Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band	)	GN Docket No. 12-354

COMMENTS OF CANTOR TELECOM SERVICES, L.P. IN RESPONSE TO SECOND FURTHER NOTICE OF PROPOSED RULEMAKING

July 15, 2015

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EXECUTIVE SUMMARY

Cantor Telecom Services, L.P. ("Cantor Telecom") applauds the Commission for seeking further comment on the development of a spectrum exchange to further the Commission's goals of promoting widespread innovation and access to flexible, fungible spectrum in the 3.5 GHz Band and encouraging efficient use of this valuable resource. Cantor Telecom maintains that a spectrum exchange would be the most effective way to facilitate rapid, robust, open market transfers as Priority Access License needs arise, providing significant benefits and efficiencies to consumers and the U.S. Government, including enhanced price discovery, transparency, and paperwork and cost efficiencies, improving access to and significantly increasing the liquidity of the spectrum.

As further discussed herein, Cantor Telecom envisions that a spectrum exchange would be complementary to, and interoperable with, one or more Spectrum Access Systems that would compile and publish relevant data regarding use, pricing and availability, among other functions. Cantor Telecom supports partitioning and disaggregation of Priority Access licenses, such that use rights may be divisible by geography, time and capacity in order to derive maximum value per unit. An engineering definition of "use" for Priority Access Licenses should be adopted to permit the Commission and spectrum exchange participants to determine what spectrum is or could be made available for secondary market transactions. Finally, Cantor Telecom suggests that the Commission adopt a registration or precertification process to screen for licensee eligibility that would allow spectrum exchange participants to participate in rapid, real-time transactions.

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Cantor Telecom Services, L.P. ("Cantor Telecom") hereby submits these comments in response to secondary market issues presented in the Federal Communications Commission ("FCC" or "Commission") Second Further Notice of Proposed Rulemaking establishing rules for the Citizens Broadband Radio Service ("CBRS") in the 3550-3650 MHz ("3.5 GHz") band and seeking additional comment on discrete issues including secondary market structure.[1]

I. BACKGROUND

Cantor Telecom is a subsidiary of Cantor Fitzgerald, L.P. ("Cantor Fitzgerald"), the holding company for a diversified organization, including financial services such as investment banking and securities brokerage, and real estate services and real estate financing operating in the global financial and commercial real estate markets, which has been in operation since 1945. As one of the last private partnerships operating on Wall Street, Cantor Fitzgerald has utilized its extensive experience and innovation as a computer-based bond brokerage to become a global premier financial services firm.

[1] *In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Report and Order and Second Further Notice of Proposed Rulemaking, FCC 15-47 (rel. April 21, 2015) ("*Order & Second FNPRM*").

Cantor Fitzgerald and its affiliates have approximately 10,000 employees in 20 countries including major financial hubs worldwide and Cantor Fitzgerald acts as one of 22 Primary Dealers to the United States Federal Reserve.

For decades, Cantor Fitzgerald has been a market leader in the most efficient and cost-effective trading methods, providing expertise in a variety of areas, including the equity and fixed income capital markets, commercial real estate brokerage and finance, prime brokerage, gaming technology, insurance products and others. Cantor Fitzgerald and its affiliates conduct more than $150 trillion of notional volume in financial transactions for customers annually.

Cantor Fitzgerald has a long history of leadership in the development and operation of innovative electronic exchanges and Cantor Telecom has participated in a number of rulemaking proceedings pertaining to spectrum issues. Cantor Fitzgerald's electronic trading platforms enable participants to transact business online instantaneously and can be rapidly customized with auction and reverse auction capabilities, inquiry-based functions, real-time distribution and transaction capabilities which can operate on a secure, high-speed private network or over the public Internet. Cantor Fitzgerald has long been at the forefront of electronic exchange innovation and recently divested one such platform facilitating trading in several forward U.S. Treasury security markets to NASDAQ.

Cantor Telecom applauds the Commission for seeking further comment on the development of a spectrum exchange, recognizing that "the secondary market could provide a viable means of matching supply and demand" and "facilitate a vibrant and

deep market for [Priority Access License ("PAL")] rights."[2] As discussed in its prior filings, Cantor Telecom envisions a spectrum exchange as a tool under the government's supervision that can be used to balance resource availability and transparency, while preserving classified information to maximize public utility and government revenues.[3] Cantor is well positioned to offer originally and support aftermarket transactions for 3.5 GHz use rights given its experience in maintaining a low-friction and pervasive marketplace for U.S. Government securities as well as one of the world's largest trading platforms for government and corporate securities, generally.

