



Daniel C.H. Mah
Vice President, Legal & Regulatory Affairs

Shri Syed Tausif Abbas
Advisor (Networks, Spectrum and Licensing)
Telecom Regulatory Authority of India
New Delhi 110-002
INDIA
advmn@traf.gov.in

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Subject: **Licensing Framework for Establishing Satellite Earth Station Gateway**
Consultation Paper No. 6/2021

Dear Sir,

SES Worlds Skies Singapore Pte Ltd, a wholly owned indirect subsidiary of SES S.A., (together, “SES”) is pleased to submit its comments on the Telecom Regulatory Authority of India (“TRAI”) Consultation Paper on *Licensing Framework for Establishing Satellite Earth Station Gateway*, released on 15 November 2021 (“Consultation”).

SES is a global satellite operator that operates a fleet of about 50 satellites in geostationary orbit (“GEO”), as well as the innovative O3b Ka-band constellation of 20 High Throughput Satellites (“HTS”) in medium Earth orbit (“MEO”). For over 20 years, through arrangements with ISRO and NSIL (formerly Antrix), SES has helped meet the satellite capacity needs of India. In doing so, it has contributed to the vibrant growth of the Indian broadcast industry and the expansion of satellite data networks across India. Today, two major Indian DTH platforms and several telecommunications and data service providers use SES satellite capacity to serve over 30 million TV households and to connect over hundreds of thousands of sites around the country.

With its multi-orbit satellite fleet, SES stands ready to help meet India’s rapidly growing need for satellite capacity and services. SES’s Broadcasting Satellite Service (“BSS”) satellites are ready to support the expansion of India’s DTH platforms, while freeing up Fixed Satellite Service (“FSS”) capacity for broadband data services. In addition, SES’s HTS systems in GEO and MEO can be put to use immediately to extend 4G and 5G coverage,¹ expand broadband availability,² and to help meet the *Connect India 2022* goals in the *National Digital Communications Policy, 2018*.

¹ See, e.g., SES, *iSAT Africa and SES Networks to Provide Reliable 4G Services in East Africa via O3b mPOWER* (15 Jul. 2021), <https://www.ses.com/press-release/isat-africa-and-ses-networks-provide-reliable-4g-services-east-africa-o3b-mpower>; SES, *SES Leads Satellite-enabled 5G Tests* (13 Jul. 2021), at <https://www.ses.com/blog/ses-leads-satellite-enabled-5g-tests>.

² See, e.g., SES, *INRED and SES Networks Expand Wi-Fi Access Across Colombia, Connect Nearly One Million People in 424 Municipalities* (4 Nov. 2020), at <https://www.ses.com/press-release/inred-and-ses-networks-expand-wi-fi-access-across-colombia-connect-nearly-one-million>.



SES is therefore keenly interested in the evolution of India’s satellite regulatory framework into one that will provide the Indian public with more choice and greater access to the newest satellite technologies and services. To that end, SES provides its responses to TRAI’s specific questions on the Consultation below.

Q1. Whether there is a need to have a specific license for establishing satellite Earth Station Gateway in India for the purpose of providing satellite-based resources to service licensees? Do justify your answer.

SES Response: SES supports providing the additional option of having a separate license category to establish a satellite Earth Station Gateway in India. Such a flexible licensing option should be available to satellite operators seeking to establish a satellite gateway in India to provide services in India, as well as to other entities in India seeking to operate or provide satellite gateway services to the satellite operators or to other service providers in India.

The satellite industry is continuing to evolve rapidly, both in terms of technological capabilities as well as service models. Historically, in India, satellite operators have provided satellite capacity, while service providers have established and operated the satellite earth station gateways and ground terminals. However, this is not the only technology or service model possible, nor is it necessarily the one that is most efficient for all kinds of services. As TRAI notes, some of the new Low Earth Orbit (“LEO”) satellite operators and geostationary (“GEO”) High Throughput Satellite (“HTS”) systems take a vertically integrated approach that is most efficient when the satellite gateways in India are established and operated by the satellite operator itself. Other service arrangements are also possible whereby a satellite operator partners with an Indian entity to provide gateway services or even whereby an Indian end user elects to provide own gateway services. Some satellite systems could operate on more than one such service model simultaneously for different services.

Rather than limit the entities that can obtain a license for a satellite earth station gateway, SES recommends that India establish a flexible gateway earth station licensing option that would facilitate a multiplicity of satellite technologies and service models in India. By doing so, India will enable and encourage the flexible deliver of new services more quickly and efficiently, based on market need and market dynamics, while retaining regulatory control over the operation of the gateways. The diversity of possible technological, business and service arrangements are explored further below.

