

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

On June 1, 2020, the Commission’s Wireless Telecommunications Bureau (“Bureau”) confirmed that a sufficient number of eligible space station operators filed accelerated relocation elections, triggering the accelerated relocation of the 3700-4000 MHz band pursuant to the accelerated clearing schedule set out in the Report and Order issued in the C-band proceeding.¹

By electing to accelerate clearing, SES committed to relocating its services and the associated Incumbent Earth Stations out of the lower 300 MHz per the below schedule:

Phase I: By December 5, 2021, SES will:

- Relocate all of its commercial services out of the 3700-3820 MHz band exclusive to the contiguous United States (“CONUS”);²
- Make necessary equipment changes on all associated Incumbent Earth Stations located in 46 of the top 50 Partial Economic Areas (“PEAs”) and the surrounding areas in CONUS;³
- Supplement its telemetry, tracking and control (“TT&C”) operations to enhance two earth stations located in Hawley, PA (“Hawley”), and Brewster, WA (“Brewster”) (collectively, “TT&C/Gateway”) to comply with the *C-Band R&O*;⁴ and
- Begin to consolidate its gateway services (*e.g.*, international feeder link, data, and other services) currently located at other SES gateway locations as well as any

¹ *Wireless Telecommunications Bureau Announces Accelerated Clearing in the 3.7-4.2 GHz Band*, Public Notice, GN Docket No. 18-122, DA 20-578 (WTB rel. June 1, 2020); *see also Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, Report and Order and Order of Proposed Modification, 35 FCC Rcd 2343 (2020) (“*C-Band R&O*”).

² A certain number of services, most notably from SES’s international satellite fleet, will continue to be downlinked in the 3700-3820 MHz band into CONUS. These services will be received at the Hawley or Brewster teleports in accordance with the Commission’s rules and *C-Band R&O*. 47 C.F.R. § 25.203(n); *C-Band R&O* ¶¶ 379-81. Some services may also be received at SES’s teleports in Manassas, VA and Woodbine, MD between the Phase I and Phase II clearing deadlines. Any continued limited operations in the 3700-3820 MHz band at the Woodbine and Manassas facilities will not impact the introduction of 3.7 GHz Services because both teleports are located in PEA 5, which is not subject to clearing in Phase I. To the extent necessary, SES will seek a waiver to continue unprotected international gateway operations at the Woodbine and Manassas facilities until the Phase II deadline.

³ *See* 47 C.F.R. § 27.1411(b)(5) (defining “Earth station filtering”).

⁴ *C-Band R&O* ¶ 375.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

customer or user gateway services to Hawley and/or Brewster; these gateway services will operate on an unprotected basis in the 3700-3820 MHz band.⁵

Phase II: By December 5, 2023, SES will:

- Relocate all of its CONUS-exclusive commercial services out of the 3700-4000 MHz band;⁶
- Make necessary equipment changes on all associated Incumbent Earth Stations located in all CONUS PEAs;
- Continue TT&C operations in the lower portion of the band on a protected basis at the TT&C/Gateway sites and in the upper portion of the band at SES's other teleports for existing and new satellites; and
- Complete gateway consolidation to the TT&C/Gateway sites; the gateway services will operate on an unprotected basis in the 3700-4000 MHz band at the TT&C/Gateway sites.

The amended transition implementation plan described below (“Transition Plan”) details the substantial, complex steps SES must take to meet its commitments in coordination with its customers and associated Incumbent Earth Stations. This Transition Plan accounts for all updates through July 7, 2021 to the prior SES transition plan that was filed with the Federal Communications Commission (“Commission” or “FCC”) on October 28, 2020.⁷

As the Commission has acknowledged, the C-Band Alliance played a seminal role in the proceedings leading to the adoption of the *C-Band R&O* and the substantive decisions reflected in that Order. The C-band Alliance laid the foundation for all of the work by SES, Intelsat, and the other satellite operators that has flowed from the *C-Band R&O* until now.⁸ Indeed, there are at least 344 references to the C-Band Alliance in the *C-Band R&O*. And just as SES and Intelsat were co-leaders of the C-Band Alliance, SES and Intelsat together have also taken a lead role in the substantive work of the C-band transition itself as further described below and throughout this Transition Plan.

⁵ See *supra* note 2.

⁶ See *supra* note 2.

⁷ Letter from Brian D. Weimer, Counsel, SES Americom, Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 18-122 & 20-173 (filed Oct. 28, 2020) (“October 2020 Transition Plan”). See also *Wireless Telecommunications Bureau Opens Window For Eligible C-Band Satellite Operators To Account For Updates in Their Transition Plans*, Public Notice, GN Docket Nos. 18-122 & 20-173, DA 21-736 (rel. June 23, 2021).

⁸ See, e.g., *C-Band R&O* ¶ 34.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

This Transition Plan has been communicated to all of SES’s U.S. C-band customers that have services received from SES within CONUS. SES has been extensively engaged with its customers and other C-band stakeholders for over two years to develop this Transition Plan. Since 2018, SES has held numerous meetings with its customers to understand their capacity needs now and in the future. SES also held numerous monthly joint meetings with Intelsat over the course of 2018 and 2019 to provide updates on the developing plans for customers, earth station operators, installers and other interested stakeholders. On two occasions (in September 2018 and April 2019), SES and Intelsat held joint in-person meetings with customers, MVPDs, and other earth station operators to demonstrate the capabilities of the filters SES and Intelsat jointly developed (*i.e.*, while receiving satellite signals in the presence of 5G interference) as well as to discuss other elements of the planned transition. Webinars were held with industry groups such as ACA Connects and the National Association of Broadcasters (“NAB”) to make their members aware of the impact of the C-band clearing on their operations and the importance of registering their antennas with the International Bureau. At numerous industry conferences and tradeshows, such as SCTE Cable-Tec, the NCTC WEC, the NAB Radio Show, the NAB Show, the Mid-America Cable Show and the ACA Summit, SES had a presence and discussed the C-band clearing, filters and related activities with numerous earth station operators to obtain their feedback. SES has also engaged in numerous direct one-on-one discussions with MVPDs seeking detailed input on the impacts of clearing at MVPD earth stations.

Since the adoption of the *C-Band R&O*, a multi-stakeholder group comprising “incumbent earth stations (including MVPDs and broadcasters), incumbent space station operators, wireless network operators, network equipment manufacturers, and aeronautical radionavigation equipment manufacturers” has formed to “provide valuable insight into the complex coexistence issues in the C-Band and provide a forum for the industry to work cooperatively towards efficient technical solutions to these issues.”⁹ SES presented its initial transition plan (filed June 19, 2020) to Technical Working Group #2 of the Industry Multi-Stakeholder Group on June 26, 2020 to seek industry input, and presented the revised plan, filed on August 14, 2020, to the Group on September 10, 2020. SES and the other operators have continued to participate in the Technical Working Group #2 meetings to provide updates on their transition on a monthly basis.

SES has also been working with numerous radio, cable, and broadcasting associations to communicate the latest moves regarding the C-band transition. A number of associations have agreed to post information on their websites and newsletters, including NCTC, ACA Connects (America’s Communications Association), NAB (National Association of Broadcasters), and NRB (National Religious Broadcasters). ACA Connects conducts monthly webinars at which SES representatives present status and upcoming activities to ACA Connects members and address any questions and concerns they may have. Additionally, ACA Connects and SES have an ongoing dialog to address specific member questions and concerns outside of the regularly scheduled webinars. In all cases where SES has presented material to groups of stakeholders, Incumbent Earth Station operators that elected to accept the lump sum relocation payment were invited and received all of the same information about SES’s transition process and timing as all

⁹ *C-Band R&O* ¶ 333.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

other SES-associated Incumbent Earth Station operators. Additionally, with COVID-19 restrictions lifting, SES plans to attend industry meetings and trade conferences beginning in 3Q2021 to engage directly with Incumbent Earth Station operators at those venues. SES has provided a helpdesk and email address to answer questions and concerns.

SES, Intelsat, and the other satellite operators engage on a weekly basis with RSM US LLP in its role as the Relocation Coordinator to ensure that all Incumbent Earth Stations are either associated with a satellite operator's transition plan or identified as no longer operational to the FCC. In light of this ongoing process, it would be premature for a satellite operator to certify at this time that it has completed its Phase I and Phase II clearing obligations for all associated Incumbent Earth Stations.

SES and Intelsat also presented the passband filter specification and provided an update on filter production to the Technical Working Group #1 of the Industry Multi-Stakeholder Group on August 13, 2020.¹⁰ The collective input received from years of extensive discussions, webinars, demonstrations, and industry conferences has led to the development of this Transition Plan. SES has made commercially reasonable efforts to incorporate customers' individualized needs, but developed this Transition Plan primarily to ensure the completion of accelerated relocation within the deadlines set forth in the *C-Band R&O*, with minimal impact to customers and within a reasonable cost.

I. Details of Transition

A. Existing Space Stations Subject to Transition (§ 27.1412(d)(1)(i))

SES has been providing C-band service in the United States for over 40 years and was instrumental in developing the resilient and cost-effective television and audio distribution and data network ecosystems that relies on C-band satellite service today. In developing this vibrant satellite ecosystem, SES has procured and launched dozens of satellites. Sixteen such satellites are in service today with satellite services that could be impacted by the clearing of the 3700-4000 MHz band.

