



**6712-01**

**FEDERAL COMMUNICATIONS COMMISSION**

**47 CFR Part 96**

**[GN Docket No. 17-258; FCC 17-134]**

**Promoting Investment in the 3500-3700 MHz Band**

**AGENCY:** Federal Communications Commission.

**ACTION:** Proposed rule.

**SUMMARY:** In this document, the Federal Communications Commission (Commission) proposes and seeks comment on reforms of its licensing rules governing Priority Access Licenses (PALs) in the 3550-3700 MHz band (3.5 GHz Band). Specifically, the Commission proposes extending PAL license terms from three years to 10 years, with the possibility for renewal; seeks comment on increasing the PAL geographic licensing area; proposes to allow portioning and disaggregation of PALs on the secondary market; and proposes to amend the rules governing assignment of PALs. The Commission also proposes to remove a rule requiring public disclosure of device registration information, and seeks comment on changes to the technical rules to allow operation over wider bandwidths.

**DATES:** Interested parties may file comments on or before **[INSERT DATE 30 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]**, and reply comments on or before **[INSERT DATE 60 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]**.

**ADDRESSES:** You may submit comments, identified by GN Docket No. 17-258, by any of the following methods:

- **Electronic Filers:** Comments may be filed electronically using the Internet by accessing the Commission's Electronic Comment Filing System (ECFS):  
<http://fjallfoss.fcc.gov/ecfs2/>. See Electronic Filing of Documents in Rulemaking Proceedings, 63 FR 24121 (1998).

- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing. Generally, if more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number. Commenters are only required to file copies in GN Docket No. 13-111.
- Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.
  - All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12<sup>th</sup> St., SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.
  - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
  - U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12<sup>th</sup> Street, SW, Washington DC 20554.

People with Disabilities: To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to [fcc504@fcc.gov](mailto:fcc504@fcc.gov) or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY).

**FOR FURTHER INFORMATION CONTACT:** Jessica Greffenius, [Jessica.Greffenius@fcc.gov](mailto:Jessica.Greffenius@fcc.gov), of the Wireless Telecommunications Bureau, Mobility Division, (202) 418-2896.

**SUPPLEMENTARY INFORMATION:** This is a summary of the Commission's Notice of Proposed

Rulemaking (NPRM) in GN Docket No. 17-258, FCC 17-134, released on October 24, 2017. The complete text of the NPRM is available for viewing via the Commission's ECFS website by entering the docket number, GN Docket No. 17-258. The complete text of the NPRM is also available for public inspection and copying from 8:00 a.m. to 4:30 p.m. Eastern Time (ET) Monday through Thursday or from 8:00 a.m. to 11:30 a.m. ET on Fridays in the FCC Reference Information Center, 445 12<sup>th</sup> Street S.W., Room CY-B402, Washington, DC 20554, telephone 202-488-5300, fax 202-488-5563.

Alternative formats are available for people with disabilities (Braille, large print, electronic files, audio format), by sending an e-mail to [FCC504@fcc.gov](mailto:FCC504@fcc.gov) or calling the Consumer and Government Affairs Bureau at (202) 418-0530 (voice), (202) 418-0432 (TTY).

The proceeding this NPRM initiates shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's ex parte rules (47 CFR 1.1200 et seq.). Persons making ex parte presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral ex parte presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the ex parte presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during ex parte meetings are deemed to be written ex parte presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written ex parte presentations and memoranda summarizing oral ex parte presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native

format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's ex parte rules. We find that all ex parte presentations made by NTIA or Department of Defense representatives are exempt under our exemption for presentations by federal agencies sharing jurisdiction with the Commission (see 47 CFR 1.1204(a)(5)).

## **Synopsis**

### **I. INTRODUCTION AND BACKGROUND**

In this Notice of Proposed Rulemaking in GN Docket No. 17-258 (NPRM), the Commission seeks comment on several proposed changes to the rules governing Priority Access Licenses (PALs) that will be issued in 3550-3700 MHz band (3.5 GHz Band)—including longer license terms, renewability, larger geographic license areas, and auction methodology. These changes are consistent with the service rules and license assignment models that helped foster the development of 4G and LTE services in the United States. We anticipate that adopting similar rules for the 3.5 GHz Band similarly will encourage robust investment in network deployment. We also seek comment on changes to the technical rules that could facilitate operations over wider bandwidths while ensuring that current and future incumbent operations continue to be protected from interference. In addition, we seek changes to the information security requirements that would help safeguard private information and protect critical infrastructure.

In 2015, the Commission adopted rules for commercial use of 150 megahertz in the 3.5 GHz Band. Specifically, the First Report and Order in GN Docket No. 12-354, adopted April 15, 2015 and released April 21, 2015 (FCC 15-47), created a three-tiered framework to coordinate shared federal and non-federal use of the band. Incumbents comprise the highest tier and receive protection from all other users, followed by PAL, the second tier, and General Authorized Access (GAA), the third tier. PALs receive protection from GAA operations; GAA is licensed-by-rule and must accept interference from all other users. Automated frequency coordinators, known as Spectrum Access Systems (SASs), will coordinate operations between and among users in different access tiers. The service and technical rules governing the 3.5 GHz Band were adopted as the new Part 96 of the Commission's rules.

