

Supporting Statement

Sections 96.17; 96.21; 96.23; 96.33; 96.35; 96.39; 96.41; 96.43; 96.45; 96.51; 96.57; 96.59; 96.61; 96.63; 96.67

Commercial Operations in the 3550-3650 MHz Band

A. Justification

1. Explain the circumstances that make the collection of information necessary. Identify any legal or administrative requirements that necessitate the collection. Attach a copy of the appropriate section of each statute and regulation mandating or authorizing the collection of information.

On April 17, 2015, the Federal Communications Commission (“Commission” or “FCC”) adopted a Report and Order and Second Further Notice of Proposed Rulemaking, FCC 15-47, GN Docket No. 12-354 (*Report and Order*) that establishes rules for commercial use of 150 megahertz in the 3550-3700 MHz (3.5 GHz) band and creates a new Citizens Broadband Radio Service. The rules will create additional capacity for wireless broadband by adopting a new approach to spectrum management to facilitate more intensive spectrum sharing between commercial and federal users and among multiple tiers of commercial users.

The 3550-3650 MHz band segment is currently reserved for use by Department of Defense (DoD) radar systems and commercial fixed satellite service (FSS) earth stations (in the 3600-3650 MHz portion of the band). The 3650-3700 MHz portion of the band is currently used by a limited number of DoD radar systems and FSS earth stations as well as wireless radio services authorized under Part 96, subpart Z of the Commission’s rules. The *Report and Order* establishes a roadmap for making the entirety of the 3.5 GHz band available for commercial use in a phased manner. This sharing arrangement is part of a broader three-tiered sharing framework enabled by a Spectrum Access System (SAS). The SAS incorporates a dynamic spectrum database and serves as an advanced, highly automated frequency coordinator across the band.

Incumbent users represent the highest tier in this framework and receive interference protection from Citizens Broadband Radio Service users. Protected incumbents include the federal operations and FSS earth stations described above and, for a finite period, grandfathered terrestrial wireless operations in the 3650-3700 MHz portion of the band (Grandfathered Wireless Broadband Licensees). Non-federal incumbents must register the parameters of their operations with the Commission and/or an SAS to receive protection from Citizens Broadband Radio Service users. In addition, an Environmental Sensing Capability (ESC) may be used to detect transmissions from DoD radar systems and transmit that information to an SAS to ensure that federal Incumbent Users are protected from interference.

The Citizens Broadband Radio Service itself consists of two tiers—Priority Access and General Authorized Access (GAA)—both authorized in any given location and frequency by an SAS. As the name suggests, Priority Access operations receive protection from GAA operations. A Priority Access License (PAL) is defined as a non-renewable authorization to use a 10 megahertz channel in a single census tract for three years. PALs will be assigned via competitive bidding in up to 70 megahertz of the 3550-3650 MHz portion of the band. One Priority Access Licensee may hold up to forty megahertz of PALs in any given census tract at any given time.

GAA use will be licensed by rule throughout the 150 megahertz band. Both PAL and GAA use will be authorized and coordinated by an SAS. GAA users will be permitted to operate on any frequencies not assigned to PALs and may operate opportunistically on any PAL channels that are not in use. GAA users will receive no interference protection from other Citizens Broadband Radio Service users, including other GAA users, and must not interfere with higher tier operations.

Citizens Broadband Radio Service Devices (CBSDs) are fixed stations, or networks of such stations, that operate on a Priority Access or GAA basis. These devices fall under two categories. Category A CBSDs operate at lower power. Category B CBSDs operate at higher power, must transmit additional technical information, and are expected resolve interference through voluntary arrangements. All CBSDs must register with an SAS prior to beginning operations and upon material changes to their locations or operational configurations.