The Commission's rules require transition plans to list "[a]ll existing space stations with operations that will need to be transitioned to operations above 4000 MHz."¹¹ SES understands that this would include any satellite that is intentionally downlinking in the 3.7-4.0 GHz band to earth stations in CONUS.¹² SES also understands that this includes any other space station transition activities necessary for SES to cease downlinking to CONUS in the 3.7-4.0 GHz band

¹⁰ See Letter from Neeti Tandon and Robert Weller, Technical Working Group #1 of the C-band Multi-stakeholder Group, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed Nov. 13, 2020).

¹¹ 47 C.F.R. § 27.1412(d)(1)(i).

¹² See 47 C.F.R. § 25.147 ("The 3.7-4.0 GHz portion of the band is being transitioned in CONUS from FSS GSO (space-to-Earth) to the 3.7 GHz Service."); see also *C-Band R&O* ¶ 175.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

by the accelerated relocation deadlines.¹³ SES operates several such satellites under Commission authority to provide service to the United States using the 3.7-4.2 GHz band.¹⁴ A full list of these satellites is provided in Appendix A.

To identify the satellites that must be transitioned to meet the accelerated relocation deadlines, SES leveraged its internal fleet management resources to determine the most efficient way to migrate customers on SES's satellite fleet to clear spectrum while ensuring continuity of service. Much of the early work on this topic was conducted through the C-Band Alliance in close cooperation with the other satellite operators, especially Intelsat.

Among the elements considered were:

- Satellite capabilities, performance, and available capacity;
- Orbital location field of view, operational restrictions, and satellite penetration into CONUS earth stations;
- Protection schemes available on the satellites and across the fleet;
- Contractual obligations and future commercial needs;
- Channel line-up and programming requirements; and
- Specific mobility¹⁵ and government customer constraints and requirements.

It is important to note that orbital locations are not fungible, and certain orbital locations are better suited for certain services compared to others. Only satellites located within the U.S. orbital arc are suitable for the delivery of broadcast and cable services on which nearly 120 million American households rely. Yet even within the U.S. orbital arc, not all orbital locations are suitable for all applications. For example, the distribution of cable video services requires strict 50-state coverage, effectively narrowing the orbital locations (specifically, between 135° W.L. and 99° W.L.) within which satellites used for cable distribution can be placed to maintain “look” angles able to see New England, Maine, and Alaska. It is critically important to maintain sufficient antenna elevation angles after the transition process is complete because of the

¹³ See *C-Band R&O* ¶ 204 (permitting as reimbursable transition costs non-CONUS “system modifications . . . as a direct result of the transition in [CONUS] to make spectrum available for flexible use”).

¹⁴ These satellites are authorized through a U.S. license or through a grant of U.S. market access.

¹⁵ Specifically, SES considered maritime services where ship-to-shore and shore-to-ship traffic was required to be assessed to develop the most efficient and effective transition approach.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

aggressive power flux density limit adopted in the *C-Band R&O*, which assumes an earth station antenna elevation angle of at least 19 degrees.¹⁶

SES has developed a robust broadcast and cable video distribution neighborhood using its orbital locations at 101° W.L., 103° W.L., and 105° W.L. These orbital locations offer 50-state coverage, and earth station antennas receiving content carried on satellites operating at these orbital locations are already pointed to this four-degree slice of the geosynchronous orbital arc.

Orbital locations outside the U.S. arc are not suitable for distribution of broadcast or cable video services because of the low look angles and lack of 50-state coverage. Customers providing this video programming thus cannot simply be moved to a C-band satellite outside the U.S. orbital arc to clear spectrum for 5G terrestrial operations. Moreover, SES uses its non-U.S. orbital locations for distribution of broadcast programming in other regions and for data applications such as maritime and aeronautical mobile satellite services. For example, SES satellites in orbital locations 20° W.L. to 47.5° W.L., are unable to provide service to the western portion of the United States but can offer coverage between the east coast of the United States and Europe. Similarly, NSS-9 at 177° W.L. is unable to provide service to the eastern portion of the United States but offers connectivity between the U.S. west coast and Asia.

As a result, clearing the lower 300 MHz in CONUS will indirectly impact the loading of satellites that mainly serve areas outside CONUS but that also need to land services in CONUS, for either further distribution to consumers or monitoring of services intended for non-U.S. consumers.

B. New Satellites to be Launched (§ 27.1412(d)(1)(ii))

In addition to the transitions that need to occur on existing satellites as described above, SES needs to invest more than \$1.25 billion to manufacture and launch new satellites to ensure continuity and quality of existing service to nearly 120 million U.S. households in the accelerated relocation timeframe established in the *C-Band R&O*.¹⁷ These new satellites are necessary to guarantee that sufficient on-orbit capacity exists to provide substantially the same or better service for current customers after the transition is complete.¹⁸

Prior to the FCC's Notice of Inquiry,¹⁹ SES was finalizing the consolidation of cable programming to the satellites operating at 101° W.L., 103° W.L., and 105° W.L. On that basis,

¹⁶ See *C-Band R&O* ¶ 363, n.799.

¹⁷ *Id.* ¶ 194. Appendix D details SES's estimated transition costs.

¹⁸ See *C-Band R&O* ¶ 153 (“We find our approach here . . . provid[es] incumbent space station operators the flexibility to launch additional satellites to achieve an efficient transition to the upper portion of the band.”).

¹⁹ *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, GN Docket No. 17-183, Notice of Inquiry, 32 FCC Rcd 6373 (2017).

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

SES had made the business decision not to place new C-band satellites at 135° W.L. and 131° W.L., and instead to use those orbital locations for non-cable video distribution services, such as mobility services via inclined-orbit satellites. SES had determined it could serve existing and future business requirements with the 500 MHz of downlink bandwidth available at the center of the arc, 101° W.L., 103° W.L. and 105° W.L. (3 x 500 MHz = 1500 MHz), including protection transponders (described below). Further, without a compelling customer use case (for example long term commitments by major customers), when the time came to replace the satellite at 103° W.L. (SES-3), SES's nominal fleet plan has long been to migrate its cable video distribution customers primarily to the satellites at 101° W.L. and 105° W.L.

Because the *C-Band R&O* requires in-CONUS C-band distribution to be consolidated into 200 MHz of downlink bandwidth, SES will need a total of six satellites to support its existing C-band cable video distribution customers. SES will need five active satellites to ensure at least 1000 MHz of downlink bandwidth is available to continue existing services (i.e., 5 x 200 MHz = 1000 MHz). This means that SES must construct new C-band satellites and launch them into the orbital slots not only at 103° W.L. but also at 131° W.L. and 135° W.L. as well. SES must replace the C-band satellites at these locations to maintain its service continuity commitments to existing customers.²⁰ SES will also need another satellite to provide required capacity for protection from transponder or satellite failures.²¹

SES has customers on its existing satellites who have contractual “protection” rights, which obligate SES to maintain transponders (generally on separate satellites from where the customers are located, in case of a satellite failure) that are always available to restore service within a matter of days if those customers experience transponder failures or service disruptions.²² At

²⁰ Eutelsat has suggested that SES does not need to launch a new satellite to 135° W.L. because it relocated AMC-8 to the orbital location. Comments of Eutelsat S.A. on the Transition Plans filed by SES Americom, Inc. and Intelsat License LLC, GN Docket Nos. 18-122 & 20-173, at 5 (filed July 13, 2020). As noted in the modification application requesting authority to relocate AMC-8, it has experienced solar array circuit failures and battery cell failures that have affected the total power available to the spacecraft, and is now configured only for inclined operation. SES Americom, Inc., (Call Sign S2379) File No. SAT-MOD-20200413-00033 (granted July 1, 2020). As a result, AMC-8 has sufficient capability to support SES's current commercial needs, but it does not have the on-board capabilities necessary for station-kept operations required to support the distribution of video services from 135° W.L. pre- and post-transition.

²¹ See *C-Band R&O* at n.102 (acknowledging SES's grooming plan included “SES also operating an in-orbit spare”).

²² See Letter from Matthew S. DelNero, Counsel for Discovery, Inc., Fox Corp., The Walt Disney Company, and Univision Communications, Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 18-122 & 20-173 (filed July 31, 2020); Letter from Brian D. Weimer, Counsel for SES, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 18-122 & 20-173 (filed July 29, 2020).

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

present, those commitments are met using transponders on SES's existing satellites.²³ But with only 200 MHz of on-board downlink bandwidth per satellite, after careful analysis, SES has determined that the only realistic way to maintain its service restoration obligations is to use a dedicated "in-orbit spare." SES will meet this obligation by co-locating a second C-band satellite at 103° W.L. to satisfy contractual restoration obligations for customers at 105° W.L., 103° W.L., and 101° W.L., and therefore providing substantially the same-or-better²⁴ service after the transition as they had before.

The in-orbit spare will not be actively broadcasting while it is co-located with an operational satellite at 103° W.L. It will only begin broadcasting in the event one of the satellites in the center of the arc experience a service outage that impacts a customer who has purchased full service protection. The transponders on the in-orbit spare are part of SES's existing service to its customers who have been and continue to pay significant amounts for SES to have that additional restoration capacity available if needed.²⁵ Without an in-orbit spare, if one of the satellites operating in the U.S. arc fails, it may take months or years to recover the service, forcing SES to breach its contractual obligations to existing customers and significantly disrupting the customers' existing services. Without the in-orbit spare, SES will not be able to provide substantially the same or better service for current customers post-transition as required by the *C-Band R&O*.