In June 2017, both CTIA and T-Mobile (together, Petitioners) filed petitions for rulemaking, which ask the Commission to reexamine several of the PAL licensing rules. CTIA proposes several changes to the PAL licensing rules; T-Mobile supports CTIA's proposals and makes additional proposals, including proposed changes to the amount of spectrum available for PALs and to the technical rules governing the 3.5 GHz Band. Petitioners argue that these changes are necessary to promote 5G network deployment in the Citizens Broadband Radio Service.

The Wireless Telecommunications Bureau and Office of Engineering and Technology sought comment on the Petitions—and on related issues raised in ex parte communications—on June 22, 2017 (DA 17-609), and received comments and reply comments from more than 120 parties

## **II. NPRM**

### **A. PAL Licensing Rules**

#### **1. License Term and Renewability**

The rules adopted in the First Report and Order established a three-year license term for PALs. Under the current rules, at the end of its term, a PAL will terminate automatically and may not be renewed. During the first application window, however, an applicant may apply for up to two consecutive three-year terms for a given PAL. During subsequent regular application windows, only the next three-year license term will be made available for any given PAL.

Petitioners ask the Commission to increase the PAL license term to ten years, and to include an expectation of renewal. Petitioners and some commenters argue that a longer, renewable license term will better encourage investment in the 3.5 GHz Band, stressing that a three-year term with automatic termination creates a risk that Priority Access licensees will face stranded investment in just three (or, initially, six) years. Petitioners and some commenters also disagree with the assumption underlying the current rule—that a user's ability to switch between Priority Access and GAA use will provide sufficient incentives for investment. T-Mobile argues that the current rule does not account for challenges “that providers have reported experiencing in the real world today” that can delay network deployment. For

example, CTIA cites difficulties in obtaining siting approvals, which they argue are magnified in this band, given the complexity of rolling out a high number of small cell deployments.

CTIA and several commenters also note that a ten-year, renewable licensing scheme is consistent with the Commission's "proven approach" in most other licensed mobile bands, including the bands at issue in the Spectrum Frontiers proceeding which, like the 3.5 GHz Band, "will see network deployments comprised mostly of small cells." Others argue that ten-year terms would harmonize the U.S. approach with the global approach to actively encourage 5G network deployment in the mid-band spectrum.

Other commenters, however, support the existing rules. They argue that that a longer, renewable license—combined with other potential rule changes sought by the Petitioners—would make PALs economically viable investments only for large entities, and would convert the 3.5 GHz Band from an innovative framework into a traditionally licensed band. These commenters also argue that the investments already made in the band based on the current rules belie concerns about barriers to investment and that any changes to the band should permit a diversity of deployment models and use cases and not be solely designed for the benefit of one (i.e., 5G).

We propose to revise our rules by increasing the PAL license term from three years to ten years and by eliminating the requirement that PALs automatically terminate at the end of the license term. We also seek comment on this change and on the appropriate performance requirements and renewal standards for PALs. This approach is consistent with that adopted for other wireless services and will afford each licensee sufficient time to design and acquire the necessary equipment and devices and to deploy facilities across the license area. We invite detailed comments on this proposal from all stakeholders.

We seek comment on whether the proposed rule changes will affect investment already made, as well as how they will incentivize future investment, in this band. What specific impact will a longer, renewable license have on investments and business plans already underway? How will the proposal affect investment in the future, particularly given the longer term of ten years and the possibility of

renewal? To what extent would a longer license term with the possibility of renewal facilitate the deployment of a wide array of technologies?

We also seek comment on how a longer, renewable license term for PALs could affect deployments in rural areas. Does the proposed rule change effectively promote the development and rapid deployment of new technologies, products, and services to benefit the public, including those residing in rural areas? Given concerns raised by the Wireless Internet Service Providers Association (WISPA) and other commenters about access to spectrum in rural areas, does the proposed rule change appropriately balance the objectives in Section 309(j) (47 USC 309(j))? Do these arguments present a persuasive case for maintaining the current three-year license term for PALs in rural areas? Further, does extending the license term to ten years lead to barriers to exit for companies that could impede innovation and investment or is the ability to return a license to the Commission sufficient to allay such concerns?

Additionally, we seek comment on alternative approaches to the length of the license term, including different, hybrid approaches for particular subsets of PALs (e.g., three years for some PALs, five years for some, and ten for yet others). Many of these other approaches are already in the record. For example, Charter proposes a six-year renewable term, Motorola Solutions proposes a five-year term with only a single renewal allowed, and Southern Linc and WISPA suggest that a subset of PALs could have a five-year term, with PALs seeking renewal paying a fee. What other alternative licensing terms and conditions might be appropriate for this band? What impact would these alternatives have on investment, deployment, and on smaller or rural entities seeking PALs? Commenters that submit alternative proposals should include a cost-benefit analysis to support their approach.

If the license term is increased to ten years with the possibility of renewal, PALs would more closely resemble other licenses issued by the Commission under its auction authority. Such licenses include performance requirements—typically construction requirements—and many services also include renewal standards. Some commenters argue that, if PALs are licensed for a ten-year, renewable term, the Commission should impose construction requirements on Priority Access licensees, as it has for other licensed wireless services. We seek comment on whether, if we adopt longer term, renewable PALs, it

would serve the public interest to adopt certain performance requirements to ensure that the spectrum is put to its best use in an efficient and effective manner. If so, what types of performance requirements would be appropriate? Which performance metrics (e.g., population coverage, geographic coverage) and benchmarks would be appropriate? Does the opportunistic GAA use of the band—including unused PAL channels—alleviate concerns involving spectrum warehousing or otherwise satisfy the Commission’s statutory obligations? If so, how can we take that into account in determining performance requirements for longer term, renewable PALs?