The SASs¹ will authorize and coordinate use of spectrum for the Citizens Broadband Radio Service. The SAS will coordinate among Priority Access Licensees, GAA users, and Incumbent Access Users in the band. The SAS will be responsible for authenticating and authorizing CBSDs in both tiers of service and ensuring that those CBSDs operate within permissible technical parameters. The SAS must also perform the following core functions:

- Determine the available frequencies at a given geographic location and assign them to CBSDs;
- Determine the maximum permissible transmission power level for CBSDs at a given location and communicate that information to the CBSDs;
- Register and authenticate the identification information and location of CBSDs;
- Enforce Exclusion and Protection Zones, including any future changes to such Zones, to ensure compatibility between Citizens Broadband Radio Service users and incumbent federal operations;
- Communicate with ESCs and ensure that CBSDs operate in a manner that does not interfere with federal users;
- Ensure that CBSDs protect non-federal incumbent users consistent with the rules;
- Protect Priority Access Licensees from impermissible interference from other

¹ The SAS Administrator(s) will act in the capacity of a contractor for the Commission; therefore, the burden and cost for this collection will not be impacted by the functions that the SAS performs.

- Citizens Broadband Radio Service users;
- Facilitate coordination among GAA users to promote a stable spectral environment;
- Ensure secure and reliable transmission of information among the SAS, ESC, and CBSDs;
- Provide approved ESCs with any sensing information reported by CBSDs if available;
- Protect Grandfathered Wireless Broadband Licensees until the end of the grandfather period; and
- Facilitate coordination and information exchange among SASs.

Prospective SAS Administrators and ESC operators must apply to, and be approved by, the Commission prior to commencing operation.

Information Collection Requirements

Registration Requirements (47 C.F.R. §§ 96.17(d)(1) and (2); 96.21(a)(3); 96.23(b); 96.33(b); 96.35(e); 96.39(a)(1)-(3); 96.39(c)-(g); 96.43(b); 96.45(b); 96.45(d))

CBSD Registration and Operational Parameters (47 C.F.R. § 96.39): All CBSDs must register with and be authorized by an SAS prior to initial service transmission. All CBSDs must be able to determine their geographic coordinates or, alternatively, a professional installer may determine them and report them to an SAS. All CBSDs shall incorporate security measures to ensure that they are capable of communicating only with SASs operated by approved SAS Administrators and that communications between CBSDs and SASs, individual CBSDs, and End User Devices are secure (47 C.F.R. §§ 96.39(f) and (g)). CBSDs must provide an SAS with operational parameters based on their category (47 C.F.R. §§ 96.43; 96.45). The GAA is intended to provide a low-cost entry point into the Citizens Broadband Radio Service for a wide array of users, and they will have no expectation of interference protection from incumbents or PALs. Registration requirements and operating parameters are necessary to ensure efficient use of available spectrum and prevent harmful interference. Security measures will prevent corruption and unauthorized interception of data.

Spectrum Access System (SAS) Administrator Requirements and Authorization (47 C.F.R. §§ 96.57(a)-(c); 96.59(a); 96.61; 96.63)

SAS Administrator Approval (47 C.F.R. § 96.63): The Commission will designate one or more SAS Administrators to provide nationwide service.

Registration, Authentication, and Authorization of CBSDs (47 C.F.R. § 96.57): The SAS must be capable of accepting CBSD registrations and authenticating and authorizing their operations. The SAS must also verify that the FCC ID of any CBSD seeking access is valid and

obtain a list of devices with valid FCC IDs from the Commission's Equipment Authorization System.

FSS Earth Station Registration (47 C.F.R § 96.17(d)): FSS earth stations requesting interference protection must register with the SAS.

Incumbent 3650-3700 MHz Band Grandfathered Wireless Broadband Registration (47 C.F.R. § 96.21(a)(3)): Existing operators in the 3650-3700 MHz band may register with an SAS to be granted Incumbent User status and receive interference protection around base or fixed stations registered in the Commission's Universal Licensing System (ULS) before April 17, 2015.

Radio Frequency (RF) Safety (47 C.F.R. § 96.51):

Applications for equipment authorization must contain a statement confirming compliance with RF exposure requirements for both fundamental emission and unwanted emissions, which is necessary to ensure devices meet the Commission's RF safety limits.

Environmental Sensing Capability (ESC) Approval and Reporting (47 C.F.R. § 96.67)

ESC Approval (47 C.F.R. § 96.67(b)): An ESC² must demonstrate that it is qualified to operate and this information is necessary so that the Commission may make such a determination and approve its operation.