Consequently, SES's transition requires the manufacture and launch of four C-band spacecraft comprising: (i) a replacement at 135° W.L.; (ii) a replacement at 131° W.L.; (iii) a replacement at 103° W.L.; and (iv) one in-orbit spare satellite (to be collocated at 103° W.L.) to meet existing contractual obligations to customers for in-orbit protection. These satellites will offer C-band-only (*i.e.*, no Ku-, Ka- or other frequency payloads) service over the 50 United States at similar or improved power levels.²⁶ The satellites have been designed to ensure substantially the same

²³ Prior to the *C-Band R&O*, 500 MHz of downlink bandwidth at each of the satellites in the three center arc orbital locations provided SES with sufficient spare capacity to satisfy its service restoration obligations.

²⁴ See *C-Band R&O* ¶ 194 ("Reasonable' relocation costs are those *necessitated by the relocation* in order to ensure that incumbent space station operators continue to be able to provide substantially the same or better service So long as the costs for which incumbents are seeking reimbursement are *reasonably necessary* to complete the transition in a timely manner (and reasonable in cost), such expenses would be compensable.") (emphasis added).

²⁵ *Id.*

²⁶ All of the new satellites will provide an EIRP performance over CONUS which is better than what is currently provided by SES-3 and AMC-11 (the satellites being replaced), with a minimum EIRP of 41 dBW over CONUS (and many areas reaching an EIRP of 42-43 dBW).

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

or better service to current customers and Incumbent Earth Station operators.²⁷ While these satellites will include incidental coverage of areas around the United States (similar to current SES satellites at 101 ° W.L, 103 ° W.L and 105 ° W.L), such as Mexico, SES does not intend to provide international-only services over these satellites.

The four C-band spacecraft are planned to be launched by the end of Q3 2022, after which the relevant services will be transitioned as described in more detail below. See Table 1 below.

135°W	131°W	105°W	103°W		101°W
[AMC-10R]	[AMC-11R]	SES-11	[SES-3R]	New Spare Satellite	SES-1

Table 1: Future Fleet Deployment

SES’s nominal launch plan is to launch the first two satellites to 131° W.L. (AMC-11R) and the in-orbit spare position at 103° W.L. The second two satellites will operate at 135° W.L. (AMC-10R) and 103°W.L. (SES-3R). While the satellites have been designated as SES-18, SES-19, SES-20, and SES-21 with the manufacturers, the location of each of these named satellites will depend upon the order in which they are launched. SES will launch the first satellites that are available to meet its nominal replacement schedule. To assist stakeholders (namely, SES customers and other Incumbent Earth Stations) in identifying transition satellites,²⁸ SES uses the placeholder naming convention shown in brackets in Table 1.

As is typical in satellite procurements, industry-wide issues concerning the reliability of certain components and their testing can arise. This is no different for the satellites under procurement as mentioned in this Transition Plan. While some delay outside of SES’s control has arisen as a result of such issues, SES continues to work collaboratively with its vendors to ensure that the deadlines in the Transition Plan remain on track.

²⁷ Certain commenters requested that link budgets of replacement satellites be included in transition plans. *See* Comments of ACA Connects, GN Docket No. 20-173, at 22 (filed July 13, 2020) (“ACA Connects Comments”). For its part, SES’s replacement satellites are designed to deliver service using operating parameters (including power levels) that are the same or better than the satellites that will be replaced. Link budgets—which are highly specific to a particular earth station operator—can therefore not be provided on a generic basis without being misleading.

²⁸ Including an “R” on a satellite designation indicates that the satellite is a replacement for an existing satellite that will be retired from an orbital location. Since the AMC-10 satellite formerly was located at 135° W.L. (it has since been re-orbited), we use AMC-10R to indicate the new satellite that will be located at 135° W.L. Each of these locations will subsequently be the location for one of the satellites SES-18, SES-19, SES-20, or SES-21.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

Additionally, as noted in SES's prior Quarterly Reports, the COVID-19 crisis continues to impact SES's satellite manufacturing programs. All SES-associated satellite manufacturers have received notifications from some of their subcontractors indicating that the COVID-19 pandemic has impacted their production capabilities, and consequently, some component forecast delivery dates are delayed. Notwithstanding the impacts of the industry-wide issues affecting certain satellite components and the COVID-19 pandemic, the forecasted delivery dates for the satellites remain on track. Critical paths for each spacecraft are well-identified and the satellite manufacturers are required to enforce heightened focus on their supply chains to ensure the critical deliveries will come on time and will not drive the overall delivery schedules.

The need to meet very aggressive transition deadlines poses significant risks for SES. The new satellites will require between two and three years to manufacture and at least two additional months for launch (including shipment and a launch campaign), assuming all launches go as scheduled and that the manufacturer finishes on time so the pre-reserved launch slots can be utilized. Following launch, up to eight weeks are needed for the satellites to reach their orbital destination, be fully tested in orbit, and commence commercial service.

SES therefore also had to order and start construction of spare satellites and launches as backup for the satellites to be deployed. If the primary satellites are lost due to launch failures or the inability to place the satellite in the proper orbit, or alternatively, if some of the first four satellites experience significant manufacturing delays, it would be much too late to start construction of new satellites and still meet the tight timelines required for spectrum clearing by early December 2023. It is a common and commercially reasonable practice in the satellite industry to construct ground spares to be launched only in the event of a satellite failure (at least when alternate contingency plans are not available, which is the case here given the need to add so many new satellites so quickly to meet aggressive transition deadlines). Given the truncated timing, there would not be another two to three years of flexibility if there is a launch failure.

To provide assurance to customers that it can maintain service continuity, and consistent with its August 2020 Transition Plan, SES contracted with Thales Alenia Space France in June 2020 to manufacture two ground spares. The manufacturing of the first ground spare satellite (SES-22) started immediately in order to be ready for launch within a few weeks after any potential launch failure of one of the first two dual launches (described below). The manufacturing of the second ground spare (SES-23) began on June 1, 2021, consistent with the SES contingency fleet plan. Subject to the successful launch and deployment of the first four satellites included in this Transition Plan, SES will then determine whether or not to finalize the second ground spare program and will seek reimbursement only for the costs incurred until that moment for the second ground spare program, including termination liability.

As of the date of this amended Transition Plan, the satellite procurement programs are progressing as planned with all three satellite manufacturers. Boeing, Northrop Grumman and Thales Alenia Space France have successfully completed Critical Design Reviews for SES-18, SES-19, SES-20, SES-21 and SES-22 satellites. However, as noted above, the delays caused by the industry-wide manufacturing issues and the COVID-19 pandemic have reduced the margin in our satellite manufacturing schedule. SES continues to work with the impacted parties to

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

mitigate the effects of these impacts to our overall satellite procurement schedule.

SES also determined that using dual launches for its new satellites is the most failsafe and commercially reasonable approach under these circumstances. SES and Intelsat are constructing new C-band satellites at about the same time, and are planning to launch all these satellites in a matter of a few months, since both operators are working towards the same deadline. Because more than ten replacement C-band satellites will need to be launched for SES and Intelsat, essentially concentrating a large number of launches during the same launch period, and since the new C-band satellites are in addition to the planned launches of other satellites already in the manifests of launch providers, launch capacity in the relevant time frame is quite limited. SES determined that a dual-launch deployment strategy is necessary to ensure it could meet the Commission's clearing deadlines and a single launch strategy would not be logistically feasible.²⁹ Additionally, multiple single launches would expose SES to additional launch failure risk and increase the likelihood of launch delay due to launch vehicle unavailability. Given that SES needs *all* of its replacement satellites to be launched successfully and on time to meet the Phase II deadline, a dual-launch strategy significantly reduces the execution risk.

Procuring six satellites (four nominal and two spare satellites) is the optimal and necessary strategy for SES to ensure service continuity for existing customers and to ensure the C-band spectrum is cleared consistent with the FCC's accelerated relocation deadlines.

For the same reasons as the purchase of the two ground spare satellites, SES is purchasing additional launches for the ground spare satellites to address the risk of launch failure. Launch vehicles of the type needed for launch of the ground spare satellites are expected to require nearly two years to complete, so the contingency launches need to be purchased well in advance to ensure the deadline is met in case of a launch failure. In July and August 2020, SES signed contracts with ULA and SpaceX to launch the first four satellites in 2022. Mission requirement reviews are progressing according to plan with ULA and SpaceX. As of the date of this amended Transition Plan, the final coupled load analyses and spacecraft CAD models were provided to the launch providers and no major issue was identified. The launcher for SES-23 has not been selected yet.

In the event of any launch failures, SES will submit a claim to the insurers. In the event that the claim results in a reimbursement to SES from the insurers, and to the extent that the claim covers amounts that have been reimbursed by the Relocation Payment Clearinghouse, SES will in turn refund the appropriate amount to the Relocation Payment Clearinghouse.

²⁹ In the course of SES's analysis and discussions with satellite manufacturers and launch service providers, it was determined that use of single launches and one fewer ground spare was not logistically feasible on the Commission's accelerated clearing timeline.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

C. Plan to Migrate Existing Services (§ 27.1412(d)(1)(iii))

SES is committed to relocating all services that are contracted as of the date of each accelerated clearing deadline in advance of the deadline.³⁰ As of the date of this amended Transition Plan, SES expects to transition all Phase I services by August 31, 2021 and all Phase II services by August 31, 2023. SES is working very closely with Intelsat to meet these deadlines and in particular is focused on achieving the August 31, 2021 deadline in the near term. To accomplish this, SES has worked to develop an efficient transition process for all affected services to minimize as much as possible the impact to SES customers and their affiliated earth stations. Under this amended Transition Plan, there are 172 services in total that are impacted by the C-band repurposing: 107 services on domestic satellites (SES-1, SES-2, SES-3, SES-11, AMC-11, AMC-3) and 65 services on international satellites (SES-4, SES-6, SES-14, NSS-9, NSS-10). SES will be required to perform 117 frequency/satellite moves for services, gateway moves for 55 services, 11 services will require compression/modulation upgrades (and also frequency/satellite moves), and 6 mobile services may require frequency moves on the same satellite should the user determine it is necessary.