In addition, to obtain renewal, a licensee generally must show that it has continued to provide at least the initially-required level of service necessary to satisfy its performance requirement, and that it has substantially complied with the Communications Act and Commission rules. If we adopt the proposed changes to PALs, what standard, if any, would be appropriate for the Commission to apply at the end of the PAL license term to determine whether renewal is warranted? Would such a requirement be appropriate in this band? If so, how should it be applied and what level of service should be used as a renewal standard?

Some commenters have argued that, instead of renewability, the licenses should be reaucted at the end of the license term. For example, Paul Milgrom describes an auction format under which an incumbent would be required to bid for a renewal of its license at the end of the license term, but it would be given a bidding credit so that, if it won, it would have to pay only a fraction of the auction-determined price. Moreover, if the incumbent loses, it would be compensated with a transferable bidding credit to apply to the purchase of other outcomes. Milgrom argues that this would mitigate the risk that the incumbent licensee’s investments may become stranded. We seek comment on this approach and its assumptions, as well as on other approaches that might offer an alternative to renewability and still encourage robust investment in the band. Could this approach promote competition and efficient use of spectrum?

## **2. Geographic License Area**



The First Report and Order defined the geographic license area for each PAL as one census tract. Petitioners request that the Commission increase the geographic licensing area from census tracts to Partial Economic Area (PEAs). T-Mobile argues that doing so would “be consistent with the geographic licensing area that the Commission has already identified as best for 5G operations” in the Spectrum Frontiers proceeding. Petitioners and some commenters contend that licensing PALs on a census tract-basis—which could result in over 500,000 PALs—will be challenging for SAS Administrators, the Commission, and licensees to manage, and will create unnecessary interference risks due to the large number of border areas that will need to be managed and maintained. Petitioners and some commenters contend that these challenges ultimately will make PALs unattractive to licensees and reduce investment. They argue that PEAs are small enough to allow for flexible and targeted networks, but large enough to reduce border areas and decrease administrative burdens. Some commenters also contend that a larger license area (along with a longer, renewable license term) will promote global harmonization of the 3.5 GHz Band for 5G development.

Many commenters oppose expanding the geographic license area of PALs from census tracts to PEAs or other larger areas. These commenters argue that PEAs—especially in combination with other potential changes to the PAL licensing rules—could foreclose smaller entities from participating in the PAL auction. Some commenters similarly contend that enlarging the geographic area and extending the license term will effectively grant permanent spectrum rights to large carriers, and upend planned business models for targeted, local, and rural uses. Some of these commenters—including, Google and Sony, which have applied to be SAS Administrators—argue that managing licenses in over 70,000 geographic areas would not pose an undue burden “given the meaningful advances in database management, cloud computing, and other technologies and engineering systems in recent years.”

NCTA and Charter suggest that county-sized license areas could strike a balance between preserving low barriers to entry and minimizing administrative burdens. Some commenters propose using a hybrid approach to offer more than one PAL license size (e.g., offering some licenses by PEAs and others by county or census tracts). GeoLinks similarly asks us to consider whether rural areas would

benefit more from using census tracts or counties to ensure more timely broadband access to rural communities, while more urban areas could benefit from using PEAs.

We seek comment on increasing the geographic licensing area of PALs to stimulate additional investment, promote innovation, and encourage efficient use of spectrum resources. We seek comment on this proposal and on the potential effects of this change on investment in and use of the 3.5 GHz Band. We also seek comment on whether a larger license area would provide additional flexibility to facilitate the deployment of a wide variety of technologies, including 5G.

We seek comment on Petitioners' specific request to increase the license size of PALs to PEAs, and how this would affect investment in PALs—both investments currently underway and future PAL investment—and diversity of PAL uses and users. Would PEAs strike an appropriate balance between facilitating access to spectrum by both large and small providers while incentivizing investment in, and rapid deployment of, new technologies? We also note that, like census tracts, counties nest into PEAs, which in turn nest into EAs. This nesting would make it easier for operators to combine or partition their PEAs into the license area of their choice. Would the larger size of PEAs and the ability to combine and partition licenses to customize service areas effectively address the concerns raised by commenters and promote robust deployment in the band? Commenters should include cost-benefit analyses when comparing licensing PALs on a PEA-basis versus a census tract-basis, as well as for options in between these choices (e.g., licensing on a county-basis). Would PEAs effectively balance the objectives set forth in Section 309(j) of the Act (47 USC 309(j)), including encouraging “efficient and intensive” use of the 3.5 GHz spectrum and prescribing license area designations that promote “an equitable distribution of licenses and services among geographic areas” and “economic opportunity for a wide variety of applications”? What impact would licensing PALs using PEAs have on smaller entities, rural deployments, and existing investments? Would PEA-based licensing facilitate compatible, authorized users and uses occupying the same spectrum?

