ET Docket No. 14-14 (filed Jan. 21, 2015).

⁵ *Id.* at 8.

allow no harmful interference is the fairest approach to protecting existing over-the-air television viewers.

Second, as the Commission has recognized,⁶ requiring wireless licensees to conduct and maintain copies of interference analyses is critical for minimizing inter-service interference. Ironically, this is due to the Commission's curious decision to adopt a methodology that it itself acknowledges is not firmly rooted in reality. The Commission's methodology for predicting inter-service interference for purposes of the forward auction is based on hypothetical base station deployments that bear little relationship to the Commission's rules or actual current deployments. It also makes a number of simplifying assumptions solely to allow the Commission's computers to conduct the analyses during the auction.⁷ Thus, the FCC never intended this methodology to predict inter-service interference between wireless services and broadcast DTV signals based on actual deployments; rather, it is intended *solely* to provide bidders with a first rough approximation of the degree to which licenses in the forward auction are impaired. That is *precisely* why the Commission warns wireless carriers that they may not rely upon the predictions made by the auction's ISIX methodology, and instead must conduct additional

⁶ ISIX NPRM at ¶ 72.

⁷ See *Office of Engineering and Technology Seeks To Supplement The Incentive Auction Proceeding Record Regarding Potential Interference Between Broadcast Television And Wireless Services*, Public Notice, 29 FCC Rcd 712, 725 n. 12 (rel. Jan. 29, 2014) (adopting a hypothetical 10-kilometer spacing for base station transmitting sites because it "approaches a practical limit on computation."); see also *Comment Sought on Competitive Bidding Procedures for Broadcast Incentive Auction 1000, Including Auctions 1001 and 1002*, Public Notice, AU Docket No. 14-252, GN Docket No. 12-268, FCC 14-191, ¶ 81, n. 81 (rel. Dec. 17, 2014) (aggregating ISIX data to a county level because at a more granular level "the number of decision variables and constraints that must be considered would increase to an unsolvable number.")

detailed analyses based on their actual proposed deployments, rather than the simplified inputs the Commission intends to use for the auction.

If CTIA wishes to reduce complexity and uncertainty in the forward auction – which NAB agrees is an important goal – the correct approach is not a decades-long Hatfield-McCoy feud about interference standards, but rather to eliminate market variability, which is the source of inter-service interference. The kind of nationwide band plan the Commission employs in nearly every other mobile wireless context does just that. It will provide simplicity for forward auction bidders and greater certainty that they can actually provide service to their customers to recoup multi-billion dollar investments. Simplicity and certainty will drive bidding in the forward auction, which will raise revenues and encourage robust broadcaster participation. The result is an auction that is successful for all stakeholders.

II. THE COMMISSION SHOULD CONDUCT ADDITIONAL ANALYSIS OF THE POTENTIAL FOR INTERMODULATION INTERFERENCE TO DTV RECEPTION.

In its comments, the Consumer Electronics Association (“CEA”) raises concerns about the risk of intermodulation interference to DTV reception.⁸ The Commission’s proposed 600 MHz band plans, and its insistence on market variation, raise the distinct potential for intermodulation interference from multiple LTE signals. To date, the FCC has not adequately analyzed this issue. NAB agrees that this significant issue merits prompt study and analysis to avoid adopting a plan that is arbitrary and capricious.

⁸ CEA Comments at 2 (“Based on CEA’s analysis of DTV receivers, intermodulation interference from LTE and DTV operations into DTV receivers poses a substantial risk to DTV reception, not only for legacy receivers currently on the market, but also for future receivers that may need to continue receiving frequencies also used for LTE operations *due to market variability.*”) (emphasis added).