Cantor Telecom agrees with the Commission that "such an exchange could improve the ability of individual licensees to obtain microtargeted (in geography, time, and bandwidth) access to priority spectrum rights narrowly tailored to their needs on a highly customizable, fluid basis,"[4] and urges the Commission to ensure that any rules ultimately adopted are sufficiently flexible to accommodate innovative spectrum exchange approaches, as further discussed herein.

II. A SPECTRUM EXCHANGE WOULD BE THE MOST EFFECTIVE METHOD OF FACILITATING VOLUNTARY TRADING OF PALS.

The Commission seeks additional comment on the potential use of one or more spectrum exchanges to facilitate the transfer of PALs in the secondary market and any related changes to existing Part 1 secondary market rules that should be considered.[5] At

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2 *Order & Second FNPRM* at ¶ 431.

3 *See In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Ex Parte Comments of Cantor Fitzgerald Telecom Services, LLC, FCC 12-148 (filed July 31, 2013); Ex Parte Comments of Cantor Fitzgerald Telecom Services, LLC (filed Mar. 13, 2014); Comments of Cantor Fitzgerald Telecom Services, LLC (filed July 14, 2014) ("*Cantor Telecom Comments*").

4 *Order & Second FNPRM* at ¶ 433.

5 *Order & Second FNPRM* at ¶ 434.

the outset, Cantor Telecom commends the Commission for adopting NTIA's revised recommended exclusion zones and two-phase approach to federal Incumbent User protection, which will open up a much larger portion of the country for CBRS once the Spectrum Access System ("SAS") is approved and commercially viable.[6] This, in turn, will yield a greater supply of PALs available for auction and secondary market transactions in potentially valuable markets.

Cantor Telecom believes that a spectrum exchange would be the most efficient and effective way to facilitate rapid, robust, open market transfers as PAL needs arise but may require further consideration of certain existing secondary market and licensee eligibility rules to enable rapid, real-time transfers. A streamlined spectrum exchange would support the Commission's goal of "promoting efficient and widespread use of the 3.5 GHz band for a variety of potential users."[7] The adoption and use of a spectrum exchange through which PAL users could trade and acquire spectrum based upon their needs at any given time would provide significant benefits and efficiencies to consumers and the U.S. Government ("USG"), including enhanced price discovery, transparency, and paperwork and cost efficiencies, improving access to available spectrum and significantly increasing the liquidity of the spectrum.

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6 *Order & Second FNPRM* at ¶ 258.

7 *In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Further Notice of Proposed Rulemaking, FCC 14-49 (rel. April 23, 2014). *See also In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Notice of Proposed Rulemaking, FCC 12-148, ¶ 14 (rel. Dec. 12, 2012) ("The Commission recognizes the shortage of available spectrum for commercial broadband uses in this country and the urgent need to make additional spectrum available . . .".).

A. An Interoperable Spectrum Exchange with the Proposed SAS would Enable a Robust Secondary Market.

In the *Order & Second FNPRM*, the Commission outlined the required functions the SAS which will be responsible for coordinating operations among PAL, GAA and Incumbent Access users and for preventing harmful interference to Incumbent and PAL users to promote a stable spectral environment.[8] As Spectrum Bridge Inc. ("Spectrum Bridge") notes, the TV Whitespaces database provides one example of a "fully functional spectrum management system" capable of supporting a secondary marketplace for spectrum with the demonstrated "ability to support n-tier users, spectrum allocation policies, configurability to support various interference models, incumbent protection and pre-emption."[9] Similarly, Cantor Telecom envisions that a spectrum exchange would be complementary to, and interoperable with, one or more SASs. If multiple SASs are established, the SASs must be synchronized and will have to communicate with each other and with the spectrum exchange real-time to prevent conflicting secondary market transactions.

As discussed in prior comments, Cantor Telecom believes that a 3.5 GHz spectrum exchange would best be managed by an independent and disinterested third party who can compile and make available the necessary information to facilitate these diverse uses in the most efficient manner.[10] An experienced broker and exchange operator would be able to utilize its expertise to provide an electronic marketplace through which operators can come together to share this limited and valuable resource.

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[8] *Order & Second FNPRM* at ¶ 320.

[9] *In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Comments of Spectrum Bridge, Inc., at 1, 10 (filed Feb. 20, 2013) ("*Spectrum Bridge Comments*").

[10] *Cantor Telecom Comments* at 5.

Such an exchange could provide the necessary interference predictions to protect operators, and the exchange operator could actively work with users to resolve any claims of interference as well as provide dynamic usage reporting. Moreover, a spectrum exchange would be compatible with geolocation database technology, which would serve as the underlying mechanism to assign frequencies and authorize spectrum users to transmit.

