

SUPPORTING STATEMENT

Part 25 – Satellite Communications; and Part 27 - Miscellaneous Wireless Communication Services: 2.3 GHz Band

A. Justification:

1. On May 20, 2010, the Commission adopted a First Report and Order and Second Report and Order in WT Docket No. 07-293, IB Docket No. 95-91, GEN Docket No. 90-357, and RM-8610, FCC 10-82 (1st Report and Order and 2nd Report and Order), which established a regulatory framework for the co-existence of Satellite Digital Audio Radio Service (SDARS) and Wireless Communications Service (WCS) licensees in the 2305-2360 MHz (2.3 GHz) frequency band.

Actions taken in the 1st Report and Order and 2nd Report and Order included:

- Providing permanent rules for the operation of SDARS terrestrial repeaters, including out-of-band emission limits and power levels.
- Revising the technical parameters that govern the operation of WCS mobile and portable devices in the 2.3 GHz band, thereby enhancing performance requirements to ensure that mobile broadband is rapidly deployed and made available to the public, while ensuring that WCS licensees intensively use the 2.3 GHz band spectrum in the public interest. This enables WCS licensees to offer mobile broadband services, while limiting the potential for harmful interference to incumbent services operating in adjacent bands.
- Minimizing the potential for harmful interference between WCS and SDARS operations, by requiring that WCS licensees share information with SDARS licensees regarding the location and technical parameters of their stations prior to the operation of new or modified stations.
- Enabling WCS mobile operations to commence while avoiding harmful interference to others, specifically entities using the Aeronautical Mobile Telemetry (AMT) band and the National Aeronautical Space Administration (NASA)'s Deep Space Network (DSN), that operate on spectrum above and below the WCS bands.

On October 17, 2012, the Commission adopted an Order on Reconsideration in WT Docket No. 07-293, IB Docket No. 95-91, GEN Docket No. 90-357, FCC 12-130 (Order on Reconsideration), which affirmed, modified and clarified the Commission's actions in the 1st Report and Order and 2nd Report and Order.

Among the actions taken in the Order on Reconsideration, the Commission:

- Revised technical rules to enhance the ability of WCS licensees to deploy mobile broadband networks while establishing additional safeguards to protect neighboring SDARS, AMT and DSN networks from harmful interference.
- Prohibited WCS mobile and portable devices' transmissions in WCS Blocks C and D to further protect SDARS operations.
- Relaxed WCS licensee notification requirements regarding low-power WCS stations and minor WCS station modifications, and clarified WCS notification and coordination procedures.
- Restarted and provided a limited extension of the WCS performance periods to enable licensees to respond to revisions of technical rules.

Information Collection Requirements

a. WCS Notifications of Commencement of Commercial Operations. 47 C.F.R. § 25.202(h)(3) and 47 C.F.R. § 25.214(d)(2) permit SDARS licensees to operate terrestrial repeaters using out-of-band emissions attenuation levels and power limits different than those specified in 47 C.F.R. § 25.202(h) and 47 C.F.R. § 25.214(d)(2), respectively, unless a WCS licensee provides written notice that it intends to commence commercial service within the following 365 days.

47 C.F.R. § 25.202(h)(3). *WCS notifications affecting SDARS out-of-band emissions limits.* SDARS repeaters are permitted to attenuate out-of-band emissions less than the levels specified in 47 C.F.R. § 25.202(h)(1)¹ and 47 C.F.R. § 25.202(h)(2)² unless a WCS licensee provides written notice that it intends to commence commercial service within the following 365 days. Starting 180 days after receipt of such written notice, SDARS repeaters within the area affected by the notice must operate in accordance with 47 C.F.R. § 25.202(h)(1) and 47 C.F.R. § 25.202(h)(2).

47 C.F.R. § 25.214(d)(2). *WCS notifications affecting SDARS power limits.* Pursuant to 47 C.F.R. § 25.214(d)(2), SDARS repeaters are permitted to operate at power levels above 12-kW average EIRP, unless a WCS licensee provides written notice that it intends to commence commercial service within the following 365 days. Starting 180 days after receipt of such written notice, SDARS repeaters within the area affected by the notice must be operated according to specifications otherwise set out in 47 C.F.R. 25.214(d)(2).³

¹ 47 C.F.R. § 25.202(h)(1) specifies the out-of-band emissions limits for SDARS terrestrial repeaters operating at a power level greater than 2-watt average.

