Comments of

TechFreedom[1]

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In the Matter of

Petitions for Reconsideration of Action in a Rulemaking Proceeding:

Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions

GN Docket No. 12–268

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Introduction & Summary

On November 5, 2014, the Federal Communications Commission ("FCC" or "Commission") released a Public Notice[2] establishing a comment cycle for parties to file oppositions and replies to the Petitions for Reconsideration ("Petitions") filed with the FCC over its Report and Order released earlier this year setting forth rules to govern the upcoming broadcast incentive auctions.[3] The planned broadcast incentive auctions constitute the most innovative and ambitious spectrum reallocation proceeding ever attempted by a regulatory authority, and the 484-page Report and Order from earlier this year is a testament to the difficult and complicated questions presented by this initiative.

Due to the length and complexity of the Report and Order, it is perhaps unsurprising that it has been the subject of numerous Petitions for Reconsideration from interested parties.[4] Petitions were filed by parties representing various interests likely to be affected by the FCC's broadcast incentive auctions, and the particular issues raised in their Petitions reflect their varying perspectives and areas of concern.[5] TechFreedom was not amongst those who filed Petitions for Reconsideration, but too much is at stake here for us not to respond to some of the arguments raised in those Petitions. In particular, these comments address the technical parameters proposed for unlicensed operations in the 600 MHz Band post-auction; the Petition for Reconsideration filed by Qualcomm, Inc. ("Qualcomm") questioning those parameters; and the FCC's recent initiation of a rulemaking to address these issues by amending its Part 15 rules governing unlicensed operations.

As we lack the engineering competence and resources to engage with the particular technical details at issue, these comments focus rather upon the higher-level policy questions implicated by these technical considerations, drawing upon recent experiences with these same issues in other settings. Although we take no particular stance on the merits of Qualcomm's Petition, we hope that these comments will provide thoughtful guidance for the Commission to take into consideration going forward, with the ultimate goal of making the broadcast incentive auctions a resounding success that can serve as a model for both the FCC and other spectrum regulatory bodies around the world — a success measured in terms of reallocating spectrum to uses more highly demanded by consumers

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[2] Pleading Cycle Established for Oppositions and Replies to the Petitions for Reconsideration of the *Incentive Auction Report and Order*, *Public Notice*, GN Docket No. 12–268 (Nov. 5, 2014), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db1105/DA-14-1608A1.pdf.

[3] Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, *Report and Order*, GN Docket No. 12–268 (rel. June 2, 2014) [*Incentive Auctions R&O*], *available at* https://apps.fcc.gov/edocs_public/attachmatch/FCC-14-50A1.pdf; *see also* Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156, §§ 6401–05 (2012) ["Spectrum Act"], *available at* http://www.gpo.gov/fdsys/pkg/PLAW-112publ96/pdf/PLAW-112publ96.pdf (giving the FCC authority to conduct broadcast incentive auctions and establishing certain requirements and conditions on that authority).

[4] To date, a search in the FCC's electronic comment filing system ("ECFS") in the 12–268 docket for "Petitions for Reconsideration" yields 32 different Petitions. *See* http://apps.fcc.gov/ecfs/comment_search/input?z=5rlb9.

[5] *See, e.g.*, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, *Petition for Reconsideration of Sprint Corp.*, GN Docket No. 12–268 (Aug. 11, 2014) [*Sprint Petition*], *available at* http://apps.fcc.gov/ecfs/document/view?id=7521757784; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, *Petition for Reconsideration of the Walt Disney Co.*, GN Docket No. 12–268 (Sept. 15, 2014) [*Disney Petition*], *available at* http://apps.fcc.gov/ecfs/document/view?id=7522587032; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, *Petition for Reconsideration of LPTV Spectrum Rights Coalition*, GN Docket No. 12–268 (Sept. 15, 2014) [*LPTV Coalition Petition*], *available at* http://apps.fcc.gov/ecfs/document/view?id=7522654599.