ESC Operation (47 C.F.R. § 96.67(c)): An ESC must be able communicate information about the presence of signals from a federal system and adjacent frequencies, maintain security of detected and communication signal information and respond to Commission requests for any information collected or communicated by the ESC. These requirements are necessary for the ESC to facilitate coexistence of Citizens Broadband Radio Service users and federal Incumbent Users and to enable Commission oversight.

Alternative Received Signal Strength Level (RSSL) Reporting (47 C.F.R. § 96.41(d)(1)):

PALs may agree to alternative RSSLs and communicate that to the SAS. This information is necessary to give PALs flexibility to maximize use of the band while allowing the SAS Administrator(s) to monitor for impermissible interference.

This collection of information is authorized under Sections 1, 2, 4(i), 4(j), 5(c), 302(a), 303, 304, 307(e), and 316 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 154(j), 155(c), 302(a), 303, 304, 307(e), and 316.

² The ESC Operators will act in the capacity of a contractor for the Commission; therefore, the burden and cost for this collection will not be impacted by the functions that the ESC performs.

This information collection does not affect individuals or households – respondents are limited to applicants, protected entities and licensees using the subject radio frequency (RF) spectrum. Thus, there is no impact under the Privacy Act and a Privacy Impact Assessment is not required.

2. Indicate how, by whom and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection.

Incumbents and CBSDs will submit technical information to the SAS(s) so it can perform its core functions, including coordinating use of the 3.5 GHz band and managing three tiers of users and reducing interference. The SAS Administrators will also use technical information to set permissible power limits and communicate channel and frequency availability to users to ensure efficient use of the spectrum. SAS-to-SAS synchronization will ensure coordination occurs among CBSDs that use different SAS providers and will protect incumbent users.

The Commission will collect information from SAS applicants to determine whether they meet the qualifications to manage the database.

The SAS will use CBSD registration and geo-location requirements and acceptance of interference acknowledgements to effectively and efficiently assign channels and frequencies to users while protecting incumbents and PALs.

The SAS will use registration information from FSS earth stations and 3650-3700 MHz Band Grandfathered Wireless Broadband Licensees to protect all licensees and users in accordance with the three-tier access model.

The Commission will use the RF compliance statement to ensure that devices comply with applicable Commission-adopted limits for RF exposure.

SAS Administrators will use Priority Access Licensee's reports of alternative received signal strength levels to enforce these agreements, while promoting technical flexibility in the band.

The Commission will collect information from ESC operator applicants to determine whether they are qualified to operate and will collect information from operators for oversight and to protect the security and confidentiality of federal operations.

3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses, and the basis for the decision for adopting this means of collection. Also describe any consideration of using information technology to reduce burden.

The Commission's Wireless Telecommunications Bureau conducts an analysis to determine whether improved information technology can be used to reduce the burden on the public. This analysis considers the possibility of obtaining and/or computer-generating the required data from existing databases in the Commission or other Federal agencies. The Commission believes information technology will reduce the burden on the public, as the SAS will collect registration and technical information via electronic means and the SAS will publish publicly available information on-line. The Commission expects that SAS-to-SAS synchronization and ESC communication will occur using electronic means. The majority of communication between and among users, SASs, and ESCs will occur automatically through the device. Existing licensing information can be found on-line.

4. Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for use for the purposes described in item 2 above.

The Citizens Broadband Radio Service, ESCs, and the SASs were established by the *Report & Order* and all associated information collection requirements are new. Therefore, there is no similar data available and this is no duplication of effort by the FCC or any other agency.

5. If the collection of information impacts small businesses or other small entities, describe any methods used to minimize burden.

The information that will be submitted to the SASs and ESCs is necessary to ensure that the Citizens Broadband Radio Service does not cause harmful interference to Incumbent Users and that CBSDs operate only consistent with parameters authorized by an SAS (As noted above, the ESC may be used to detect transmissions from DoD radar systems and transmit that information to an SAS to ensure that federal Incumbent Users are protected from interference.). The reporting, recordkeeping, and other compliance requirements resulting from the *Report and Order* will apply to all entities in the same manner. The Commission does not believe that the costs and/or administrative burdens associated with the rules will unduly burden small entities. The Commission will work with the SAS Administrators to ensure that information is collected in the least burdensome manner to all businesses, both large and small.