² 47 C.F.R. § 25.202(h)(2) specifies the out-of-band emissions limits for any SDARS terrestrial repeater operating at a power level equal to or less than 2-watt average EIRP (equivalent isotropically radiated power).

³ A terrestrial repeater must otherwise operate at a power level less than or equal to 12-kW average EIRP, with a maximum peak-to-average power ratio of 13 dB.

b. WCS Construction Notifications. Pursuant to 47 C.F.R. § 27.14(p)(7), WCS licensees holding authorizations for Block A in the 2305–2310/2350–2355 MHz bands, Block B in the 2310–2315/2355–2360 MHz bands, Block C in the 2315–2320 MHz band, and Block D in the 2345–2350 MHz band must demonstrate compliance with applicable performance requirements by filing a construction notification⁴ with the Commission within 15 days of the expiration of the relevant benchmark, in accordance with the provisions set forth in 47 C.F.R. § 1.946(d). Specifically, the licensee must demonstrate whether or not it has met the following performance requirements:

47 CFR § 27.14(p)(1). Pursuant to § 27.14(p)(1), a WCS licensee deploying mobile or point-to-multipoint systems must file construction notifications with the Commission within 15 days after: 1) **March 13, 2017**: the licensee must demonstrate that it is providing reliable signal coverage and offering service to at least 40 percent of the license area's population. If a WCS licensee demonstrates that 25 percent or more of its license area's population for Block A, B or D is within a coordination zone as defined by §27.73(a), the applicable benchmark is reduced to 25 percent; and 2) **September 13, 2019**: The licensee must demonstrate that it is providing reliable signal coverage and offering service to at least 75 percent of the license area's population. If a WCS licensee demonstrates that 25 percent or more of its license area's population for Block A, B or D is within a coordination zone as defined by section 27.73(a), the applicable benchmark is reduced to 50 percent.

47 C.F.R. § 27.14(p)(2). Pursuant to § 27.14(p)(2), a WCS licensee deploying point-to-point fixed systems, *except those deployed in the Gulf of Mexico license area*, is required to file construction notifications with the Commission within 15 days after: 1) **March 13, 2017**: The licensee must demonstrate that it has constructed and is operating a minimum of 15 point-to-point links per million persons (one link per 67,000 persons) in a license area, and 2) **September 13, 2019**: The licensee must demonstrate that it has constructed and is operating a minimum of 30 point-to-point links per million persons (one link per 33,500 persons) in a license area.

47 C.F.R. § 27.14(p)(3). Pursuant to § 27.14(p)(3), a WCS licensee deploying point-to-point fixed systems on any spectrum block in the Gulf of Mexico license area must file a construction notification with the Commission within 15 days after: 1) **March 13, 2017**: The licensee must demonstrate that it has constructed and is operating a minimum of 15 point-to-point links, and 2) **September 13, 2019**: The licensee must demonstrate that it has constructed and is operating a minimum of 15 point-to-point links.

⁴ As part of their construction showings, licensees must file a description and certification of the areas for which they are providing service. The construction notifications must include electronic coverage maps, supporting technical documentation and any other information as the Commission's Wireless Telecommunications Bureau may prescribe by Public Notice. Electronic coverage maps must accurately depict the boundaries of each license area. Each licensee also must file supporting documentation certifying the type of service it is providing for each market and the type of technology used to provide such service. Supporting documentation must include the assumptions used to create the coverage maps, including the propagation model and the signal strength necessary to provide reliable service with the applicable technology.

47 C.F.R. § 27.14(p)(5). For license areas in which the initial authorization is granted after March 13, 2013, a WCS licensee must file construction notifications with the Commission within 15 days after: 48 and 78 months after the license grant date, respectively, a WCS licensee must demonstrate that it has met the applicable performance benchmarks in sections 27.14(p)(1), (p)(2) and (p)(3).