We also seek comment on alternatives or hybrid approaches, including those already in the record. Would counties, or a combination of PAL license areas (e.g., a hybrid combination of PEAs in

urban areas and census tracts in rural areas, offering PALs of different sizes, such as PEAs and census tracts, or some other combination) ensure a diversity of auction participants, differing technologies, and rural deployments? Since we are offering seven PALs, commenters in favor of offering different license sizes in rural and urban areas should discuss what would be the appropriate balance between larger geographic areas and census tracts. Are there other possibilities that could promote such objectives? Should the Commission reconsider package bidding of census tracts or other geographic areas for a limited number of PALs? Would this approach promote our objectives? Would package bidding, bidding credits for certain bidders or areas, or other auction design mechanisms be appropriate for us to consider if we were to increase the license area? Specifically, we seek comment on whether we should adopt the bidding credits we used in the 600 MHz Band (Incentive Auction). Commenters should include a cost-benefit analysis of their proposed alternatives or hybrid approaches and discuss how their proposed approach appropriately balances the objectives set forth in Section 309(j) of the Act (47 USC 309(j)).

In addition, we seek comment generally on how changes to the license area (on their own, and in combination with changes to the license term) could affect auction complexity. How might such changes affect bidding strategies? How would a combination of license areas affect the auction mechanism and bidding strategies? Are there insights from bidders' experience during recent auctions that may be relevant in this context?

In light of the proposed change to modify the geographic license area, as well as any other changes considered in this NPRM, should the Commission modify the current 40 megahertz spectrum aggregation limit? Should we remove it altogether? What are the costs and benefits of higher or lower limits? How would changes affect competition and new entrants?

### **3. Secondary Markets**

In the Second Report and Order in GN Docket No. 12-354 (FCC 16-55), the Commission prohibited Priority Access licensees from partitioning or disaggregating their licenses because the Commission found typical reasons for permitting partitioning and disaggregation in more traditionally licensed bands were not present in the 3.5 GHz Band. The Commission also determined that a light-touch

leasing process could achieve the goal of making PAL spectrum use rights available in secondary markets—on a targeted, flexible basis—without the need for the Commission oversight required of partitioning and disaggregation.

In its Petition, T-Mobile asks the Commission to consider allowing partitioning and disaggregation of PALs, if it permits licensing on a PEA basis. Several commenters agree that allowing partitioning and disaggregation will help ensure that PAL spectrum rights flow to their best use and support a wide variety of deployments. These commenters also argue that partitioning and disaggregation will encourage service to targeted areas, mitigating concerns that licensing larger area PALs might result in inefficient spectrum use.

Several commenters oppose the concept of secondary market transactions as a replacement for smaller geographic areas and shorter term PALs to encourage efficient use of spectrum by a variety of users. They argue that there is no guarantee that the licensee will lease or sell idle spectrum in the secondary market. Other commenters, however, suggest that, if the Commission were to make changes to the PAL license term, renewability, and geographic area, then the ability of a PAL licensee to partition or disaggregate its license on the secondary market could be a useful tool to ensure robust and targeted use of the spectrum throughout the license area.

We propose to allow partitioning and disaggregation of PALs in secondary market transactions. Allowing partitioning and disaggregation would be consistent with other changes considered in this NPRM, and is consistent with the licensing paradigm for other similarly licensed services. We also anticipate that the ability to partition and disaggregate a PAL will be an effective way to improve spectral efficiency and facilitate targeted network deployments, particularly if the Commission adopts a longer license term or larger license area for PALs. We seek comment on this proposal and its underlying assumptions. If we were to adopt a larger geographic license area for some or all PALs, would allowing partitioning and disaggregation of PALs enable prospective PAL licensees to acquire PAL rights in smaller geographic areas where their business needs call for it? Are partitioning and disaggregation effective means to facilitate the ability of small entities to access the spectrum they desire for targeted,

local deployments? If the Commission does not adopt some or all of the other proposed revisions to PALs, should we still allow partitioning and disaggregation? If so, why? To what extent would partitioning and disaggregation help the Commission facilitate the objectives of Section 309(j) (47 USC 309(j)), which, among other considerations, asks us to promote “economic opportunity for a wide variety of applications”?

We note that several commenters argue the PAL licensees will lack an incentive to disaggregate or partition a larger, longer-term PAL. T-Mobile, in response, suggests that this “can be remedied by adopt[ing] reasonable performance requirements associated with renewal expectations.” We seek comment on the relationship between secondary market transactions and performance requirements. What types of requirements would be appropriate to encourage a robust secondary market for PALs to facilitate targeted and intensive spectrum use? How would requirements related to secondary markets interplay with construction requirements for PALs more broadly? How could performance requirements and secondary markets incentivize users to provide service to rural and other difficult-to-serve areas?

#### 4. **SAS Public Disclosure of CBSD Registration Information**

In the First Report and Order, the Commission required that SAS Administrators make Citizens Broadband Radio Service Device (CBSD) registration information available to the general public. When doing so, however, SAS Administrators must “obfuscate the identities of the licensees.” In doing so, the Commission acknowledged “the concerns raised by commenters about disclosure of confidential business information to the public.”

Both CTIA and T-Mobile, supported by several commenters, ask the Commission to eliminate the rule requiring public disclosure of CBSD registration information. Petitioners assert that the rule raises both competitive concerns and “cybersecurity and national security concerns.” AT&T also claims that “the SAS will be required to collect extensive data regarding users’ network configuration, uses, and technical parameters”—data that “amounts to critical infrastructure data” that must be adequately protected to avoid competitive and cybersecurity concerns.” In addition, Petitioners and commenters argue that obfuscating the licensees’ identities does not adequately address these concerns because it still

may be possible to uncover the identities of individual licensees based on publicly available information. Petitioners and commenters also contend that, since potential GAA operators can coordinate directly with the SAS Administrators to deploy GAA services, the public disclosure requirement is unnecessary to ensure that operations in the band are effectively coordinated.