Cantor Telecom urges the Commission to solicit detailed proposals from prospective spectrum exchange operators, concurrent with the request for proposals from SAS administrators.[11] Cantor envisions that the selected spectrum exchange operator would work with the Commission to establish framework regulations for the operation of a spectrum exchange and develop a rulebook and relevant agreements that would apply to exchange participants. The regulations and rulebook would cover topics such as the participation and qualification of brokers, traders, market-makers, clearing members, clearinghouses, margin requirements and procedures, interference reviews, "kill-switch" criteria for reversion of spectrum to the USG as needed, trading procedures (for example whether/how off-market negotiated trades would be permitted), reporting and public dissemination of trade prices, eligibility and documentation requirements for the various types of market participants.

Certain requirements must be met in order to obtain maximum value for use rights associated with PALs available on the spectrum exchange. First, information regarding the commercial utilization of the 3.5 GHz spectrum resource must be published and could be incorporated into the SAS. Second, holders of use rights must be able to easily and

[11] *See Wireless Telecommunications Bureau Announces Comment Dates for 2.5 GHz Second FNPRM and Upcoming Releases in GN Docket No. 12-354*, Public Notice, DA 15-750 (rel. June 25, 2015).

freely exchange such rights while complying with rules and regulations associated with use right ownership. As discussed above, use rights should be divisible by geography, time and capacity in order to derive maximum value per unit. Once set, each use right must be freely tradable on a liquid, reliable exchange. If a secondary market has low liquidity, it may discourage market participation, and thus reinforce the market's illiquidity, providing a disincentive for holders to use the exchange, or for prospective holders to use it. A secondary market with greater liquidity may also be useful for private firms to be able to value their spectrum holdings, by reference to market prices. The Commission should therefore adopt policies that create incentives for holders and prospective holders to conduct a trade. For example, a clearinghouse process would help to assure creditworthiness and reduce the risk of failed trade settlements. Trades could also be required to be conducted on the exchange with reporting of prices and other relevant data to help establish market prices. Third, the USG must receive adequate recompense for allowing the 3.5 GHz spectrum resource available to non-Incumbent users. Spectrum, a finite public resource owned and administered by the USG, increasingly drives the United States economy and a virtual innovation economy globally. Just as use right holders must receive fair value for holdings they acquire in the aftermarket, the USG must receive value it attains for issuing initial spectrum use rights to ensure a properly functioning economy.[12]

B. Adoption of an Engineering Definition of "Use" would be Most Compatible with a Spectrum Exchange Model.

The Commission seeks comment on the most appropriate definition of PAL "use" to determine if priority access rights have not been claimed such that the Commission

[12] *Cantor Telecom Comments* at 5-6.

may permit opportunistic access to the spectrum to promote "maximum flexibility and utility of the 3.5 GHz Band for the widest range of potential users."[13] Cantor Telecom maintains that the definition of "use" should constitute verifiable commercial use and not simply "lighting" PAL capacity for testing or non-commercial purposes. An engineering definition of "use" which effectively leverages "the SAS to define a boundary that would forbid GAA access near Priority Access CBSDs"[14] would be most compatible with Cantor's envisioned spectrum exchange and could encourage additional secondary market participation. Given that PAL users will retain their use rights for their entire license area for the entire license term,[15] if use data is populated into the spectrum exchange based on a yet-to-be-determined metric (e.g., minimum signal strength), spectrum exchange participants interested in acquiring PAL rights on the secondary market could utilize this information to proactively extend an invitation to a PAL licensee about trading its unused spectrum rights, in part or in full.

III. PARTITIONING AND DISAGGREGATION OF LICENSES WOULD FACILITATE A VIBRANT SECONDARY MARKET.

In the *Order & Second FNPRM*, the Commission seeks comment on proposals to allow partitioning and disaggregation of PALs.[16] Cantor agrees with comments filed by AT&T Services, Inc. ("AT&T"), Qualcomm Incorporated and the Wireless Internet Service Providers Association ("WISPA") that support partitioning and disaggregation of licenses to facilitate a vibrant secondary market.[17] As AT&T asserts, "flexibility in the

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13 *Order & Second FNPRM* at ¶ 419.

14 *Order & Second FNPRM* at ¶ 420.

15 *See Order & Second FNPRM* at ¶ 74.

16 *Order & Second FNPRM* at ¶ 434.