47 C.F.R. § 27.14(p)(6). Licensees must use the most recently available U.S. Census Data at the time of measurement to meet the performance requirements described in 47 C.F.R. § 27.14(p)(1)-(5).

c. Agreements Modifying Out-of-Band Emissions Limits. 47 C.F.R. § 27.53(a)(10) permits parties to agree to out-of-band emissions limits different than those specified in 47 C.F.R. § 27.53(a)(1)-(3). WCS licensees must maintain, and make available, a copy of any such agreement.

47 C.F.R. § 27.53(a)(10). 47 C.F.R. § 27.53(a)(10) provides that parties may enter into an agreement modifying the applicable out-of-band emissions limits in 47 C.F.R. § 27.53(a)(1)-(3), which sets out the required out-of-band emissions limits for base and fixed stations as well as fixed customer premises equipment (CPE) stations. Licensees must maintain a copy of the agreement in their station files and disclose it to prospective assignees, transferees, or spectrum lessees and, upon request, to the Commission.

d. WCS Information Sharing Requirements. Pursuant to 47 C.F.R. § 27.72, WCS must share information regarding the location and operation of stations (except fixed customer premises equipment) with Satellite Digital Audio Radio Service (SDARS) licensees operating in the 2320–2345 MHz band. WCS and SDARS licensees may enter into separate coordination agreements to facilitate efficient deployment and coexistence of operations. To the extent that provisions of any coordination agreement conflict with the requirements of 47 C.F.R. § 27.72, procedures established pursuant to the coordination agreement will control. WCS licensees must maintain a copy of any such agreement in their station files and disclose it to prospective assignees, transferees, or spectrum lessees, and, upon request, to the Commission.

47 CFR § 27.72(b). *Prior notice periods.* WCS licensees that intend to operate a station are required to provide 10 business days prior notice to all SDARS licensees before commencing operation. WCS licensees that intend to modify an existing station must provide 5 business days prior notice⁵ to all SDARS licensees before commencing operation.

Exceptions:

⁵ 47 CFR § 27.72(c)(2) requires WCS licensees to provide in the notice its contact information and relevant technical details, including at a minimum: coordinates of the proposed station; the proposed operating powers, frequency bands, and emissions; the antenna center height above ground and ground elevation above mean sea level; the antenna gain patterns in the azimuth and elevation planes that include the peak of the main beam; and the antenna downtilt angles.

47 CFR § 27.72(b)(1). For modifications other than changes in location, a licensee may provide notice within 24 hours after the modified operation if the modification does not result in a predicted increase of the power flux density (PFD) at ground level by more than 1 dB since the last advance notice was given. If a SDARS licensee demonstrates that such modifications may cause harmful interference to SDARS receivers, WCS licensees must provide notice 5 business days in advance of additional station modifications.

47 CFR § 27.72(b)(2). WCS stations operating below 2 watts equivalent isotropically radiated power (EIRP) are exempt from the prior notice requirements.

47 CFR § 27.72(b)(3). WCS and SDARS licensees may enter into agreements regarding alternative notification procedures.

47 CFR § 27.72(c)(3). *Inventory of base stations*. Pursuant to 47 CFR § 27.72(c)(3), WCS licensees operating stations must maintain accurate and up-to-date inventory of its stations, including the information set forth in 47 CFR § 27.72(c)(2),⁶ which shall be available upon request by the Commission.

e. WCS, AMT and DSN Coordination. 47 C.F.R. § 27.73 requires WCS licensees to coordinate the deployment of stations with AMT facilities in the 2360-2395 MHz band, as well as with NASA's DSN operations in Goldstone, California.

47 C.F.R. § 27.73(a) *Coordination with AMT entities*. WCS licensees operating stations in the 2345-2360 MHz band, prior to operation, must reach a mutually satisfactory coordination agreement with the applicable AMT entity(ies) for any AMT receiver facility within 45 kilometers or the radio line of sight, whichever distance is larger, of the intended WCS station location.

47 C.F.R. § 27.73(b) *Coordination with DSN*. WCS licensees operating stations in the 2305-2320 MHz band, prior to operation, must reach a mutually satisfactory coordination agreement with NASA regarding WCS stations located within 145 kilometers of the Goldstone, California site.

Statutory authority for this information collection is 47 U.S.C. 154, 301, 302(a), 303, 309, 332, 336, and 337 unless otherwise noted.

This information collection does not affect individuals or households; thus, there are no impacts under the Privacy Act.