Google, Open Technology Institute and Public Knowledge (OTI/PK), and WISPA support retention of the current rule, arguing that it benefits potential operators that need to investigate the feasibility of deploying GAA or PAL service before incurring the cost of attempting to reserve or auction spectrum. OTI/PK contends that meaningful transparency allows incumbents and public advocacy groups to play a productive role in holding SAS Administrators and other stakeholders accountable for responsibilities such as military radar protection and ensuring that valuable PAL spectrum does not lie fallow. Google denies that anonymized public registration data presents security or competitive concerns and argues that such information is already available, as wireless carriers' transceiver locations are visible to a passerby, logged by crowd-sourced applications, and publicly documented. Google also notes that several aspiring SAS Administrators—including CTIA—already have negotiated a model sharing agreement, and that CTIA itself has stated that the agreement “provides the necessary protections for SAS customers' proprietary and competitively sensitive information, as well as end users' private information.” In response, AT&T argues that the model sharing agreement that Google references addresses SAS-to-SAS information sharing, not public availability of information, and that Google incorrectly assumes that licensees plan network deployment based on activities of others rather than on internal objectives and consumer behavior.

Charter, Federated Wireless, and NCTA encourage the Commission to seek comment on how it could ensure that prospective users of the band can obtain sufficient information to execute network deployments without disclosing detailed CBSD registration information to the public.

We propose to amend the current rules to prohibit SASs from disclosing publicly CBSD registration information that may compromise the security of critical network deployments or be considered competitively sensitive. We seek comment on the proposal and ask which specific

information should be withheld from public disclosure to address the concerns raised by Petitioners and Commenters. We ask commenters to address the potential competitive, security, or other forms of risk presented by the rule, as well as on specific and actionable suggestions to mitigate these risks. Nothing we propose here will affect SAS-to-SAS information sharing requirements.

We also note that some commenters claim that potential GAA and PAL users will use registration information to plan deployments. As such, we seek comment on how to appropriately balance the potential competitive and security risks with potential users' need for information about CBSD deployment. Is there a mechanism—other than full public disclosure of CBSD registration information—for potential users to plan future GAA and/or PAL deployments? For example, could potential users communicate with an SAS on a confidential basis? We also seek comment on whether there is certain information that the SAS can publicly provide while balancing data sensitivity and security concerns

## **5. Competitive Bidding Procedures for PALs**

### **a. Assignment of PALs**

Section 309(j) of the Communications Act (47 USC 309(j)) requires that the Commission assign licenses using competitive bidding when “mutually exclusive applications are accepted for any initial license,” subject to certain exemptions not applicable to this band. Because of the “generic” nature of PAL frequency assignments, mutual exclusivity exists when multiple applicants apply to bid on more PALs than exist in a given census tract. In the First Report and Order, the Commission decided that, when there are two or more applicants for PALs in a given census tract, it will make available one fewer PAL than the total number of PALs for which all applicants have applied in that license area, up to a maximum of seven PALs. The Commission also concluded that assigning PALs on a non-auctioned basis would not result in the most efficient assignment of the spectrum. It therefore decided that, where there is only a single applicant for one or more PALs in a license area, it would not proceed to an auction or assign any PALs for that license area and there would only be shared GAA access to that spectrum until the next filing window for competitive bidding. In its Order on Reconsideration in GN Docket No. 12-354 (FCC 16-55), the Commission granted a limited exception for certain rural areas, finding it in the

public interest to assign a PAL even if there is only a single applicant, given the likelihood of lower demand in rural areas.

T-Mobile and several commenters ask the Commission to make all PALs available, regardless of the number of applications the Commission receives in any given license area. GeoLinks argues that, by prohibiting the assignment of PALs when there is only one interested carrier, the Commission will “surely create gaps in rural, sparsely populated parts of the country that could benefit from an interested service provider.” Further, several commenters, like AT&T and Ericsson, argue that the Commission’s current policy will eventually phase out PAL licenses in a market with each subsequent auction if there is no renewal expectancy, rendering the auctions “essentially a game of musical chairs for PAL licensees.” No commenter opposes T-Mobile’s mutual exclusivity proposal specifically.

United States Cellular Corporation (USCC) argues that the Commission should assign PALs in any given license area by subjecting all PALs to a minimum opening bid and the existing spectrum aggregation limit of four PALs. If the aggregate demand in a license area does not exceed seven PALs, USCC suggests that the applicant(s) would receive the number of PALs for which they applied, subject to the payment of the minimum opening bid for those PALs, and remaining spectrum would be available on a GAA basis.