To maintain continuous service and service quality, when a service is migrated from one satellite to one in another orbital location, SES will provide customers with a period of dual illumination during which customers will commence the new service on a phased basis before giving up access to the prior service. These dual-illumination periods will allow for Incumbent Earth Stations to have sufficient time to repoint or install new antennas, as well as make other necessary adjustments (such as installing feeds and LNBS). Dual-illumination minimizes service interruption arising from the transition. As of the date of this amended Transition Plan, SES has completed nearly all Phase I satellite transitions, which include radio, broadcast TV, cable network services and other services. SES has extended dual illumination for a limited number of services, as indicated in our June 28, 2021 Quarterly Report, to allow for the transition at a number of Incumbent Earth Stations that have elected a lump sum payment as well as for earth stations that are not classified as an Incumbent Earth Station where such an extension did not compromise SES's ability to complete all transition activities according to its Transition Plan. In any case, all dual-illumination of Phase I services are expected to be completed by August 31, 2021.

Appendix B provides (1) a detailed list of the services that will be migrated by each of the Phase I and Phase II deadlines, (2) the satellites and frequencies they will be moved to, and (3) the start and end of the transition period for each service.³¹ As previously stated, the new satellites are

³⁰ 47 C.F.R. § 27.1411(b)(4) (defining "Earth station migration").

³¹ ACA Connects requested that SES and Intelsat include additional migration data that is outside the scope of the *C-Band R&O* and the Commission's rules. *Compare* ACA Connects Comments at 22-23 (requesting a table that includes "bit rate, video compression, modulation, and video resolution" for each video feed), *with C-Band R&O* ¶ 303 (requiring transition plans include a grooming plan for existing services, "including the pre- and post-transition frequencies that each customer will occupy"). *See also* 47 C.F.R. § 27.1412(d)(1)(iii).

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

designated with an “R” at the end of the satellite name to reflect replacement satellites. Customers whose service will be supported at 103° W.L. or 131° W.L. will ultimately be receiving service from a new satellite (with an “R” designation) even if they initially receive service on an existing satellite at those orbital locations.

Since the services shown in Appendix B are for actual SES customers, to protect the confidentiality of SES’s customers each service is identified by a “Service ID.”³² Each customer has been informed of its Service ID, and therefore can easily confirm that the transition described in Appendix B reflects the plan SES has communicated to it. Services currently above 4.0 GHz and not requiring any type of transition are not included in Appendix B.

The details of each service transition, such as the service’s ultimate satellite and frequency as well as the timing of the transition, are subject to change, particularly due to actions taken by SES’s customers. For example, an SES customer may choose not to renew services, may ask to complete its transition early, or may mutually agree with SES to modify the transition satellite to which its service is to be relocated, or the frequency, timing or other factors affecting its service or the transition process. Appendix B reflects the status of each service: Transition Completed, In Transition, Pending Transition, Deleted, or Added—indicated by a “C”, “I”, “P”, “D” or “A”, respectively as compared to the Appendix B submitted in our October 2020 Transition Plan.

Since filing our October 2020 Transition Plan, 51 services were removed from the plan, 37 services were added and 67 services completed transitions. Appendix B provides an explanation for these changes.

D. Technology Upgrades to be Implemented (§27.1412(d)(1)(iv))

The *C-Band R&O* notes that “upgrades such as video compression, modulation/coding, and HD to SD down-conversion at downlink locations, may be necessary to accomplish efficient clearing.”³³ To ensure that it can deliver substantially the same-or-better services with only 40 percent of the spectrum being usable for continuing C-band communications, SES has explored ways to reduce the capacity needs of existing services through technology upgrades.

³² One commenter requested that SES identify its customers by name. Comments of Verizon, GN Docket Nos. 18-122 & 20-173, at 2-3 (filed July 13, 2020) (“Verizon Comments”). But due to SES’s confidentiality obligations to its customers, SES cannot disclose the names of its customers in this appendix. *See also C-Band R&O* at n.684 (“We clarify that nothing in this *Report and Order* is intended to affect or change the terms of any private contractual arrangement.”). And given that Service IDs already provide SES’s customers with the information needed to ensure that their services are being migrated appropriately, SES has not identified a need to specify confidential customer information. But to the extent the Commission determines that such information is “necessary to effectuate the transition,” SES requests that the Commission affirmatively state as much. *See id.* at n.694.

³³ *C-Band R&O* ¶ 194.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

SES determined that one customer currently receiving services from 11 transponders on one SES satellite will require compression/modulation technology upgrades for the service to continue to be provided at the same quality level after the relocation.³⁴ Specifically, the pre-transition services encoded using MPEG-2 will be upgraded to MPEG-4, which will support substantially the same or better service in much less bandwidth. With technology upgrades, the customer's post-transition needs are reduced to only 5-6 transponders,³⁵ which will allow those services to continue to be downlinked on a single satellite which is necessary for this particular service. Changes will be needed at the customer's uplink locations as well as at the receiving Incumbent Earth Station locations. At the customer uplink locations, encoding, statistical multiplexing, modulator and other equipment will be required. At the Incumbent Earth Station downlink locations, integrated satellite receiver/decoders ("IRDs"), multiplexing, and other equipment may be required.

This use of compression technology is necessary in light of the very limited orbital slots available to SES to maintain its C-band service obligations with only 40 percent of the available capacity. This approach works well from a technological (and economic) perspective because of the large number of transponders used by this customer; the same approach would not be as effective for customers using a small number of transponders.

As previously reported in SES's quarterly reports, all uplink compression equipment has been shipped to and installed at the earth station locations associated with the SES services requiring compression technology. All of the equipment has been configured and tested and all uplink services subject to compression are currently being dual illuminated as of the date of this amended Transition Plan. All of the downlink equipment, including demodulators, decoders, transcoders and related equipment, has been shipped to Incumbent Earth Station operators – including lump sum electees – receiving the SES satellite services requiring compression technology. Ninety-five percent of Incumbent Earth Stations subject to SES's Phase I Transition Plan and subject to compression have been fully transitioned and are either authorized or on air. The remainder of non-lump sum Phase I Incumbent Earth Stations subject to compression are expected to be fully transitioned in early July 2021, and all Incumbent Earth Stations in SES's Transition Plan and subject to compression are expected to be transitioned by August 31, 2021.

³⁴ *Id.* ("Earth station migration includes . . . technology upgrades necessary to facilitate the repack, such as compression technology or modulation."); Letter from Brian D. Weimer, Counsel for SES, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122, at 5 (filed July 8, 2020) ("the space station operators' control over video quality is inherently limited to a defined network distribution architecture that involves transmit and receive antennas located on the spacecraft and in rare cases—most of which are not video networks—at antennas located at earth stations.").

³⁵ SES's customer is currently evaluating the final number of transponders that will be required after the implementation of the technology upgrades. Once this number is finalized, SES will provide an update in its quarterly reports to the Commission.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

For services below 4.0 GHz on SES's international satellites that cannot be transitioned above 4.0 GHz due to unavailable capacity on those international satellites, SES will be performing other types of technology upgrades for customers that require transition of data services that operate on an SES-supplied platform or a platform at a customer's facility. SES is building a duplicate platform, including hub chassis, line cards, modems, core network components, and other equipment at one of the TT&C/Gateway sites where downlinking services below 4.0 GHz will be permitted. Once built, the data service will be transitioned from the existing platform to the new platform. The original platform will be decommissioned after the service is fully transitioned. Currently, SES is expecting the Phase I platform migrations to be completed by August 31, 2021.

Appendix B also sets forth information on when a particular service requires a technology upgrade as part of its transition.

E. Number and Location of Incumbent Earth Stations to be Transitioned
(§27.1412(d)(1)(v)-(vi))

Appendix C identifies Incumbent Earth Stations that are (1) included on the FCC Incumbent Earth Station list released on June 22, 2021;³⁶ and (2) to the best of SES's knowledge,³⁷ are receiving at least one service from an SES satellite.³⁸ To the extent necessary, SES will file a further amended Transition Plan reflecting all of the Incumbent Earth Stations that meet the above criteria prior to filing its Phase I and Phase II clearing certifications.³⁹

Section 27.1412(d)(1)(vi) requires satellite operators to provide "an estimate of the number and location of Incumbent Earth Station antennas that will require retuning and/or repointing in order to receive content on new transponder frequencies post-transition."⁴⁰ This information was estimated in SES's October 2020 Transition Plan and is further revised in Appendix C. As nearly all outreach activities to SES-affiliated Incumbent Earth Stations in the top 46 PEAs are complete, SES believes that the information provided by SES for Phase I PEAs in Appendix C is

³⁶ *International Bureau Releases Updated List of Incumbent Earth Stations in the 3.7-4.2 GHz Band in the Contiguous United States*, Public Notice, IB Docket No. 20-205 & GN Docket No. 20-305, DA 21-731 (rel. June 22, 2021).

³⁷ SES's analysts have compared the list of Incumbent Earth Stations released by the International Bureau on June 22, 2021, to the affiliate earth station lists provided by SES customers to clarify the Incumbent Earth Stations assigned to SES satellites. This revised list is included in Appendix C.

³⁸ See Section 25.138 of the Commission's rules. 47 C.F.R. § 25.138.