2. The information filed by WCS licensees in support of their construction notifications will be used to determine whether licensees have complied with the Commission's

⁶ See *id.*

performance benchmarks. Further, the information collected by licensees in support of their coordination obligations will help avoid harmful interference to SDARS, AMT and DSN operations in other spectrum bands.

3. The Commission's Wireless Telecommunications Bureau conducts an analysis to ensure that improved information technology may 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 data bases in the Commission or other Federal Agencies.
4. This agency does not impose a similar information collection on the respondents. There is no similar data available.
5. In conformance with the Paperwork Reduction Act of 1995, the Commission is making an effort to minimize the burden on all respondents, regardless of size. The Commission has limited the information requirements to those absolutely necessary.
6. If the information required were not made available the Commission would not be able to determine whether spectrum is being used intensively in the public interest. Less frequent collection of the information would inhibit the Commission's ability to ensure that licensees provide service to the majority of consumers in their license areas in a timely manner and to promote the provision of innovative services to the public. Further, notification and coordination requirements are necessary as they allow WCS licensees to offer broadband mobile services while enabling licensees to avoid harmful interference to SDARS, AMT and DSN operations. However, WCS, SDARS, AMT and DSN entities may agree on measures that would limit notification and coordination burdens.
7. There are no special circumstances which would require collections to be conducted in a manner inconsistent with the guidelines in 5 CFR 1320.5.
8. The Commission published a Notice in the Federal Register on June 27, 2016 (81 FR 41537), as required by 5 CFR § 1320.8(d) seeking comments from the public on the information collection requirements contained in this supporting statement. No comments were received from the public as a result of the Notice.
9. Respondents will not receive any payments associated with this collection.
10. There is no need for confidentiality with this collection of information.
11. This collection of information does not address any private matters of a sensitive nature.

12. **The annual burden hours for the 158 licenses subject to this information collection are as follows:**

WCS Notice of Commencement of Commercial Operations. In order to require SDARS licensees to operate terrestrial repeaters pursuant to out-of-band emissions and power levels specified in 47 C.F.R. § 25.202(h) and 47 C.F.R. § 25.214(d)(2), respectively, WCS licensees must provide written notice that it intends to commence commercial service in a specified area within the following 365 days. According to the Commission's ULS database, there are approximately 158 WCS licenses. The annual burden imposed by this collection will vary depending on the rate of commencement of service in a given area. However, the Commission estimates that WCS licensees may provide such notice four times per year for each license. The written notice covers both rule sections and therefore, only one notice, four times a year is required. The Commission expects that an in-house engineer would take approximately 0.5 hours to draft such notice. The hourly wage for the engineer is estimated at \$36/hour.

158 licenses x 0.5 hour (staff engineer) x 4 = 316 hours.

Total Notification Burden Hours = 316 hours.

“In-house Cost”:

158 licenses x 0.5 hour (staff engineer) x 4 x \$36/hr. = **\$11,376.**

b. WCS Construction Notifications. Licensees of the approximately 158 WCS licenses must, pursuant to section 27.14(p)(7), submit notifications demonstrating compliance with the construction requirements set out in sections 27.14(p)(1)-(6). Licensees have the same construction notification obligation regardless of the type of system deployed (e.g. mobile, point-to-multipoint, or point-to-point).

The Commission anticipates that entities holding 7 of the licenses will employ engineering resources and those holding all 158 licenses will employ legal resources in order to prepare and file documents demonstrating compliance with the Commission's performance benchmarks. The Commission estimates that it will take approximately 15 hours per license for in-house engineers to prepare the requisite maps and other documents. See question #13 (item b) for the cost the respondents will pay the consulting engineers and attorneys to fulfill this requirement on the respondents' behalf. The hourly wage for the engineer is estimated at \$36/hour.

151 licenses x 15 hours (in house engineering) = 2,265 hours.

Total Notification Burden Hours = 2,265 hours.

“In-house Cost”:

151 licenses x 15 hours (staff engineers) x \$36/hr. = **\$81,540.**

c. Agreements Modifying Out-of-Band Emissions Limits. Parties may, pursuant to 47 C.F.R. § 27.53(a)(10), agree to out-of-band emissions limits different than those specified in 47 C.F.R. § 27.53(a)(1)-(3). WCS licensees must maintain a copy of the agreement in their station files and disclose the agreement to certain parties including, upon request, the Commission. The Commission estimates that licensees will require 0.5 hour per license annually to maintain and disclose copies of such agreements, using in-house support staff. The hourly wage for the support staff (secretary) is estimated at \$19/hour.