Consistent with our proposals to lengthen the PAL license term, make them renewable, and increase the PAL geographic license area, we also propose to employ our standard practice for finding mutual exclusivity among accepted applications. We propose to eliminate the rule that limited the number of PALs the Commission would make available. We also propose to assign PALs even when there is only one applicant in a given license area, assuming the applicant is otherwise qualified. We seek comment on these changes, which appear consistent with the broad opposition to the current requirements already in the record. The other proposed changes to PAL licensing discussed in this NPRM—including longer, renewable license terms and a larger geographic area—would make PALs more similar to licenses offered in the Incentive Auction and other recent spectrum auctions, where there was no need for the requirements in Sections 96.29(c) and 96.29(d) of our rules (47 CFR 96.29(c) and 47 CFR 96.29(d)). We



seek comment on this proposal. What are the costs and benefits of removing these requirements? Are these changes consistent with the statutory objectives of Section 309(j) (47 USC 309(j)), including to “promot[e] economic opportunity and competition,” “ensur[e] that new and innovative technologies are readily accessible,” “avoid[] excessive concentration of licenses” and “disseminat[e] licenses among a wide variety of applicants” ; “recover[] for the public of a portion of the value of the of the public spectrum” ; and promote “efficient and intensive use of electromagnetic spectrum.” Additionally, as fully described below, we also seek comment on whether a PAL for any given license area is mutually exclusive to GAA use in that area such that the Commission would have the authority to assign PALs by auction in those situations.

In the First Report and Order, the Commission adopted these two limitations on the assignment of PALs because it concluded that assigning PALs on a non-auctioned basis would not result in as efficient an assignment of the spectrum as licensing the spectrum for shared GAA use. The Commission found that ensuring widespread GAA use of spectrum in any geographic area for which it had not received mutually exclusive PAL applications was the best way to discharge its statutory obligation to “encourage the larger and more effective use of radio in the public interest.” However, the Commission reached these conclusions regarding nonrenewable PALs that had substantially shorter license terms than we are now proposing to adopt for PALs. Under our current proposals, the use case for PALs could vary more significantly from GAA use than under our current rules. The Commission also noted in the First Report and Order that the determination of mutual exclusivity of PAL applications would not be a one-time event for this band, because PALs would be licensed for three-year, non-renewable terms and the Commission would periodically open application windows for new PALs, as well as interim filing windows to accept applications for unassigned PALs. If we adopt our proposal to increase PAL license terms to 10 years, such frequent application or filing windows likely would not be necessary. We seek comment on whether the circumstances that will pertain if our proposals regarding license term, renewability, and geographic area are adopted warrant our elimination of the current limits on the number of PALs we make available.

Moreover, the record indicates that PALs will be more useful to a wide variety of potential licensees if PALs are renewable, longer term, and/or licensed for a larger geographic area. USCC suggests that, if the Commission adopts PEA-based license areas and a ten-year license period with a renewal expectancy, “it will be far less likely that the aggregate demand in any license area will be less than seven PALs.” We seek comment on whether our proposed changes in the term, renewability, and service area of PALs would make them more useful to a wider range of potential licensees and, if so, whether that would reduce the benefit of limiting the number of PALs available in a given license area or not assigning PALs in any area for which there is only one applicant.

We note that, if we adopt the above proposal to make all of the PALs in a given license area available for assignment regardless of the number of applicants that have applied in that area, it would still be possible, albeit less likely, for the number of PALs being offered to exceed applicant demand in a given area. Similarly, if we were to assign PALs in a license area for which only a single applicant applied for a PAL, as some commenters advocate, in those instances we would not have accepted mutually exclusive PAL applications, which is the prerequisite for assigning PALs by auction. While the Commission has the authority in both situations to assign the PALs on a non-auctioned basis, we seek comment on whether it would be consistent with our statutory objectives to do so on a non-auctioned basis given the nature of the changes we propose to adopt for PALs. Such a circumstance raises questions of how to accommodate GAA use such that the sharing envisioned within this band could occur. To the extent necessary and as an alternative, we also seek comment on whether we nevertheless have authority to assign PALs by auction in these situations because a PAL for any given area is mutually exclusive to GAA use in that area. If we were to assign PALs by auction in these situations, applicants would be required to submit at least the minimum opening bid for each PAL consistent with the Commission’s general competitive bidding procedures. Would such an approach be consistent with our statutory requirements and objectives under Section 309 of Act (47 USC 309(j))? Commenters that support this proposal should describe in detail the mechanism by which such a change would work, particularly within

the sharing regime contemplated in the 3.5 GHz Band, and how it would fit within the Commission's statutory requirements.

**b. Bidding on Specific PAL License Blocks**

Under the current rules, Priority Access licensees do not bid on specific spectrum blocks. Rather, SAS Administrators assign frequencies based on the amount of spectrum that the PAL licensee is authorized to use in a given license area. Licensees may request a particular channel or frequency range from the SAS, but are not guaranteed a particular assignment. The SAS will “assign geographically contiguous PALs held by the same Priority Access Licensee to the same channels in each geographic area” and “assign multiple channels held by the same Priority Access Licensee to contiguous frequencies within the same License Area” when it is feasible to do so. T-Mobile instead asks the Commission to allow applicants to bid on particular channels, rather than bidding solely on an amount of spectrum that will later be assigned by the SAS.

A few commenters support T-Mobile's proposal. Ericsson argues that this approach would ensure a “stable and predictable” spectrum environment, while 5G Americas and GSMA argue that it would encourage robust use of the band for 5G and would align with what other countries have planned for the band.

Commenters opposing this proposal question how it would work given the need to protect incumbent rights. Vivint Wireless calls it “unnecessary and a bit confusing,” arguing that it “would seem to limit the available channels should a PAL licensee need to move to avoid interfering with a protected incumbent.” Google argues that, if the Commission permitted parties to manually select frequencies, an operator could position itself in the middle of the PAL spectrum, preventing other PAL holders from aggregating contiguous blocks. It argues that “the current SAS dynamic assignment framework allows protection of federal incumbent and Priority Access operations while enabling a seamless experience for end users of [Citizens Broadband Radio Service] services.”