³⁹ *Wireless Telecommunications Bureau Opens Window For Eligible C-Band Satellite Operators To Account For Updates in Their Transition Plans*, Public Notice, GN Docket Nos. 18-122 and 20-173, DA 21-736 (rel. June 23, 2021).

⁴⁰ 47 C.F.R. § 27.1412(d)(1)(vi).

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

highly accurate; however, SES will update Appendix C, as necessary, in any further amendments to the Transition Plan prior to filing its Phase I clearing certification. Regarding SES-affiliated Incumbent Earth Stations outside of the top 46 PEAs, SES continues to provide rough estimates based on Incumbent Earth Station information available to SES at this time. Further outreach in 2022 and 2023 will provide a much more accurate estimate and to the extent necessary, SES will file a further amended transition plan reflecting the results of the outreach as necessary. Additionally, SES continues to coordinate with the Relocation Coordinator and other satellite operators to share outreach information to further increase the accuracy of SES's estimates.⁴¹

SES will endeavor to repoint antennas, but this is not possible for all earth stations. For example, if a service will be transferred to another satellite, in most circumstances a new antenna will be needed rather than repointing the existing antenna as the existing antenna will continue to receive other services, either from the original satellite or other satellites operated by SES or other satellite operators. Also, repointing an antenna could create a significant service outage that may not be acceptable to an Incumbent Earth Station operator and can be avoided by installing a new antenna. Fortunately, based on the customer outreach SES has performed, SES understands that, in the vast majority of cases,⁴² an antenna is already available at the Incumbent Earth Station site to receive service from the new satellite. This expectation has been borne out in SES's Phase I clearing activities and a new antenna is needed at less than 10% of Phase I Incumbent Earth Station sites as a result of inter-satellite service transitions. New antennas are also installed at some Incumbent Earth Stations for reasons other than inter-satellite service transitions as explained more fully below.

To generate the data on which Appendix C is based, SES received feedback from and conducted considerable outreach to owners or operators of Incumbent Earth Stations, used internal databases, the FCC's IBFS database, the FCC's updated list of Incumbent Earth Stations (released June 22, 2021), engaged in extensive discussions with Intelsat and the Relocation Coordinator, and solicited feedback from customers to develop its current understanding of the universe of Incumbent Earth Stations receiving transmissions from SES satellites that will be impacted by the satellite service transitions, as shown in Appendix C.

When creating its initial list of associated Incumbent Earth Stations, SES threw a wide net based on the assumption it would identify Incumbent Earth Stations that were not in fact receiving SES services as transition activities progressed. Specifically, SES developed its initial list of the Incumbent Earth Station sites from customers' affiliate lists, research, and from the FCC's IBFS database. The owner/operator of each of the Incumbent Earth Stations included on the initial list has been or will be contacted by an outreach vendor initially to confirm general earth station information, such as contact details, site location information, and number of antennas accessing

⁴¹ In light of this ongoing outreach, it would be premature for a satellite operator to certify that it has completed both its Phase I and Phase II clearing obligations at this time.

⁴² In SES's current estimate, approximately 90% of Incumbent Earth Stations already have an antenna pointed towards the SES satellite(s) to which services currently received by those satellites will be transitioned.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

SES satellites at the site. A separate installation vendor then coordinates with each Incumbent Earth Station operator to determine the equipment required for the transition (antenna equipment, filters, etc.) depending on the needs of the site in accordance with the service transitions described in Appendix B and the status of the Incumbent Earth Station on the FCC's updated Incumbent Earth Station list. The installation vendor confirms the number of Incumbent Earth Stations at the site accessing SES satellites, which defines the number of passband filters that must be installed. The installation vendor determines if an additional or replacement antenna is needed for the Incumbent Earth Station to continue accessing SES's services, which may be migrated to a different SES satellite. For example, a site may only have one antenna available, but two antennas may be needed to continue downlinking the equivalent SES services post-transition.

For Incumbent Earth Stations requiring equipment (other than filters), prior to the service transition periods defined in Appendix B, SES-hired installation teams contact each SES-associated Incumbent Earth Station operator to schedule a time during which they will install the equipment. For example, SES anticipated that all MVPD Incumbent Earth Stations would be scheduled for equipment and filter installations within the last six months of the Phase I and Phase II clearing timelines because most MVPD Incumbent Earth Stations require access to several satellites and all transitions on those satellites will need to be completed before any filters are installed.⁴³ For Phase I, MVPD Incumbent Earth Station filtering began in May 2021 and is expected to be completed by August 31, 2021. On the other hand, some Incumbent Earth Stations, such as those that only need access to one service on one satellite, may be able to accommodate the installation of filters at any time. SES's internal communications team, through the assistance of a third-party outreach vendor, and its third-party installers working with SES customers and industry groups have been providing and will continue to provide Incumbent Earth Station operators, including lump sum electees, with a notification as to the overall timeframe when filter installation is expected to occur. SES anticipates that (as required by the *C-Band R&O*) each Incumbent Earth Station operator, who had not otherwise elected to accept the lump sum, will cooperate with SES to grant installers access to their facilities and equipment within the defined timeframe to ensure a smooth transition process. Should any scheduling disputes arise between SES and an associated Incumbent Earth Station Operator, the dispute will be resolved according to the dispute resolution process established by the Relocation Coordinator, required by the *C-Band R&O*. As of the date of this Transition Plan, no scheduling disputes have arisen.

SES recognizes that some Incumbent Earth Stations may have unique characteristics or requirements, including old and obsolete facilities, and will require a customized approach to timely transition every associated Incumbent Earth Station. When the installer visits the site, the installation technician is equipped to address a number of potential scenarios, including cases

⁴³ SES and Intelsat have already provided the multi-stakeholder technical working group (which includes Verizon) with the technical specifications of the filters that will be installed at Incumbent Earth Station sites. *See* Verizon Comments at 3 (requesting "a description of filter characteristics").

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

where an antenna is not performing adequately when tested prior to any work that needs to be done, the inability to install a filter due to antenna mechanical issues, and antennas in hard-to-reach locations.

The *C-Band R&O* holds incumbent satellite operators individually responsible for migrating customer services out of the lower 300 MHz. At cable headends, Incumbent Earth Station operators are likely to have antennas that access multiple satellite operators, which could create logistical challenges if migration is not managed efficiently.

Given the added complexity at these earth stations, Intelsat and SES have agreed to coordinate some of the commonly required activities. Both operators will take individual responsibility for their antenna seeding plans, for their customer compression upgrades, and for any other customer specific work required at an earth station. After the customer migrations are completed, Intelsat and SES have agreed to coordinate filter installation for Incumbent Earth Stations located at cable headends and any other Incumbent Earth Station sites that have antennas accessing both Intelsat and SES satellites. Such coordination will minimize the burden on the earth station technical staff and will reduce the risk of issues occurring during the filter installation process.

Following the installation of filters at joint sites, USSI, which is conducting transition activities for both SES and Intelsat at joint Incumbent Earth Station sites, provides feedback to SES and Intelsat on the antennas that are transitioned, and in the case of multifeed antennas, the feeds that received Intelsat or SES filters. SES and Intelsat then provide information to the Relocation Coordinator. The Relocation Coordinator can then identify unclaimed Incumbent Earth Station antennas or feeds.⁴⁴

SES and Intelsat have also agreed to voluntarily install filters on any unregistered antennas located at Incumbent Earth Station sites at the same time they install filters on the collocated Incumbent Earth Stations that receive services from either SES or Intelsat satellites, provided that doing so does not impact any of SES or Intelsat's obligations under the *C-Band R&O*. The fact that SES and Intelsat will install filters on these unregistered antennas does not change their status with respect to the *C-Band R&O* and therefore, these unregistered antennas will not be eligible for interference protection from future licensed terrestrial services.⁴⁵ Furthermore, because SES and Intelsat are volunteering to take on this filtering activity, which is outside the scope of the obligations imposed by the *C-Band R&O*, the unregistered antennas subject to this agreement will not be considered part of SES's or Intelsat's accelerated clearing obligations or

⁴⁴ The complicated situation involving transitioning individual feeds on multifeed antennas further illustrates why a satellite operator cannot certify that it has completed both its Phase I and Phase II clearing obligations at this time.

⁴⁵ *C-Band R&O* ¶ 123. *But see Incumbent Earth Stations in the 3.7-4.2 GHz Band in the Contiguous United States*, Order, IB Docket No. 20-205 & GN Docket No. 20-305, DA 20-1258 (rel. Oct. 23, 2020) (granting limited waiver requests from several Incumbent Earth Station operators seeking to register additional, existing co-located antennas for the purposes of interference protection in the 4.0-4.2 GHz portion of the band).

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

relevant for either operator's accelerated clearing certification. Finally, for the avoidance of doubt, SES and Intelsat will not install filters or take any responsibility for transitioning unregistered antennas that are not collocated with an Incumbent Earth Station pointed to an Intelsat or SES satellite.

SES anticipates that certain Incumbent Earth Station operators will prefer to install equipment needed for the transition on their own.⁴⁶ For such self-installations, SES requested the Incumbent Earth Station operator to notify SES in email format to Cbandhelp@ses.com. The notice must specify if the Incumbent Earth Station operator plans to (1) procure equipment on its own, and therefore will be seeking reimbursement directly through the Relocation Payment Clearinghouse rather than looking to SES to cover the cost of the equipment, or (2) request SES-provided equipment and provide SES with a list of the equipment that is required for each Incumbent Earth Station.⁴⁷ SES expects most Incumbent Earth Station operators to request SES-provided equipment, but this is a choice each Incumbent Earth Station operator can make. The notice must also provide a detailed listing of the equipment needed for each physical Incumbent Earth Station identified in the FCC's updated Incumbent Earth Station list receiving service from an SES satellite. SES will review these details to determine the eligibility for reimbursement of the equipment prior to ordering and shipping the equipment to the Incumbent Earth Station operator's location.