158 licenses x 0.5 hour (in-house support staff) = 79 hours.

Total Agreement Burden Hours = 79 hours.

“In-house Cost”: 158 x 0.5 hour (staff secretary) x \$19/hr. = **\$1,501.**

d. WCS Information Sharing. Section 27.72 requires that WCS licensees intending to deploy a base station must provide 10 business days prior notice to all SDARS licensees before beginning operation. WCS licensees that intend to modify an existing base station must, before commencing such modified operation, provide 5 business days prior notice to all SDARS licensees. Licensees must also maintain up-to-date inventory of its base stations. The annual burden imposed by this collection will vary depending on the rate of deployment or modification of WCS facilities, or on agreements between parties as to how such notification will be conducted. The number of such occurrences will fluctuate considerably year-to-year, and the Commission is not able to estimate with great certainty the number of annual burden hours. However, the Commission approximates that a licensee will seek to notify SDARS licensees of new base station deployment at least four times a year on average for each license. The Commission also estimates that, for each license, a licensee will seek to notify SDARS licensees of base station modifications approximately twice a month, or 24 times a year, on average. The Commission estimates that it will take a licensee, employing in-house engineering staff, approximately two hours to perform the required information sharing for the new deployments and modifications for each of 151 licenses. Further, the Commission expects that it will take in-house engineering staff one hour per license annually to maintain and update its inventory of existing base stations. The hourly wage for the engineer is estimated at \$36/hour.

151 licenses x 2 hours (in house engineering) x 4 (new base station deployment) = 1,208 hours.

151 licenses x 2 hours (in house engineering) x 24 (modification of base stations) = 7,248 hours.

158 licenses x 1 hour (in house engineering) x 1 (maintenance of inventory) = 158 hours.

Total Information Sharing Burden Hours = 8,614 hours.

“In-house Cost:

151 licenses x 2 hour (staff engineers) x 4 (new deployment) x \$36/hr. = \$43,488.

151 licenses x 2 hour (staff engineers) x 24 (modification) x \$36/hr. = \$260,928.

158 licenses x 1 hour (staff engineers) x 1 (inventory) x \$36/hr. = \$5,688.

“In-house Cost”: \$43,488 + \$260,928 + \$5,688 = **\$310,104.**

e. WCS, AMT and DSN Coordination. Section 27.73 requires certain WCS licensees to reach mutually satisfactory coordination agreements with AFTRCC for sites within 45 kilometers of AMT operations, and with NASA regarding sites within 145 kilometers of the DSN. The annual burden hours resulting from this collection will vary depending on circumstances surrounding each deployment, and this collection will not affect licensees/licenses uniformly. However, taking into account situations that are likely to trigger coordination obligations, the Commission estimates that affected licensees will engage in coordination for new stations at least 4 times a year on average, with each coordination requiring approximately 40 hours per license. The Commission expects annual burdens on licensees imposed by this collection to reduce over time as parties develop coordination agreements. There are currently 79 WCS A, B, and D Block licenses that may have coordination obligations with AMT operations, and five current WCS A, B, and C Block licenses that may have operations requiring coordination with the DSN. The hourly wage for the engineer is estimated at \$36/hour.

Coordination with AMT:

79 Licenses x 40 hours (in house engineering) x 4 (base station deployment) = 12,640 hours.

Coordination with DSN:

5 Licenses x 40 (in house engineering) x 4 (base station deployment) = 800 hours.

Total Coordination Burden Hours = 13,440 hours.

“In-house Cost:”

79 licenses x 40 hours (staff engineers) x 4 (AMT coordination) x \$36/hr. = \$455,040.

5 licenses x 40 hours (staff engineers) x 4 (DSN coordination) x \$36/hr. = \$28,800.