6. Describe the consequence to Federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.

If CBSD and incumbent users did not provide registration and technical information, the SAS will not be able to accurately assign channels and frequencies and provide approval for the initial service transmission. If an SAS Administrator or ESC collected this information less frequently, it would not be able to properly fulfill its role to authorize service initiation and it could result in significant harmful interference to existing commercial licensees, federal Incumbent Users, and future users of the band.

7. Explain any special circumstances that cause an information collection to be conducted in a manner: requiring respondents to report information to the agency more often than quarterly; requiring respondents to prepare a written response to a collection of information in fewer than 30 days after receipt of it; requiring respondents to submit more than an original and two copies of any document; requiring respondents to submit proprietary trade secrets, or other confidential information unless the agency can demonstrate that it has instituted procedures to protect the information's confidentiality to the extent permitted by law.

Respondents will provide information to the SAS(s) and ESCs more often than quarterly. CBSDs must register with an approved SAS before initial use and within 60 seconds if any of the required registration information changes. ESCs will transmit information to the SAS whenever a radar transmission is detected. However, this information is vital to the Citizens Broadband Radio Service framework and an SAS or ESC could not function properly without it.

8. If applicable, provide a copy and identify the date and page number of publication in the Federal Register of the agency's notice, required by 5 CFR 1320.8(d), soliciting comments on the information prior to submission to OMB.

The Commission has met the notice requirements of 5 C.F.R. § 1320.8. The public has been given the opportunity to comment via publication of the Notice in the Federal Register on June 30, 2015 (80 FR 37258). No comments were received.

9. Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.

The respondents will not receive payments in connection with this collection of information.

10. Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation or agency policy.

The Commission is not requesting respondents to submit confidential information.

11. Provide additional justification for any questions of a sensitive nature.

No sensitive information is required for this collection of information

12. Provide estimates of the hour burden of the collection of information. The statement should: indicate the number of respondents, frequency of response, annual hour burden, and an explanation of how the burden was estimated. If the hour burden on respondents is expected to vary widely because of differences in activity, size, or complexity, show the range of estimated hour burden, and explain the reasons for the variance.

- a. *CBSD Registration (47 C.F.R. §§ 96.23(b); 96.33(b); 96.39(c)-(e); 96.43(b); 96.45(b) and (d); 96.57; 96.59; 96.61)*. It is estimated that approximately 45,800 CBSDs will file registrations with an SAS. The estimate is based on the number of existing 3650-3700 MHz band sites registered in ULS. The required registration information and interference reporting is automated via the device and the burden for automated submission of information is insignificant.

$$45,800 \text{ (CBSDs)} \times 0 \text{ hrs./registration} = \mathbf{0 \text{ hours}}$$

- b. *CBSD Geo-location Information Registered Automatically via Device (47 C.F.R. § 96.39(a))*. It is estimated that half of CBSD users will send geo-location automatically through the device.

$$22,900 \text{ (CBSDs)} \times 0 \text{ hrs./automatic geo-location delivery} = \mathbf{0 \text{ hours}}$$

- c. *CBSD Security Measures (47 C.F.R. § 96.39(f) and (g))*. It is estimated that all CBSDs (45,800) will incorporate security measures, but this is automated via the device so the burden is insignificant.

$$45,800 \text{ (CBSDs)} \times 0 \text{ hrs.} = \mathbf{0 \text{ hours}}$$

- d. *Category B CBSD Voluntary Coordination (47 C.F.R. § 96.35(e))*. Based on the number of existing incumbent 3650-3700 MHz wireless broadband licensees, it is estimated that there will be 2,750 Category B CBSDs users that will file coordination agreements and that it will take .25 hours to file the agreement.

$$2,750 \text{ (users)} \times .25 \text{ hrs./agreement} = \mathbf{688 \text{ hours}}$$