The Commission's rationale that intermodulation interference is not a significant concern here because it has not been an issue in the past is unsound. As CEA explains, "(f)or any given DTV transmitter, it will be substantially more likely that there is a corresponding strong LTE signal at the appropriate frequency sufficient to cause intermodulation interference than is the case with DTV stations today."⁹ Further, intermodulation interference from current LTE downlink and DTV operations poses much less risk of interference when compared to the proposed 600 MHz band plans. There is substantial frequency separation between DTV and 700 MHz LTE operations, and larger frequency separations generally reduce the risk of intermodulation interference. Currently, DTV channel 51, at 692-698 MHz, is the closest DTV operation to a widely deployed wireless downlink band – wireless band 17 at 734-746 MHz.¹⁰ Thus, under the current 700 MHz band plan, the lowest intermodulation pair (N+k and N+2k) is the seventh and fourteenth adjacent channels. By contrast, the 600 MHz band plans will readily produce second and fourth adjacent channel situations, with market variability further exacerbating this problem.

The Commission's assertion that this interference is minimized by the cellular nature of LTE operations is simply wrong. The cellular nature of LTE does not *minimize* the likelihood that such interference will affect DTV services, it *increases* it. As CEA observes, "the 'cellular nature' of LTE operations suggests that there will be many base

⁹ *Id.* at 6.

¹⁰ *Id.* at 8.

stations and therefore many locations where LTE signals will be sufficient to create intermodulation interference.”¹¹

NAB also agrees with CEA’s assessment that the potential for intermodulation interference is not only a problem for legacy DTV receivers but also a problem for *future* DTV receivers due to market variability.¹² Market variability means that TV stations will continue to broadcast on 600 MHz channels in some markets. Market variability also means that consumer electronics manufacturers will continue to build television receivers that can receive broadcast signals in bands in which both broadcasters and wireless carriers may operate. As a result, those future television receivers will be open to LTE frequencies and susceptible to intermodulation interference. CEA states that potential fixes that would allow television receivers to receive only broadcast DTV signals in the area, such as software-defined or GPS-defined radios, are cost-prohibitive or impractical given current technology.¹³

To minimize the impact of intermodulation interference on broadcasters and consumers, further study is needed to determine proper guard band configurations for the 600 MHz band plans and to determine where, if at all, to implement market variability. The Commission should immediately undertake and complete these interference studies use its results to make any modifications to the band plan and market variability necessary to ensure that consumers are not harmed by intermodulation interference.

¹¹ *Id.* at 11.

¹² *Id.* at 11-12.

¹³ *Id.* at 12, n.23. Marketing and building TV sets that can only be used in certain geographic areas is also impractical. Consumers move and expect to take their televisions to new locations without needing to buy new ones.

NAB also agrees with CEA that relocating television stations in the 600 MHz band presents unique challenges depending on where in the band stations are placed: the uplink portion; the downlink portion; or the duplex gap. The Commission would be best served by identifying the costs and benefits of each option and establishing criteria by which to make a determination.¹⁴ Of course, the development of such criteria and the cost/benefit analysis should be subject to public notice and comment to ensure that the views of both broadcasters and the wireless industry are fully taken into account.

Finally, NAB also supports CEA's request for clarification regarding how a broadcast television licensee can request expansion of its contour and protection of stations during the 39-month repacking construction period.¹⁵ The FCC has determined that, as part of its initial construction permit application, a broadcaster may request up to a one percent coverage contour increase. NAB urges the Commission to clarify that this increased contour will be deemed the station's new baseline for the purposes preventing a broadcaster from expanding its contour in the direction of a wireless licensee, and that this increased contour should be protected from interference due to wireless operations.¹⁶ NAB also requests the Commission to clarify that wireless licensees must protect DTV operations on existing channels as well as new repacked DTV operations that will be constructed during the 39 month transition period.

¹⁴ *Id.* at pp. 20-21.

¹⁵ *Id.* at p. 22-23.

¹⁶ See *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567 at para. 525 (2014).

III. CONCLUSION.

Comments in this proceeding underscore yet again that a variable band plan introduces unnecessary complexity into the auction and creates myriad technical challenges for operations after the auction. Ultimately, however, if the FCC proceeds with this misguided plan, the Commission should hold firm to the principle that broadcast stations and their viewers should not be harmed by an auction Congress specified should be voluntary and must allow broadcasters to serve the same people and the same areas they do today. Accordingly, NAB supports the Commission's proposal to allow no harmful interference to broadcast television stations from wireless carriers operating in the 600 MHz band, and urges the Commission to conduct a prompt further inquiry into concerns intermodulation interference.

Respectfully submitted,

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