17 *See In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Comments of AT&T, at 4 (filed Dec. 5, 2013) ("*AT&T*

deployment of PALs will be important to commercial operators and other Priority Access licensees," given that PALs may be needed for varying durations and geographic areas and licensees should be able to gain access as needs arise.[18]

The Commission has determined that 3.5 GHz spectrum will be allocated in 10 MHz blocks, at the census tract level, over three-year non-renewable license terms with the option for an initial six-year term (comprised of two consecutive three-year terms).[19] Cantor Telecom urges the Commission not to prohibit, as it suggests, segmentation of PALs, despite their relatively small geographic size and limited duration and the potential prevalence of GAA spectrum in license areas.[20] The availability of GAA spectrum does not provide the same meaningful use and interference protection rights afforded to PAL uers, which are often necessary to meet stringent quality of service requirements for commercial services and which encourage innovation and capital investment in the spectrum.[21] Permitting dynamic disaggregation and partitioning of the licenses in terms of geography, duration or bandwidth could enhance liquidity and improve demand and value of the spectrum in the secondary market, allowing the market to work freely and encouraging the most efficient use of spectrum.

Cantor Telecom's exchange and geolocation database technology operates in near real-time, and can dynamically disaggregate and partition spectrum. As such, Cantor

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Comments"); Comments of Qualcomm Incorporated, at 3-4 (filed July 14, 2014); Comments of WISPA, at 21-22 (filed July 14, 2014).

18 *AT&T Comments* at 4.

19 *Order & Second FNPRM* at ¶¶ 90-113.

20 *Order & Second FNPRM* at ¶ 434.

21 *See, e.g.¸In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, Comments of Telecommunications Industry Association, at 8 (filed Dec. 5, 2013) (noting that licensed spectrum offers a superior user experience based on predictable service quality as compared to the license-by-rule approach framework applicable to GAA use, which can generally only be considered a complement to licensed spectrum).

Telecom maintains that these parameters could be easily built into the spectrum exchange without creating any significant administrative burden.

IV. A SPECTRUM EXCHANGE COMPLEMENTARY TO THE SAS WOULD REDUCE TRANSACTION COSTS AND INCREASE AUTOMATION OF PAL TRANSFER AND LEASE APPLICATIONS.

The Commission's existing secondary market rules which permit leasing or transfers of licenses do not provide for immediate, real-time transfers of license rights and often require weeks or months to approve because of Commission review or backlogs. A spectrum exchange would reduce the administrative burden on the Commission to review, process and approve license transfers and leases under existing Part 1 rules and would facilitate more rapid use of spectrum that would otherwise lie fallow pending Commission approval of a transaction. Cantor Telecom also agrees with Spectrum Bridge, Inc. that the "operational costs of an SAS system are minimal when amortized across the total costs of implementing, deploying and maintaining a 3.5 GHz wireless eco-system" and that the costs of SAS operations could be "incorporated into the costs of goods sold (radio devices) and virtually eliminated with respect to costs incurred by regulatory agencies, notwithstanding oversight."[22]

A spectrum exchange would permit qualified participants to gain immediate access to PAL use rights with additional benefits including enhanced price discovery, transparency, and paperwork and cost efficiencies, improving access to available bandwidth and significantly increasing the liquidity of the spectrum. Interested PAL users would have immediate access to pricing and spectrum availability information through the exchange, which would eliminate the burdens of entering into individual negotiations

[22] *Spectrum Bridge Comments* at 9.

and contracts with potential sellers and submitting individual applications through the FCC's Universal Service Licensing system. The completion of the transaction would be real-time and funds would be electronically processed through the exchange, with a certain percentage going to the Commission to cover transaction costs. Cantor Telecom envisions that the spectrum exchange would provide the Commission with automated reports on a real-time or periodic basis for oversight and enforcement purposes.

V. COMPATIBILITY WITH EXISTING AUCTION AND SECONDARY MARKET RULES REQUIRES FURTHER CONSIDERATION.

A. A Vibrant Secondary Market would be Enhanced By Retaining Unclaimed PAL Use Rights After Auction.

Cantor Telecom urges the Commission to consider that a vibrant secondary market requires maximum flexibility and should permit PAL users to gain access to additional spectrum as future needs arise between auction windows, given that PAL use may be "short term, *e.g.*, coverage for a large event, or longer term, *e.g.*, backhaul or access applications."[23] The Commission notes that the "3.5 GHz Band is designed to allow new, innovative operations access to flexible, fungible spectrum. The small cell deployment envisioned for the 3.5 GHz band should enable tremendous spatial reuse and coexistence among users."[24] However, as currently structured, PALs will be assigned by competitive bidding only where the Commission receives multiple competing applications in a given license area, as required by Commission rules.[25] In order to facilitate competitive bidding, the Commission will make available one less PAL than the total number of PALs in a given census tract for which all applicants have applied, up to

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23 *Order & Second FNPRM* at ¶ 432.