For Incumbent Earth Station operators choosing to self-install equipment, SES will provide the timeline within which the dual illumination of all affected services, if any, will occur and when the equipment must be installed. Upon receipt of the necessary equipment by the Incumbent Earth Station operator, SES will then provide the Incumbent Earth Station operator remote assistance via SES's help desk as needed to support the installation. The Incumbent Earth Station operator is requested to provide SES with a certification confirming that all of the equipment has been installed and tested on all Incumbent Earth Stations receiving SES services at that location, and no operational issues have been identified. Upon receipt of the original self-install notification from an Incumbent Earth Station operator, SES will deem all Incumbent Earth Stations receiving service from an SES satellite at that Incumbent Earth Station operator location as cleared for purposes of this Transition Plan.

SES is not responsible for the quality of equipment purchased by the Incumbent Earth Station operator or the workmanship of the self-installation. If an Incumbent Earth Station operator informs SES it intends to self-install but fails to provide a certification in a timely manner, SES will not be obligated to provide a certification of completion for that Incumbent Earth Station

⁴⁶ These self-install Incumbent Earth Station operators are not the ones electing to receive a lump sum payment – SES will have no obligations with regard to the operators electing the lump sum payment beyond providing necessary equipment where a technology upgrade is required and responding to the elected earth station operator's request to coordinate with SES, as necessary. SES will provide support to self-install Incumbent Earth Station operators, as discussed herein.

⁴⁷ SES will provide equipment only for Incumbent Earth Stations receiving service from an SES satellite.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

operator. SES will provide a summary of Incumbent Earth Stations that have notified SES of their intent to self-install SES-provided equipment or their directly purchased equipment, including whether a certificate of completion has been received denoting the transition of the particular Incumbent Earth Station is complete, in its quarterly status reports to the Commission. As of the date of this amended Transition Plan, 28 Incumbent Earth Station operators have chosen to self-install their C-band equipment and 13 have provided certification that the self-installation activities have been completed.

The amended Appendix C attached to this Transition Plan reflects the status of each Incumbent Earth Station included in the Appendix C submitted with our October 2020 Transition Plan. For Incumbent Earth Station records that were removed, an explanation for that decision is provided.⁴⁸ SES has provided the Relocation Coordinator a list of all Incumbent Earth Stations it removed from Appendix C since its October 2020 Transition Plan. The Relocation Coordinator works with the other satellite operators and the Incumbent Earth Station operator to confirm if these and other unclaimed Incumbent Earth Stations remain operational, and if so, the associated satellite operator. An Incumbent Earth Station is only an associated Incumbent Earth Station if it is not: (i) determined to be decommissioned; or (ii) currently unused; or (iii) a steerable antenna to be used as needed to access any satellite within its range of motion; or (iv) non-responsive to a satellite operator's outreach. In the case of (i), the Relocation Coordinator informs the FCC for the Commission's further action. In the case of (ii) and (iii), the Relocation Coordinator will assign the unclaimed Incumbent Earth Station to one of the satellite operators for transitioning.⁴⁹ In the case of (iv), SES or its designated third parties (e.g., installers) makes numerous attempts via telephone and email to reach the non-responsive Incumbent Earth Station Operator. If those attempts fail, SES will reach out to various industry stakeholders (e.g., ACA Connects in the case of a non-responsive MVPD operator) for assistance as well as the regulatory point-of-contact for the non-responsive Incumbent Earth Station Operator as set forth in the respective IBFS filing application. If these subsequent attempts fail, SES then informs the Relocation Coordinator for their further action.

As part of SES's election to clear on an accelerated basis, SES has committed "to take responsibility for relocating its associated Incumbent Earth Stations by" the accelerated relocation deadlines.⁵⁰ Associated Incumbent Earth Station operators accordingly must

⁴⁸ In nearly all cases (except when an Incumbent Earth Station is designated as decommissioned), other satellite operators have picked up the removed claim. In the few cases where no satellite operator has claimed an earth station, SES continues to work with the Relocation Coordinator to ensure that all active earth stations associated with Phase I are claimed prior to the completion of the Phase I clearing, as described herein.

⁴⁹ In light of this ongoing work by the Relocation Coordinator, it would be premature for a satellite operator to certify that it has completed both its Phase I and Phase II clearing obligations at this time.

⁵⁰ *C-Band R&O* ¶ 292.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

“facilitate SES’s completion of earth station relocation,” including “by helping with scheduling, providing access to facilities, and confirming the work performed.”⁵¹

If SES learns of any potential earth station transition delays, as contemplated by the *C-Band R&O*, SES intends to work expeditiously with the Incumbent Earth Station operator, Relocation Coordinator, and the Bureau to resolve such issues consistent with SES’s Transition Plan, including its transition timeline. SES also intends to timely inform the Bureau of any “earth station transition delays” that are beyond SES’s control.⁵²

F. Gateway and TT&C Transition

The *C-Band R&O* requires SES to identify two of the four protected TT&C locations in its transition plan.⁵³ For the avoidance of doubt, SES has selected the Hawley and Brewster sites as its two protected TT&C locations.

SES will supplement its TT&C services to support the new and existing satellites in compliance with the FCC clearing requirements. To that end, SES will be enhancing the capabilities at Hawley and Brewster to support the testing and operations of SES’s North America fleet utilizing C-band. To accomplish these requirements, SES will install full-motion antennas and associated satellite ground control equipment at each location. Once the new full-motion antennas are installed and tested, SES will no longer receive TT&C signals below 4.0 GHz at any CONUS location other than Hawley and Brewster, which are permitted by the *C-Band R&O* to receive TT&C signals below 4.0 GHz on a protected basis. SES will continue to use its existing teleports to receive signals in the 4.0-4.2 GHz band.

SES will also relocate downlink services associated with international video feeds, data and other services that cannot be transitioned out of the 3.7-4.0 GHz band to the Hawley and Brewster sites.⁵⁴ These services cannot be transitioned into the upper 200 MHz of C-band spectrum for one of several reasons. One overarching issue is the lack of available capacity in the upper 200 MHz once all of the CONUS services are transitioned.⁵⁵ Also, it may not be possible to

⁵¹ *Id.*

⁵² *Id.* ¶ 294.

⁵³ *Id.* ¶ 374 (“Should the incumbent space station operators fail to come to consensus, we expect that SES would identify two locations and Intelsat would identify the other two locations.”).

⁵⁴ *Id.* at n.826 (“[The Commission] expect[s] that all incumbent space station operators will have the opportunity to co-locate their TT&C and international gateways at [consolidated TT&C/Gateway sites].”).

⁵⁵ See Letter from Bill Tolpegin, Chief Executive Officer, C-Band Alliance, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122, at 8 (filed Jan. 14, 2020) (“[Consolidated TT&C/Gateway] sites are critical . . . because they serve as gateways (or ingest points) for a significant amount of customer services that must maintain access to the entire 500 MHz of the FSS C-band downlink band.”).

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

transition the uplink frequency due to other local regulatory factors such as coordination with terrestrial fixed services in the 6 GHz band (when the service has an uplink paired with the downlink below 4.0 GHz) or technical restrictions in the uplink equipment itself.

Consistent with the *C-Band R&O*, SES intends to receive signals in the 3.7-4.0 MHz band on an unprotected basis at the TT&C Gateway sites.⁵⁶ The transition of such signals will follow one of two approaches. International video feeds and some of the data service downlinks will be transitioned simply by installing antennas and IRDs or other equipment at the TT&C/Gateway sites to receive the signals in the current frequency from the current satellite. The received signals will then be delivered to current customer downlink locations via terrestrial means. Other data services that operate through a VSAT-type managed platform will be migrated in whole (*i.e.*, the platform itself will be relocated to the Hawley or Brewster sites) and the two-way data service will be interconnected via terrestrial means with existing customer hub locations.

As previously reported, the TT&C antenna installations, along with the associated ground equipment, and transition services are underway at both Brewster and Hawley. All transition activities are expected to be completed well in advance of the Phase I and Phase II clearing deadlines.

II. Reporting and Certification of Clearance

On or before each of the accelerated clearing deadlines, SES will file a certification confirming that the relevant Incumbent Earth Stations, previously reflected in its Transition Plan have been transitioned.

III. Timeline (§ 27.1412(d)(1)(vii))

The full scope of the service transitions described above and in Appendix B are reflected in the timeline provided in Appendix E. The timeline is a high-level description of all of the many complex and time-consuming activities SES will complete to meet the accelerated relocation deadlines and reflects the extensive discussions SES held with customers and other C-band stakeholders. Customers and associated Incumbent Earth Station operators should refer to the transition times associated with their specific services in Appendix B to understand when they and their affiliates will be subject to dual illumination and any equipment changes.

A more detailed description of each element of the timeline is provided below.

Transitions: During the time periods designated for “Transition” in the Appendix E timeline, SES will perform all necessary activities to migrate services on its satellites and install all necessary equipment resulting from the satellite service migrations at affected Incumbent Earth Stations and install requisite passband filters. In some cases, services that are affected by the Phase II deadline may be transitioned during the Phase I period to improve efficiencies and reduce the impact on Incumbent Earth Station operators. As noted previously, given the fluidity

⁵⁶ *C-Band R&O* ¶ 380.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

of these transition activities and the ongoing efforts to identify and allocate all associated Incumbent Earth Stations, it is premature for any satellite operator to certify that it has completed both its Phase I and Phase II clearing obligations at this time.