- e. *Alternative Received Signal Strength Limit (RSSL) Reporting (47 C.F.R. § 96.41(d)(1))*. Based on the 518,000 available license areas (74,000 license areas and up to seven licenses available in each), it is estimated that one-third of the available licenses will result in 172,667 Priority Access Licenses, based on previous auction results. It is estimated that one-third of these licensees (57,556) will use alternative RSSL's and it will take .25 hours to report this to an SAS.

$$57,556 \text{ (licenses)} \times .25 \text{ hrs./report} = \mathbf{14,389 \text{ hours}}$$

- f. *RF Safety Compliance Certificate (47 C.F.R. § 96.51)*. It is estimated that it will take each CBSD operator .5 hours to submit a statement confirming compliance with radiofrequency radiation exposure requirements.

$$45,800 \text{ (CBSD operators)} \times .5 \text{ hrs./statement} = \mathbf{22,900 \text{ hours}}$$

Burden to the Respondents:

a. CBSD Registration and Interference Reporting	=	0 hours
b. CBSD Geo-location Information Registered Automatically	=	0 hours
c. CBSD Security Measures	=	0 hours
d. Category B CBSD Voluntary Coordination	=	688 hours
e. Alternative RSSL Reporting	=	14,389 hours
f. RF Safety Compliance Certification	=	<u>22,900 hours</u>
		37,977 hours

Total Number of Respondents is: 110,782³

Total Number of Annual Responses: 136,432⁴

Total Hour Burden is: 37,977 hours

The Commission estimates the following **in-house costs** to respondents for each collection based on its knowledge of its respondents providing this information:

- CBSD Registration (47 C.F.R. §§ 96.23(b); 96.33(b); 96.39(c)-(e); 96.43(b); 96.45(b) and (d); 96.57; 96.59; 96.61): 45,800 (CBSDs) x 0 hrs. x \$0/hr. = **\$0**
- CBSD Geo-location Information Registered Automatically via Device (47 C.F.R. § 96.39(a)): 22,900 (CBSDs) x 0 hrs. x \$0/hr. = **\$0**
- CBSD Security Measures (47 C.F.R. § 96.39(f) and (g)): 45,800 (CBSDs) x 0 hrs. x \$0/hr. = **\$0**
- Category B CBSD Voluntary Coordination (47 C.F.R. § 96.35(e)): 2,750 (users) x .25 hrs. x \$49.32/hr. (in-house attorney based on salary for 2015 GS-13, Step 5 federal government employee) = **\$33,908**
- Alternative RSSL Reporting (47 C.F.R. § 96.41(d)(1)): 57,556 (licensees) x .25 hrs. x \$49.32/hr. (in-house engineer based on salary for 2015 GS-13, Step 5 federal government employee) = **\$709,666**
- RF Safety Compliance Certification (47 C.F.R. § 96.51): 45,800 (CBSD operators) x .5 hrs. x \$49.32/hr. (in-house engineer based on 2015 salary of GS 13, Step 5 federal government employee) = **\$1,129,428**

³ This figure was calculated as follows: 45,800 CBSD users + 57,556 Priority Access Licensees + 4,658 FSS earth stations + 2,750 Grandfathered Wireless Broadband licensees + 9 SAS Administrator applicants + 9 ESC Operator applicants.

⁴ This figure was calculated as follows: 2,750 coordination agreements + 57,556 Alternative RSSL reports + 45,800 RF Safety Compliance Statements + 22,900 Geo-location Information Registrations (by a professional installer)+ 4,658 FSS Earth Station Registrations + 2,750 Grandfathered Wireless Broadband Registrations + 9 SAS Administrator Authorization Applications+ 9 ESC Operator Certification Applications = 136,432 responses.

Total In-House Cost to Respondents = \$1,873,002

13. Provide estimates for the total annual cost burden to respondents or recordkeepers resulting from the collection of information. (Do not include the cost of any hour burden shown in items 12 and 14).

The capital and start-up costs for manufacturers of CBSDs are part of the design, development and manufacture of these devices. The technical capabilities required for registration, interference reporting, and geo-location are included as part of those capital and start-up costs.