We seek comment on the feasibility and desirability of allowing PAL licensees to bid on specific channel assignments. How could the Commission accomplish this given the other constraints of the band,

including the need to protect incumbents? Would having a separate voluntary channel assignment phase of the auction—as was done recently in the Incentive Auction—work in this context? For example, could we first allow applicants to bid on the amount of PAL spectrum they desire, then in a separate round, allow PAL bidders to value and bid on specific channel assignments? Would this allow PAL bidders to value their PAL spectrum more accurately by knowing their primary location vis-a-vis federal and other incumbents and adjacent band licensees? Would the Commission need to make changes to the assignment phase framework used in the Incentive Auction to accommodate interference protection of federal incumbents by PALs? And if so, what changes would it need to make? Should the Commission adopt rules to ensure that bidders are assigned to contiguous frequencies within a geographic area, where possible? We also seek comment on what alternative auction methodologies might be appropriate to balance the SAS Administrator’s need to dynamically avoid interference with Priority Access licensees’ desire for certainty and the ability to aggregate contiguous spectrum. Are there other auction designs that could better balance interests in this context? We seek comment on the costs and benefits of any proposed approaches.

**B. Emissions and Interference Limits**

In the First Report and Order, the Commission adopted the following emission limits:

- -13 dBm/MHz from 0 to 10 megahertz from the assigned channel edge;
- -25 dBm/MHz beyond 10 megahertz from the assigned channel edge down to 3530 megahertz and up to 3720 megahertz;
- -40 dBm/MHz below 3530 megahertz and above 3720 megahertz.

In the Second Report and Order, the Commission denied petitions for reconsideration that requested changes to these limits.

T-Mobile’s Petition requests changes to the emission limits that it claims are necessary to support channels wider than 10 megahertz without power reduction. Specifically, T-Mobile argues that the -13 dBm/MHz limit should apply from 0-20 megahertz outside the channel edge, and the -25 dBm/MHz

requirement should be eliminated (or, alternatively, apply at least 20 megahertz from the channel edge). Outside of the 3550-3700 MHz band, T-Mobile contends that the -40 dBm/MHz limit should be eliminated (or, alternatively, the transition gap should be 40 megahertz instead of 20 megahertz).

Qualcomm agrees that the emission limits should be relaxed to facilitate wider channels without power reduction. Qualcomm argues that, for single or aggregated channels that are the channel bandwidth (B) megahertz wide (up to 40 megahertz), the -13 dBm/MHz requirement should apply from 0 to B megahertz above and below the channel edges, and the -25 dBm/MHz requirement should apply at frequencies beyond B megahertz. Qualcomm does not request changes to the -40 dBm/MHz emission limit outside of the 3550-3700 megahertz band. Several other commenters also support relaxation of the emission limits.

Others, including Motorola Solutions and Vivint Wireless, support the current emissions limits. Motorola Solutions argues that no changes are necessary because current technologies can be utilized to meet the existing limits, and the existing rules allow higher power with wider bandwidth which helps counteract the need for power reduction. Vivint Wireless asserts that relaxing the emissions limits will increase the risk of interference between adjacent channel operations.

Our current rules were designed to accommodate 10 megahertz and 20 megahertz channels. We propose to relax the emissions mask in a manner that will be scalable to accommodate wider bandwidth channels. Petitioners and commenters agree on the value of the first step of attenuation at -13 dBm/MHz—starting at the channel edge—and many of them agree on the value of the lowest attenuation in the band at -25 dBm/MHz. We believe that relaxation of the current emission limits, while enabling efficient frequency and power assignments, would promote innovation and investment in the band and allow operators to make use of wider channels without reducing their transmit power. However, we are not persuaded by T-Mobile's proposals to eliminate the -25 dBm/MHz limit or to eliminate the -40 dBm/MHz limit below 3530 megahertz and above 3720 megahertz. We also are not persuaded by T-Mobile's proposal to increase the transition bandwidth to 40 megahertz outside of the band, because of the impact these changes would have on protecting adjacent operations. Rather, we seek comment on two

alternative proposals. First, we seek comment on Qualcomm's proposal to: (1) extend the -13 dBm/MHz limit from 0 to 100% of B; (2) apply the -25 dBm/MHz limit beyond 100% of B; and (3) not change the -40 dBm/MHz limit specified in Section 96.41(e)(2). Second, we seek comment on a more graduated reduction of the emission limits in Qualcomm's proposal, with the addition of an attenuation step between the channel edge and a full channel bandwidth from the channel edge, as follows:

- -13 dBm/MHz from 0 to B/2 (i.e., 50% of B) megahertz from the assigned channel edge;
- -20 dBm/MHz from B/2 to B (i.e., 100% of B) megahertz from the assigned channel edge;
- -25 dBm/MHz beyond B megahertz from the assigned channel edge, down to 3530 megahertz and up to 3720 megahertz;
- -40 dBm/MHz below 3530 megahertz and above 3720 megahertz.