Technology Upgrades: As described in Section I.D, SES will work with one of its customers receiving a compression/modulation technology upgrade to install encoding, statistical multiplexing, modulators and other equipment at the customer's uplink sites while simultaneously installing IRDs, multiplexing and other equipment at the associated Incumbent Earth Stations. The number of associated Incumbent Earth Stations receiving IRDs will be higher than the number of associated Incumbent Earth Stations reflected in Appendix C because SES is responsible for providing IRDs to any Incumbent Earth Station operator that has elected to take the lump sum but has indicated its intent to continue C-band service. For other technology upgrades described in Section I.D (other than platform migrations), SES will work with affected customers to assess the most efficient method for effectuating upgrades, including identifying specific equipment requirements such as demodulators, networking equipment and terrestrial service requirements to allow customer downlinks to be migrated to Hawley or Brewster and delivered via terrestrial means to current customer downlink locations. The compression/modulation technology upgrade is expected to take place in Phase I (as opposed to Phase I and Phase II, as noted in our October 2020 Transition Plan) even though the services requiring technology upgrades occupy both Phase I and Phase II frequencies.

Platform Migrations: Platform migrations as described in Section I.D are complex and time-consuming, and as such, will be performed over an extended period. As an individual platform may carry services that require transition over both Phase I and Phase II, necessary upgrades such as line cards will be installed in stages such that prioritization is given to services that must be migrated in Phase I.

Filter Installations: For all associated Incumbent Earth Stations, once all of the services received by the antenna are transitioned to their final frequencies, polarizations, or satellites, SES or the Incumbent Earth Station operator can install a passband filter. As of the date of this amended Transition Plan, SES has installed filters at nearly 60% of the Phase I Incumbent Earth Station sites. SES has been conducting MVPD filter installation in cooperation with Intelsat as well as completing the remaining filter installations at radio and broadcast TV sites. ATCi continues installing filters on Incumbent Earth Station Simulsat antenna feeds that receive SES services. SES anticipates that all Phase I filters will be installed by August 31, 2021. SES has continued to build up filter inventory for all Phase II activities during the reporting period.

Gateway Migrations: The gateway migrations consist of installing downlink equipment at the Hawley and Brewster sites to access all satellites shown in Appendix A. The gateway and teleport equipment and facilities for Phase I customer transitions are expected to be in place no later than August 31, 2021, and for Phase II customer transitions no later than August 31, 2023.

Satellite Procurement: SES has entered into manufacturing contracts to build a total of four satellites and two ground spares necessary to effectuate the transition according to the Commission's aggressive timetable. The initial four satellites are scheduled to be launched by the end of Q3 2022. SES has also entered into launch service agreements to support the launch

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

of the four satellites. As discussed above, SES must undertake dual launches. However, some additional launch reservations will be purchased for contingency to address potential manufacturing delays or launch failures.

Service Migrations: SES anticipates it will take two to four months after the satellites are launched to raise the satellites to their testing orbit locations, complete testing, move the satellites to their final orbital locations, and initiate service on the satellites.

IV. Estimated Costs

Appendix D provides the estimated costs associated with the Transition Plan described herein. SES has revised the estimated costs for filters, LNBS, antennas and related installation services to reflect the fact that a number of associated Incumbent Earth Stations are covered by an accepted lump sum election. The estimated costs for technology upgrades has not been reduced because SES continues to be responsible for providing IRDs to any associated Incumbent Earth Station that is receiving service from the SES customer implementing compression irrespective of whether the associated Incumbent Earth Station is subject to an accepted lump sum election.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

Appendix A

Authorized Space Stations Subject to Transition

The table below details the SES satellites on the list of space stations licensed under Part 25 of the Commission's regulations or granted access to the U.S. market pursuant to Section 25.137 of the Commission's rules that can carry services impacted by the transition.

Space Station	Call Sign	Orbital Location (Deg. W.L.)	Station-kept (SK) / Inclined (I)	Services impacted?
NSS-7	S2463	20	I	
SES-4	S2828	22	SK	Y
NSS-10	S2415	37.45	I	Y
SES-6	S2870	40.5	SK	Y
SES-14	S2974	47.5	SK	Y
AMC-3	S2162	72	I	Y
AMC-6	S2347	139	SK	
SES-2	S2826	87	SK	Y
SES-1	S2807	101	SK	Y
SES-3	S2892	103	SK	Y
SES-11	S2964	104.95	SK	Y
AMC-11	S2433	131	SK	Y
AMC-4	S2135	134.9	I	
AMC-8	S2379	135	I	
AMC-18	S2713	83	SK	
NSS-9	S2756	176.93	SK	Y

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

Appendix B

Plan to Migrate Existing Services

This appendix provides a description of the accompanying MS Excel file that details the services that will be impacted by the SES Transition Plan. The format of the Appendix B Excel File is as shown below, along with a description of each field. Services not requiring relocation above 4.0 GHz are not included in the Appendix B Excel File. As discussed above, SES has continued to refine its plan through discussions with customers and additional internal review since the initial plan was filed on June 19, 2020. As a result, a number of changes have been made to the Appendix B Excel file submitted in the October 2020 Transition Plan. A number of entries have changed as a result of customer contract changes, planning optimization as well as corrections for typographical errors. A number of entries have been added, while others that were determined to be outside of CONUS or already received in the Brewster or Hawley sites were removed.

Appendix B Excel File		
Field Number	Field Name	Field Description
1	Service ID	An SES generated string for identifying each unique service impacted by the SES Transition Plan. It is a concatenation of the satellite, transponder, center frequency, and bandwidth of the service in the record
2	Pre-Transition Satellite	The current satellite the service resides on
3	Pre-Transition Transponder	The current transponder the service resides on
4	Pre-Transition Center Frequency	The current center frequency of the service in MHz
5	Pre-Transition Bandwidth	The current bandwidth of the services in MHz
6	Post-Transition Satellite	The satellite the service will be transitioned to; in many cases the Transition Satellite is the same as the Current Satellite which indicates the service will not be transitioning to another satellite
7	Post-Transition Transponder	The transponder the service will be transitioned to
8	Post-Transition Center Frequency	The center frequency of the service after transition in MHz

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

9	Post-Transition Bandwidth	The bandwidth of the service after transition in MHz
10	Transition Start	The start date of the dual illumination window or transition of the service in yyyy-mm-dd format
11	Transition End	The end date of the dual illumination window or transition of the service in yyyy-mm-dd format
12	Technology Upgrade / Type	An “N” in Field 12 indicates no technology upgrade needed for this service. A “C/M” in Field 12 indicates that the service will undergo a technology upgrade of compression and modulation. A “G” in Field 12 indicates the service will be transitioned to Hawley or Brewster.
13	Actual Transition End	For those services that have completed their transition, the date the particular transition ended is provided in Field 13 in yyyy-mm-dd format.
14	Transition Status	A = Added to Transition Plan C = Completed Transition I = In Transition P = Pending Transition

For the services in the Appendix B Excel file with the service IDs of

AMC-3_03C_3760_36 (“Service 1”)

AMC-3_04C_3780_36 (“Service 2”)

AMC-3_05C_3800_36 (“Service 3”)

AMC-3_06C_3820_36 (“Service 4”)

AMC-3_10C_3900_36 (“Service 5”)

AMC-3_15C_4000_36 (“Service 6”)

SES has informed the customer that these services, if currently being received in CONUS, will need to be (1) used for shore-to-ship only, (2) transitioned to a frequency above 3820 MHz prior to 5 December 2021 for those services below 3820 MHz and to a frequency above 4000 MHz

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

prior to 5 December 2023 for those services below 4000 MHz, or (3) terminated altogether prior to 5 December 2021 for those services below 3820 MHz and terminated altogether prior to 5 December 2023 for those services below 4000 MHz. SES has provided the customer with sufficient capacity above 3820 MHz to transition Service 1 through Service 4. Although SES does not have sufficient capacity on AMC-3 to support all of the existing services below 4000 MHz, it is understood that the service is a mix of ship-to-shore and shore-to-ship services and as such not all of the AMC-3 capacity is downlinked by a CONUS-based fixed earth station. Notwithstanding, SES has also informed the customer that if sufficient capacity is not available above 4000 MHz on AMC-3 to support all ship-to-shore traffic downlinked to a CONUS-based fixed earth station, SES can downlink such services at Hawley or Brewster and deliver the service terrestrially to customer's existing downlink location.

SES offers service through its SES Government Solutions subsidiary to Raytheon Technologies, which operates an FAA / WAAS system at the SES South Mountain TT&C/Gateway location in Somis, CA. The service includes reception of the lower TT&C frequency which will require a transition from C-band to Ka-band to allow for continued satellite tracking post-transition through the addition of a Ka-band sidecar antenna and feed assembly on the WAAS antenna at the Somis, CA location. The antenna upgrade is on-track for completion and for transition to the reception of the Ka-band TT&C signal by August 31, 2021 at which time the C-band TT&C signal will no longer be received by the WAAS antenna.