Unlicensed Operations in the 600 MHz Band

The *Incentive Auctions R&O* proposed several steps designed to accommodate unlicensed operations in the 600 MHz Band post-auction, including those that currently utilize the television white spaces ("TVWS") in the 600 MHz Band on a secondary basis (notably, wireless microphones).[6] In addition to permitting unlicensed operations in both the guard bands and duplex gap of the 600 MHz Band post-auction, unlicensed operators will be allowed to utilize the remaining TVWS, one dedicated 6 MHz channel in each market, Channel 37 in any market where it is not being used for Radio Astronomy Service ("RAS") or Wireless Medical Telemetry Service ("WMTS"), and any additional vacant channels available after the forward auction.[7]

In its Petition for Reconsideration, Qualcomm criticized the plan in the *Incentive Auctions R&O* regarding unlicensed operations in the 600 MHz band post-auction as "putt[ing] the cart before the horse."[8] Commissioners Pai and O'Rielly also objected to this in their dissenting statements to the *Incentive Auctions R&O*.[9] There was significant concern that the Commission's promised ability to permit the proposed unlicensed operations in the 600 MHz Band was conjectural, and unsupported by substantial evidence at the time.[10] Qualcomm also pointed to a detailed technical study it had conducted, as well as to a lengthy technical paper submitted by the Consumer Electronics Association ("CEA"), both of which showed that certain unlicensed TVWS operations in the duplex gap and guard bands could cause significant and unresolvable interference problems.[11]

The *Incentive Auctions R&O* did not address either Qualcomm's or CEA's technical concerns, but, to support its claims, the FCC promised soon to initiate a separate proceeding to consider amending the Commission's Part 15 rules to accommodate these new planned uses, and ensure that such operations do not interfere with the licensed operators that will also be using the 600 MHz Band.[12] Following through on that promise, the Commission eventually released a Notice of Proposed Rulemaking at the end of September that "propos[ed] a number of specific differences in the technical requirements to prevent harmful interference to 600 MHz Band services, the WMTS and the RAS both during and after the post-auction transition period."[13]

The *Part 15 NPRM* asks many important questions, and is an important step towards ensuring unlicensed operations can thrive in the 600 MHz Band. Two particularly promising ideas put forward include amending Part 15 to (1) allow for channel bonding and channel aggregation by unlicensed devices and (2) institute a table of permissible power levels that can allow operators in rural areas to use

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[6] *See Incentive Auctions R&O*, III-C, ¶¶ 258–78.
[7] *Id.* at ¶ 258.
[8] *See* Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, *Petition for Reconsideration of Qualcomm, Inc.*, GN Docket No. 12–268, 2 (Sept. 15, 2014) [*Qualcomm Petition*], *available at* http://apps.fcc.gov/ecfs/document/view?id=7522669148.
[9] *Incentive Auctions R&O*, at 482 (Comm'r Pai, dissenting), 484 (Comm'r O'Rielly, dissenting).
[10] *Qualcomm Petition*, at 3.
[11] *Id.* at 4–9.
[12] *Incentive Auctions R&O*, at ¶ 268.
[13] Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37, *Notice of Proposed Rulemaking*, ET Docket No. 14–165, ¶ 17 (Sept. 30, 2014) [*Part 15 NPRM*], *available at* https://apps.fcc.gov/edocs_public/attachmatch/FCC-14-144A1.pdf.

higher power levels, which means greater bandwidth and higher data rates for consumers in unserved high-cost areas.[14]

Yet this approach still represents a significant failure of the FCC's administrative process. As Commissioner Pai noted in his statement accompanying the *Part 15 NPRM*, the Commission should have sought "comment in a neutral manner on whether we can permit [unlicensed] operations without causing harmful interference to licensed service *before* we decided to allow them."[15] By first promising such grand provisions for unlicensed operations in the *Incentive Auctions R&O* and then leaving it up to the FCC's Office of Engineering and Technology ("OET") to figure out how to ensure it all works on a technical level, the Commission takes a substantial risk: failing to make available the critical low-band spectrum needed to serve consumers in a timely manner.