The Commission estimates the following costs to respondents and recordkeepers by each collection based on its knowledge of the respondents providing this information:

- a. CBSD Geo-location Information Registered by a Professional Installer (47 C.F.R. § 96.39(b)): 22,900 (CBSDs) x .5 hrs. x \$250/hr. (outside engineer) = **\$2,862,500**
- b. FSS Earth Station Registration (47 C.F.R. § 96.17(d)): 4,658 (licensees) x 2 hrs. x \$300/hr. (outside legal counsel) = **\$2,794,800**
- c. Grandfathered Wireless Broadband Registration (47 C.F.R. § 96.21(a)(3)): 2,750 (licensees) x 2 hrs. x \$300 hr. (outside legal counsel) = **\$1,650,000**
- d. SAS Administrator Authorization (47 C.F.R. § 96.63): 9 (applicants) x 2 hrs. x \$300/hr. (outside legal counsel) = **\$5,400**
- e. ESC Operator Certification (47 C.F.R. § 96.67(b) and (c)): 9 (applicants) x 2 hrs. x \$300/hr. (outside legal counsel) = **\$5,400**

Total Cost Burden is: \$7,318,100

14. Provide estimates of annualized costs to the Federal government. Also provide a description of the method used to estimate cost, which should include quantification of hours, operational expenses (such as equipment, overhead, printing, and support staff) and any other expenses that would not have been incurred without this collection of information.

- a. *CBSD Registration.* CBSDs will provide this information directly to an SAS and there is no cost to the federal government.

\$0

- b. *CBSD Geo-location Information Registered Automatically via Device.* CBSDs will send this information directly to an SAS and there is no cost to the federal government.

\$0

- c. *CBSD Security Measures.* CBSDs will incorporate security functions at the manufacturing stage and there is no cost to the federal government.

\$0

- d. *FSS Earth Station Registration.* FSS earth station licensees will register directly with an SAS and there is no cost to the federal government.

\$0

- e. *Grandfathered Wireless Broadband Registration.* Incumbent 3650-3700 MHz Grandfathered Wireless Broadband licensees will register directly with an SAS and there is no cost to the federal government.

\$0

- f. *Category B CBSD Voluntary Coordination.* Category B CBSDs users will file coordination agreements directly with SAS and there is no cost to the federal government.

\$0

- g. *Alternative Received Signal Strength Limit (RSSL) Reporting.* Priority Access Licensee's will file alternative RSSL's directly with SAS and there is no cost to the federal government.

\$0

- h. *SAS Administrator Authorization.* It is estimated that it will take an engineer at the GS-13, Step 5 earning \$49.32/hr. eight hours to review each application for authorization.

$$9 \text{ (applicants)} \times 8 \text{ hrs.} \times \$49.32/\text{hr.} = \mathbf{\$3,551}$$

- i. *SAS Database Creation and Maintenance.* There is no cost to the federal government for the SAS database creation and maintenance.

\$0

- j. *ESC Operator Certification.* It is estimated that it will take an engineer at the GS-13, Step 5 earning \$49.32/hr. 8 hours to review each application for authorization.

$$9 \text{ (applicants)} \times 8 \text{ hrs.} \times \$49.32/\text{hr.} = \mathbf{\$3,551}$$

- k. *RF Safety Compliance Certificate*. It is estimated that it will take an engineer earning at the GS-13, Step 5 earning \$49.32/hr. one hour per submission to review each certificate.

$$45,800 \text{ (CBSD operators)} \times 1 \text{ hr.} \times \$49.32 = \$2,258,856$$

Total cost to the Federal Government is: \$2,265,958

15. Explain the reasons for any program changes or adjustments to this information collection.

This is a new information collection. The following burdens will be added to OMB's inventory as a result of the information collection requirements contained in FCC 15-47: 110,782 to the number of respondents, 136,432 to the annual number of responses, 37,977 hours to the annual burden hours and \$7,318,100 to the annual burden costs.

16. For collections of information whose results will be published, outline plans for tabulation and publication.

The information and data will not be published.

17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.

The information will be collected as informal requests in a database and, therefore, no form will be required.

18. Explain any exceptions to the Certification Statement.

There are no exceptions to the certification statement

B. Collection of Information Employing Statistical Methods.

This collection of information does not employ statistical methods.