Finally, the October 2020 Transition Plan does not reflect transitions specifically focused on the occasional use ("OU") market, because SES does not provide guaranteed long-term OU capacity and no such specific transitions are necessary. As SES has previously stated, prior to the planned transition, SES has been able to serve the needs of OU operators by making available transponders that are idle for a short period of time in the scope of full-time customer migrations.⁵⁷ The market for OU services is relatively small and on a downward turn in light of market forces and increased reliance on fiber-based services. As such, SES's ability to continue to provide OU services will not be impacted by its transition of other services. The availability of short-term idle transponders will not be impacted by the transition and SES will continue to make transponders that are temporarily available for OU use after the transition is complete just as it did before the transition.⁵⁸ In other words, the transition will have no impact on the extent or availability of idle transponders for OU service.

As reported in our June 28, 2021 Quarterly Report, on June 18, 2021, SES and PSSI Global Services, LLC, filed a joint letter with the FCC confirming they had executed a binding agreement whereby PSSI will undertake all duties and responsibilities to timely transition the six

⁵⁷ See Letter from Brian D. Weimer, Counsel, SES Americom, Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed June 17, 2020).

⁵⁸ *Id.*

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

PSSI earth station antennas that the Relocation Coordinator assigned to SES on May 6, 2021.⁵⁹ The six PSSI earth station antennas were not previously reflected in SES's October 2020 Transition Plan or subsequent quarterly reports because they were only assigned by the Relocation Coordinator in May 2021. Since PSSI has agreed to take full responsibility to transition those earth station antennas, they will not be reflected in Appendix C of this amended Transition Plan.

⁵⁹ See Joint Letter from Brian Weimer, Counsel, SES Americom, Inc., and Stephen Diaz Gavin, Counsel, PSSI Global Services, LLC, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 18-122 & 20-173 (filed June 18, 2021).

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

Appendix C

This appendix provides a description of the accompanying MS Excel file that details the Incumbent Earth Stations that currently receive services⁶⁰ from SES satellites. Using the FCC's June 22, 2021 Incumbent Earth Station list, SES removed any prior claims that (i) no longer appear on the Incumbent Earth Station list, (ii) are Incumbent Earth Stations that are subject to an accepted lump sum election, (iii) were previously claimed to be associated with an SES satellite but have been deemed subsequently not to be associated with an SES satellite or (iv) are no longer in service (i.e., decommissioned). Therefore, the Appendix C Excel file contains only Incumbent Earth Stations that SES has affirmatively determined to be associated with an SES satellite through its outreach efforts or that SES believes may be associated with an SES satellite. In the latter case, which is particularly relevant for any Incumbent Earth Station outside of the top 46 PEAs, additional outreach will validate whether the Incumbent Earth Station does in fact receive services from an SES satellite. Since its October 2020 Transition Plan was filed, SES independently and through its installers have identified 146 Incumbent Earth Station records that have been added to SES's Transition Plan and 2,223 Incumbent Earth Station records that are not receiving any services from an SES satellite, classified as a lump sum electee, or are no longer in service and therefore should be removed. Appendix C provides further explanation for each record that has been removed. Additionally, Appendix C has been revised to reflect SES-associated feeds on multi-feed antennas as has been validated by SES and its third-party installers during the filter installation process.

For clarity, the field contents are as shown below.

⁶⁰ A service is defined as a contracted continuous bandwidth segment on an SES satellite as set forth in Appendix B. If sufficient details were not provided by the SES customer, it is assumed that an Incumbent Earth Station receives all services provided by a particular SES customer.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

Table C-1: Contents of Appendix C Excel File

Field Number	Field Name	Field Description
1	ESID	Unique Earth Station identifier provide by the Relocation Coordinator
2	Quantity Claimed	The number of antennas claimed by SES that are associated with SES satellites. The value in Field 2 is equal to or less than the value in Field 17
3	Antenna Claim Type	<p>Of the antennas indicated in Field 2, Field 3 indicates the type of antenna as follows:</p> <p>Single = Antenna with a single feed Multi x = Antenna with x multiple feeds Simulsat y = An ATCi Simulsat antenna with y feeds Torus z = A General Dynamics Torus antenna with z feeds Rover = A steerable antenna that is not fixed permanently on a particular satellite and routinely steered from one satellite to another depending upon the earth station operator’s needs.</p> <p>In the case of multiple antennas claimed to be associated with SES satellites, the individual antennas are separated by a “/” symbol.</p>
4	Antenna Claim Feed Breakdown	For each antenna identified in Field 3, Field 4 provides a breakdown for the number of feeds SES claims are associated with an SES satellite. Note the ordering of the breakdown in Field 4 is correlated to the ordering of the antennas in Field 3.
5	Disposition	<p>Provides detail on the changes made to a record compared to the October 2020 Transition Plan Appendix C as follows:</p> <p>No Change: There have been no changes made to the record in terms of quantity of antennas claimed to be associated with SES satellites.</p> <p>New Claim: The Incumbent Earth Station was determined to be associated with an SES satellite.</p> <p>Quantity Claimed Change- Decommissioned: The quantity of antenna claimed to be associated with an SES satellite is reduced from the October 2020 Transition Plan due to one or more of the antennas no longer being in service.</p> <p>Quantity Claimed Change- Not SES Antennas: One or more of the antennas claimed to be associated with an SES satellite in the October 2020 Transition Plan are not associated with an SES satellite.</p>

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

		<p>Quantity Claimed Change – Not SES Antennas/Decommissioned: One or more of the antennas claimed to be associated with an SES satellite in the October 2020 Transition Plan are either not associated with an SES satellite and/or no longer in service.</p> <p>Quantity Claimed Change – Not SES Antennas/Over-registered: The number of antennas at the site is less than the number of antennas in Field 17; the number of antennas associated with an SES satellite has been adjusted accordingly.</p>
6	Claimed in October 2020 Transition Plan	Indicates if the Incumbent Earth Station was also claimed in the October 2020 Transition Plan.
7-33	Various	Data as it appears in the June 22, 2021 FCC Incumbent Earth Station List

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

Table C-2: Contents of Appendix C Excel File – Unclaimed Tab

Field Number	Field Name	Field Description
1	ESID	Unique Earth Station identifier provide by the Relocation Coordinator
2	Disposition	Reason for no longer claiming the earth station is associated with an SES satellite as follows: Added to Lump Sum List: The earth station is designated as electing a lump sum payment and SES therefore is no longer responsible for transitioning the earth station. Decommissioned: The earth station is no longer in service. Unclaimed- No SES Antenna: The earth station is not associated with an SES satellite. Unclaimed/ Over-registered: The number of antennas at the site is less than the number of antennas in Field 14 and none of the antennas are associated with an SES satellite. Unclaimed/Steerable: The antenna is a rover and has been claimed by another satellite operator. Ku-Band Only: The earth station is Ku-Band only (i.e., there is no feed in which to install a C-band passband filter).
3	Claimed in October 2020 Transition Plan	Indicates if the Incumbent Earth Station was also claimed in the October 2020 Transition Plan.
4-30	Various	Data as it appears in the June 22, 2021 FCC Incumbent Earth Station List

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

Appendix D
Estimated Costs

Category	Total
Satellite replacement program (total estimated cost)	\$1,329,000,000
<ul style="list-style-type: none"> • Satellites (6 satellites) 	\$869,000,000
<ul style="list-style-type: none"> • Launches (2 dual launches + 2 single launches)⁶¹ 	\$340,000,000
<ul style="list-style-type: none"> • Satellite ground control and TT&C systems, program management and insurance 	\$120,000,000
Filters and LNBS ⁶²	\$57,065,000
Antennas ⁶³	\$12,995,000
Dual Illumination	\$7,000,000
Other Services ⁶⁴	\$5,650,000
Technology Upgrades	\$133,000,000 ⁶⁵
TT&C / Gateway Consolidation	\$56,000,000
Other ⁶⁶	\$16,000,000
Total	\$1,616,710,000

⁶¹ SES's transition plan assumes two dual-launches and two single-launches for launch risk mitigation.

⁶² Includes installation.

⁶³ *Id.*

⁶⁴ Includes outreach, data collection, data analysis, stakeholder communications, technical consulting, and installation help desk.

⁶⁵ This estimate has not changed from SES's August 14, 2020 plan because SES remains responsible for supplying IRDs to all Incumbent Earth Stations that receive content from SES's compression customer irrespective of whether the Incumbent Earth Station is subject to an accepted lump sum election.

⁶⁶ Includes legal, communications, Relocation Coordinator, Clearinghouse, etc.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

These estimated costs reflect specific costs that are determined from contracts SES has already entered into as well as estimated costs for hardware and services that have not yet been purchased.

The satellite procurement estimates relate to the information provided in Section I.B above. The costs for four satellites plus two ground spares are based on manufacturing contracts. Similarly, the launch costs reflect the contracted cost for two dual-launches and a single contingency launch if the first of the two ground spares must be launched. A second single launch may be needed in the event the second ground spare must be launched, and the estimated cost of that launch is included. In the event of launch failures, the incremental insurance costs are not reflected above, and reimbursement will only be sought if such costs are incurred.

The costs identified for filters and LNBS, antennas, dual illumination, and other services reflect the activities described in Sections I.C and I.E above. SES has entered into agreements with a number of the suppliers and has utilized the referenced estimates from the equipment and services RFPs in forming the projected cost structure. The technology upgrade costs reflect the activities described in Section I.D and the TT&C and gateway upgrade costs relate to the activities described in Section I.F.

The internal manpower and financing charges associated with the specific categories described above has been incorporated into the specific related category.

SES Americom, Inc.
Accelerated C-band Transition Implementation Plan
(filed July 7, 2021)

Appendix E

Transition Timeline

The following represent SES’s overall transition timeline. Required individual customer transition schedules are referenced in Appendix B and are subject to adjustment as required by SES.