Lessons Learned From 700 MHz Interoperability

To be sure, the OET has some of the brightest engineers and policy minds in the country. They are perfectly capable of doing the research, performing the necessary field tests, and eventually coming up with a set of technical parameters that will suit the interested parties in this proceeding. The risk that it would fail to do so is small, if not negligible. However, these are relatively new and innovative issues, so there is a significant risk that broadcasters and carriers will be at least somewhat fearful that the OET may wind up getting it not exactly right, thereby decreasing auction revenues and broadcaster participation — and some recent history suggests that such fears may not be entirely unfounded.

Following the digital television ("DTV") transition, the Commission auctioned off the reclaimed spectrum (often referred to as the "Digital Dividend") in the lower 700 MHz Band in Auction 73, raising a total of over $18 billion in net winning bids.[16] While the Commission intended the lower A, B, and C blocks to be fungible, interference concerns from carriers — related to the efficacy of the lower guard band in blocking out of band emission ("OOBE") interference from the broadcasters on Channel 51 — led to significantly lower returns for A block licenses.[17] At the same time, the subsequent creation by the 3rd Generation Partnership Project ("3GPP") of a "boutique" band class caused 700 MHz interoperability problems that eventually had to be solved by a Commission order effectively based around a consent decree with AT&T.[18] As the FCC recognized in that order, interference from Channel 51 broadcasters into B and C block operations was "unlikely for a number of reasons[,]"[19] and thus the boutique Band Class 17 could be abandoned in favor of the general Band Class 12. But the fact remained that the

[14] *Part 15 NPRM*, at ¶¶ 54–62.
[15] *Id.* at 92 (Comm'r Pai, approving in part and concurring in part).
[16] *See* FCC, *Summary for Auction 73: 700 MHz Band* (last updated June 19, 2012), *available at* http://wireless.fcc.gov/auctions/default.htm?job=auction_summary&id=73.
[17] *See* Auction of 700 MHz Band Licenses Closes: Winning Bidders Announced for Auction 73, *Public Notice*, 2 (Mar. 20, 2008), *available at* https://apps.fcc.gov/edocs_public/attachmatch/DA-08-595A1.pdf (showing licenses in the A block to have garnered lower net winning total bids than either the B or C blocks, and A block licenses to having a significantly higher average selling price than B block licenses ($22,273,929.89 compared to $12,456,569.85), but a significantly lower average selling price than C block licenses ($395,557,583.33)).
[18] *See* Promoting Interoperability in the 700 MHz Commercial Spectrum, *Report and Order and Order of Proposed Modification*, WT Docket No. 12–69, ¶¶ 46–54 (Oct. 29, 2013), *available at* https://apps.fcc.gov/edocs_public/attachmatch/FCC-13-136A1.pdf.
[19] *Id.* at ¶ 38.

general threat of interference resulted in lower auction revenues, a significant battle over standards-setting at the 3GPP, and, ultimately, a significant administrative headache for the Commission.[20]

Perhaps worst of all, the 700 MHz interoperability fiasco significantly delayed the ability of some carriers to deploy their networks, leaving the spectrum to lie fallow and unused while consumers waited for faster mobile broadband service. The opportunity presented by the incentive auctions to vastly increase the utility of the 600 MHz Band can hardly be overstated: In addition to repacking the broadcasters into a denser configuration, multiple blocks of spectrum will be opened up in every market for vastly more efficient broadband applications. By some accounts, these broadband uses — licensed and unlicensed, fixed and mobile — will increase the utility of the 600 MHz Band by a factor of ten, as both the Verizon and AT&T networks support 100 million users on 100 MHz of spectrum (1 Hz/user) and Wi-Fi supports 300 million users on 300 MHz of spectrum (1 Hz/user), whereas broadcasters consume 10 Hz/user.[21] That means huge benefits for service providers, application developers, device manufacturers, and, most importantly, consumers. But if interference concerns threaten the fungibility of spectrum blocks the 600 MHz Band as they did the 700 MHz, these economic and consumer welfare benefits may be significantly delayed, or diminished.