“In-house Cost: \$455,040 + \$28,040 = **483,840.**

TOTAL ANNUAL BURDEN HOURS:

(a) 316 + (b) 2,265 + (c) 79 + (d) 8,614 + (e) 13,440 = **24,714 hours.**

TOTAL NUMBER OF RESPONSES:

- a. 158 licensees x 4 notices per year = 632 notices
- b. 158 licensees x 1 notice per year = 158 notices
- c. 158 records disclosed and kept = 158 records
- d. 158 notifications x 4 times/year = 632 notices
158 notifications x 2 times/year = 316 notices
158 records kept = 158 records
- e. 88 coordination agreements x 4 times/year = 352 agreements
2,406 responses.

(a) \$11,376 + (b) \$81,540 + (c) \$1,501 + (d) \$310,104 + (e) 483,840 = \$888,361

TOTAL IN-HOUSE COST: \$888,361

13. Estimated Cost to the Respondents: The Commission estimates that WCS entities holding approximately 95 percent, or 151, of the 158 WCS licenses will use staff engineers to prepare the requisite filings, and that licensees holding approximately 5 percent, or 7, of these WCS licensees will use outside contract engineers.

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Accordingly, the Commission estimates that this collection will have the following cost impact:

- a. WCS Notice of Commencement of Commercial Operations:

Notification Cost Burden: None.

- b. WCS Construction Notifications: The Commission estimates the following outside contracting costs to applicants affected by this collection:

7 licenses x 15 hours (contract engineers) x \$250/hr. = \$26,250.

158 licenses x 3 hours (contract legal) x \$300/hr. = \$142,200.

Notification Cost Burden: \$168,450.00.

- c. Agreements Modifying Out-of-Band Emissions Limits:

Written Agreement Cost Burden: None.

d. WCS Information Sharing: The Commission estimates the following outside contracting costs to applicants affected by this collection:

7 licenses x 2 hour (contract engineers) x 4 (new deployment) x \$250/hr. = \$14,000.

7 licenses x 2 hour (contract engineers) x 24 (modification) x \$250/hr. = \$84,000.

Information Sharing Cost Burden: \$98,000.00.

e. WCS, AMT and DSN Coordination: The Commission estimates the following outside contracting costs to applicants affected by this collection. Of the current 88 licenses that are likely to coordinate with AMT operations, the Commission expects that licensees holding approximately 92 percent of those licenses, or 81 licensees, will require the use of in-house engineering staff, and those holding approximately 8 percent of licenses, or 7 licensees, will require the use of outside contract engineers. The Commission estimates that the current licensees that will likely coordinate with the DSN will utilize in-house staff.

7 licenses x 40 hours (outside engineers) x 4 (AMT coordination) x 250/hr. = \$280,000.

Coordination Cost Burden: \$280,000.00.

(a) \$168,450.00 + (b) \$98,000.00 + (c) \$280,000.00 = \$546,450.00.

TOTAL ANNUAL BURDEN COSTS = \$546,450.00.

14. Estimated annual cost to the Federal Government:

a. WCS Notice of Commencement of Commercial Operations:

Sections 25.202(h)(3) and 25.214(d)(2) do not involve Commission review and thus does not implicate annual government expenditure.

b. WCS Construction Notifications:

The government review time per response for this submission is estimated at 1 hour for a GS-12, Step 5 level reviewer per application.

158 applications x 1 hour x 42.08/hr. = \$6,648.64.

c. Agreements Modifying Out-of-Band Emissions Limits:

Agreements reached by parties to modify out-of-band emissions limits do not involve Commission review and thus do not implicate annual government expenditure.

d. WCS Information Sharing:

The WCS information sharing requirements set out in section 27.72 do not involve Commission review and thus does not implicate annual government expenditure.

e. WCS, AMT and DSN Coordination:

The coordination requirements set out in section 27.73 do not involve Commission review and thus does not implicate annual government expenditure.

Total Annual Cost to the Federal Government: \$6,648.64.

15. There are no program changes to this collection. There are adjustments/decreases to the collection which are due to the recalculation of the burden for this collection. The adjustments/decreases are as follows: -3,199 to the annual number of responses, +142 to the annual burden hours and -\$115,500 to the annual cost.
 16. The data will not be published for statistical use.
 17. We do not seek approval to not display the expiration date for OMB approval of the information collection.
 18. There are no exceptions to the Certification Statement.
- B. Collections of Information Employing Statistical Methods:**
19. No statistical methods are employed.