We seek comment on these two proposals and on the tradeoffs in the number and levels of the attenuation steps. A more relaxed mask gives more margin to accommodate bandwidths wider than 10 megahertz, although this could raise the potential for increased interference to users operating on adjacent channels. We seek quantitative analysis of these tradeoffs and we seek comment on whether alternative attenuation steps could balance these tradeoffs more effectively. What is the balance between vendor cost, radio performance, and spectrum efficiency? For example, are there tradeoffs in the design complexity of out-of-band signal reduction techniques, balanced with flexible and efficient spectrum sharing? Will either or both of the proposed masks facilitate the use of wider channels in the band without requiring power reduction?

In the second proposal above, we seek comment on an attenuation step of -20 dBm/MHz between -13 dBm/MHz and -25 dBm/MHz, between one-half channel (50% of B) and one channel bandwidth (100% of B) from the channel edge. This additional attenuation step may enable more efficient SAS-based frequency and power assignments while facilitating wider channel bandwidths. Without this step, frequency separation between PAL channels (and other GAA/PAL channels) may be larger under some operational use cases. We seek comment on the capabilities of current and future CBSDs and end user

devices to meet these masks, and the attenuation steps used in other bands for other wireless services. We also seek quantitative analysis of TDD interference scenarios to assess the tradeoff and balance between the emission mask and the statistical likelihood of interference between licensees.

We note that studies have shown that device output power and out-of-band emissions are likely to be lower than regulatory limits or industry standards. For instance, an Ofcom study describes a case where the actual out-of-band emissions is lower than the minimum requirements specified in 3GPP by ~8 dB in the first adjacent channel. The study also shows the non-linear effect of out-of-band emissions at maximum power, and higher reduction in out-of-band emissions for every dB of reduction in fundamental transmit power. Ofcom notes that the increased emission leakage that accompanies increasing fundamental power is due to the non-linear behavior of the power amplifier when it is driven into saturation. What are the likely effects of this behavior in devices that will be deployed in the 3.5 GHz Band? We seek comment and quantitative evidence that actual out-of-channel emissions in the 3.5 GHz Band will be substantially lower than worst case values. Are the margins found in the Ofcom study typical and representative of the margins that can be expected in 3.5 GHz?

We also seek comment on the tradeoffs inherent in any change to the emission mask(s) in the band. Specifically, what are the tradeoffs between the margins of actual emissions, and the spectral efficiency of frequency assignments in the 3.5 GHz Band? Will either or both of the proposed masks meet the more restrictive 3GPP Adjacent Channel Leakage Ratio (ACLR) emissions limit (i.e., 30 dBc for user devices and 45 dBc for base stations)? Finally, given the existing OOB limits that apply above 3720 MHz and below 3530 MHz—which we do not propose to change—we seek comment on whether either of these proposals would facilitate the use of wider bandwidth channels at or near the band edges.

### **III. PROCEDURAL MATTERS**

#### **Initial Regulatory Flexibility Act Analysis**

As required by the Regulatory Flexibility Act of 1980 (RFA) (5 U.S.C. 603), the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) for this NPRM, of the possible significant economic impact on small entities of the policies and rules addressed in this document. Written public

comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed on or before the dates on the first page of this NPRM. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of the NPRM, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.

### **Initial Paperwork Reduction Act Analysis**

The NPRM contains proposed modified information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget OMB to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. § 3506(c)(4), the Commission seeks specific comment on how it might further reduce the information collection burden for small business concerns with fewer than 25 employees.

### **List of Subjects in 47 CFR Part 96**

Telecommunications, Radio.

FEDERAL COMMUNICATIONS COMMISSION.

Katura Jackson,  
Federal Register Liaison Officer,  
Office of the Secretary.



## Proposed Rules

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR part 96 as follows:

### **PART 96—CITIZENS BROADBAND RADIO SERVICE**

1. The authority citation for part 96 continues to read as follows:

AUTHORITY: 47 U.S.C. 154(i), 303, and 307.

2. Section 96.25 is amended by revising paragraphs (a) and (b)(3) to read as follows:

#### **§96.25 Priority access licenses.**

(a) An applicant must file an application for an initial authorization for all PALs desired. Initial authorizations shall be granted in accordance with Section 96.29. Priority Access Licensees must operate CBSDs consistent with the technical rules and interference protection requirements set for in this part.

(b) \* \* \*

(3) License term. Each PAL has a ten-year license term. Licensees must file a renewal application in accordance with the provisions of Section 1.949.

\* \* \* \* \*

#### **§96.27 [Removed and Reserved]**

3. Remove and reserve § 96.27.
4. Section 96.29 is revised to read as follows:

#### **§96.29 Competitive bidding procedures.**

Mutually exclusive initial applications for Priority Access Licenses are subject to competitive bidding. The general competitive bidding procedures set forth in part 1, subpart Q of this chapter will apply unless otherwise provided in this subpart.

5. Section 96.32 is amended by revising paragraph (b) to read as follows:

#### **§96.32 Priority access assignments of authorization, transfer of control, and leasing arrangements.**

\* \* \* \* \*

(b) Priority Access Licensees may partition or disaggregate their licenses and partially assign or transfer their licenses and may enter into de facto leasing arrangements for a portion of their licenses.

\* \* \* \* \*

6. Section 96.41 is amended by revising paragraph (e)(2) to read as follows:

**§96.41 General radio requirements.**

(e) \* \* \*

(2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

\* \* \* \* \*

**§96.55 [Amended].**

7. Section 96.55 is amended by removing and reserving paragraph (a)(3).

[FR Doc. 2017-25672 Filed: 11/27/2017 8:45 am; Publication Date: 11/28/2017]