24 *Order & Second FNPRM* at ¶ 138.

25 *Order & Second FNPRM* at ¶ 123, 130.

a maximum of seven.[26] Where there is only one applicant and hence no competing application, access to such spectrum will be made via shared GAA use only.[27] Thus, any potentially available PALs that are unclaimed in an auction window will revert to shared GAA, thereby losing any associated use rights, until a new auction window opens.

Cantor Telecom is concerned that the PAL auction, as currently structured, could impede a vibrant secondary market exchange, given that the number of PALs available would be predetermined every three years, limiting supply and potentially restricting access to valuable market entrants desiring to acquire PAL usage rights within the three-year time period, contrary to the Commission's stated goals of the 3.5 GHz Band. To the extent that interested parties file for reconsideration of these issues, Cantor Telecom would support a system whereby a single applicant could obtain PAL use rights during an auction window and under which any PAL spectrum that is unclaimed during an initial auction window would not automatically revert to GAA use and could still be acquired in the secondary market as a PAL to ensure continued access to exclusive usage rights. Notwithstanding the foregoing, Cantor Telecom would support opportunistic GAA use of any unused PAL spectrum until a PAL is acquired on the secondary market to promote the most efficient use of the spectrum.

B. Precertification of PAL Applicant Eligibility Requirements Would Deliver Significant Efficiency Benefits to Consumers and the Commission.

In the *Order & Second FNPRM*, the Commission extends PAL eligibility to a broad class of users, namely any entity eligible to hold an FCC license generally. Cantor Telecom applauds this approach and asserts that this will result in more robust utilization

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[26] *Order & Second FNPRM* at ¶ 133.

[27] *Order & Second FNPRM* at ¶ 136.

of 3.5 GHz spectrum and encourage innovation in the Band.[28] Cantor Telecom recognizes that, pursuant to Commission rules, all applicants for PALs must demonstrate their qualification to hold an authorization and demonstrate how a grant of authorization would serve the public interest. Qualifications include those under Section 310 of the Communications Act of 1934, as amended, regarding foreign ownership, as well as the bar on participation in spectrum auctions with respect to any person "who has been, for reasons of national security, barred by any agency of the Federal Government from bidding on a contract, participating in an auction, or receiving a grant."[29]

To facilitate an efficient secondary market exchange, Cantor Telecom suggests that the Commission adopt a registration or precertification process that would allow spectrum exchange participants to participate in rapid, real-time transactions to acquire PALs in the secondary market without holding up applications for extended periods of review. Cantor Telecom envisions that an applicant could answer a series of qualifying questions in the SAS that must be certified prior to entering the spectrum exchange system to engage in any transaction. [30] Once preauthorized, the participant could view all available PAL licenses in the applicable census tracts along with system-determined pricing information, permitting the applicant to acquire immediate PAL use rights upon transfer of funds and completion of a trade. Given the tremendous number of PAL licenses potentially available over more than 74,000 census tracts, a registration or

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28 *Order & Second FNPRM* at ¶ 88.

29 *Order & Second FNPRM* at ¶ 88.

30 As a starting point Cantor envisions the exchange(s) implementing a rule comparable to the New York Stock Exchange's "Know Your Customer," which requires brokerages to "[u]se due diligence to learn the essential facts relative to every customer, every order, every cash or margin account accepted or carried by such organization and every person holding power of attorney over any account accepted or carried by such organization." NYSE Rule 405, *available at* http://nyserules.nyse.com/NYSETools/PlatformViewer.asp?selectednode=chp_1_5_12_3&manual=%2Fnyse%2Frules%2Fnyse-rules%2F.

precertification process permitting rapid trades in the secondary market without triggering additional Commission review would result in significant manpower-, paperwork-, and cost- efficiencies for the Commission and would serve the public interest by facilitating rapid access to PAL use rights by qualified applicants seeking near-term, small cell deployments in the 3.5 GHz Band. To the extent an entity misrepresents its eligibility or becomes disqualified to hold FCC licenses at a later date, the exchange would implement safeguards to block trading and, if necessary, to unwind transactions.

VI. CONCLUSION

For the foregoing reasons, Cantor Telecom urges the Commission to explore the use of a spectrum exchange of 3.5 GHz spectrum to increase liquidity and efficient use of this finite resource.

Respectfully submitted,

/s/

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