Conclusion

In the broadcast incentive auctions, the fungibility of spectrum blocks is a critical factor that must be accounted for if the Commission's auction design to succeed.[22] As Commissioner Pai put it, "the FCC's goal is to offer generic, fungible licenses, so impairing any spectrum around the guard bands will drive down the value of each and every single 600 MHz license and thus deter auction participation."[23] With this goal in mind, it is critical that the OET not only get the standards for unlicensed operations in the 600 MHz Band right, but that it do so early enough — and with enough technical support — to assuage any reservations that either broadcasters or carriers may have before having to decide whether to participate in the upcoming incentive auctions. Broad participation in the auction is paramount to its success, and providing certainty to would-be participants is best way to maximize the benefits of the auction for consumers. To that end, with the lessons learned from the recent 700 MHz interoperability saga in mind, we encourage the Commission — and the OET in particular — to take a hard look at these issues, and ensure that all of the agency's institutional expertise is brought to bear on developing robust standards for unlicensed operations and guard bands in the 600 MHz Band.

Although the administrative procedure embodied in the *Incentive Auctions R&O* was highly problematic, the FCC still has the chance to get the substance of the Order right — which, in the end, is the most important thing. Through the *Part 15 NPRM*, the Commission can build the record and establish that its plan for unlicensed operations in the 600 MHz band will not cause harmful interference to any of the

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[20] *See, e.g.*, Tammy Parker, *AT&T: 700 MHz Interoperability Proposal Unnecessary, Unprecedented*, FIERCEWIRELESSTECH (Aug. 19, 2012), *available at* http://www.fiercewireless.com/tech/story/att-700-mhz-interoperability-proposal-unnecessary-unprecedented/2012-08-19.

[21] Richard Bennett, *Powering the Mobile Revolution: Principles of Spectrum Allocation*, 9 (Report Presentation on Capitol Hill, July 31, 2012), *available at* http://www2.itif.org/2012-powering-mobile-spectrum.pdf.

[22] *Part 15 NPRM*, at 92 (Comm'r Pai, dissenting).

[23] *Id.* at 93.

licensed operators, thereby providing broadcasters and carriers with the level of certainty that will increase their participation in the upcoming incentive auctions.

The complaints voiced by Qualcomm, having filed its Petition for Reconsideration two weeks before the FCC released its *Part 15 NPRM*, are perhaps no longer deserving of a full reconsideration of the *Incentive Auctions R&O* at this point, but their general concern remains valid: if broadcasters and carriers are not confident in the technical standards for guard bands and unlicensed operations in the 600 MHz Band post-auction, their participation in the incentive auctions will be reduced, and the success of the entire proceeding will be jeopardized — meaning consumers will be denied the benefits of spectrum that might otherwise have been made available. While an Order on Reconsideration may not be needed in order to ensure that such confidence is gained in advance of the incentive auctions, if that is what it takes in order to give the FCC time to develop technical standards robust enough to allay potential concerns among broadcasters and other users, then so be it. Although the FCC faces pressure to get the incentive auctions done as soon as possible — to stay within its authority under the Spectrum Act and fulfill its Congressional directives — it is more important to get these things done *right* than it is to get them done quickly. As the 700 MHz interoperability saga showed, failure to fully account for interference threats in the FCC's technical standards can have significant and deleterious effects on auction successes, and potentially result in the FCC having to expend significant administrative resources (and taxpayer dollars) on the back-end to ameliorate problems that could have been prevented by a better process initially.

We hope that these brief comments will encourage the Commission to bear these concerns in mind as it proceeds, and, ultimately, to put together the most successful and innovative spectrum auction the world has ever seen.