Q2. If yes, what kind of license/permission should be envisaged for establishing Satellite Earth Station Gateway in India? Do provide details with respect to the scope of the license and technical, operational, and financial obligations, including license fee, entry fee, bank guarantees, and NOCC charges, etc.

SES Response: The licensing regime should be as flexible as possible to enable the widest possible technological, business and service arrangements for satellite gateway services. In addition, the reforms that TRAI has recommended in terms for streamlining licensing, reducing barriers to entry, and encouraging efficient use of infrastructure – such as TRAI’s recommendations on NOCC charges and spectrum usage charges³ – should be extended equally to the new satellite gateway licenses. As far as possible, India should strive to avoid

³ See, e.g., TRAI, *Recommendations on Licensing Framework for Satellite-based connectivity for Low Bit Rate Applications* (26 Aug. 2021) (“TRAI Satellite IoT Recommendations”), available at <https://traigov.in/notifications/press-release/traireleases-recommendations-licensing-framework-satellite-based>; TRAI (26 Aug. 2021), available at *Recommendations on Spectrum Usage Charges and Presumptive Adjusted Gross Revenue for Internet Service Providers and Commercial Very Small Aperture Terminal Service Providers* (7 Mar. 2017) (“TRAI Spectrum Usage Charge Recommendations”), available at https://www.traigov.in/sites/default/files/Recommendations_07032017.pdf.

creating different licensing regimes and costs for entities performing the same function (in this case, the operation of a satellite earth station gateway) based solely on the type of service categorisation (e.g., FSS vs. MSS, Commercial VSAT vs. Closed User Group VSAT vs. MSS vs. GMPCS, etc.). This will avoid inadvertently creating unintended competitive distortions based on such categorizations. Indeed, by creating a separate category of satellite gateway service under the Unified Licence, India may be able to consolidate and simplify the satellite gateway licensing guidelines for different satellite-based services under a single, new set of guidelines.

SES would also encourage India to provide more technical flexibility for satellite earth stations. Today, the standards issued by the Telecommunications Engineering Centre (“TEC”) of the Department of Telecommunications (“DoT”) define technical criteria for satellite earth stations based primarily, if not entirely, on the gateway and terminal parameters deployed on DoS satellites. However, those parameters are not always or necessarily required when communicating with non-DoS satellites. For example, the TEC standard⁴ specifies a minimum gateway antenna size of 8m for a Ka-band gateway antenna to communicate with certain GEO satellites. However, many service licensees and satellite operators may consider an 8m antenna as unnecessarily large (and expensive) for acceptable performance for their networks and end user requirements. Similarly, a minimum terminal antenna size of 1.2m in Ku- or Ka-band may also be inflexibly large when modern aeronautical antennas can be much smaller and still comply with applicable satellite coordination agreements.

Internationally, other administrations are moving away from such inflexible parameters as antenna size, whenever not required by the ITU framework, and instead requiring compliance with satellite coordination agreements and/or establishing default off-axis EIRP density masks for the protection of other satellite systems.

Q3. Whether such Earth Station license should be made available to the satellite operator or its subsidiary or any entity having a tieup with the satellite operator? Do justify your answer.

SES Response: The new satellite earth station gateway license should be available broadly to qualified applicants, not just to the satellite operator or its subsidiary or an entity having a tie up with the satellite operator.

As explained in Response to Q1, the satellite industry is rapidly evolving with a wide variety of technology and service models possible. SES’s own GEO or MEO satellite assets can be operationalized under a variety of different arrangements with SES operating its own gateways or contracting with a third party to provide the gateway services, depending on end user requirements. Rather than dictate through the licensing framework the only technological, business and service models possible, SES recommends that India create flexibility in its licensing framework that enables a variety of such models to function in the marketplace to meet the satellite service needs of Indian end users.

The vertically integrated satellite and gateway model of the new LEO or GEO HTS systems is not the only new variety of technological and business arrangement in the satellite industry. As seen in flexible satellite markets elsewhere in the world, some satellite end users are building their own gateways to use together with a multiplicity of satellite operators in GEO and/or non-GEO, as required. These end users may be serving their own needs only, or the needs of third parties, or a combination thereof. Moreover, some major cloud companies,

⁴ TEC, Standard No. TEC 42012:2021, *Standard for Interface Requirements for Communication and Broadcast Networks for FSS/BSS* (3 Mar. 2021), available at <https://www.tec.gov.in/pdf/GR3/TEC%2042012%202021%20FSS%20BSS.pdf>.

for example, are developing “Gateways as a Service” whereby they build a gateway at their cloud computing centres for others to use to access the satellites of their choice, whether on an occasional basis (*e.g.*, to download Internet of Things data for the satellite operator or end user) or an extended basis (*e.g.*, as a gateway for a satellite operator or service provider).⁵

The licensing regime should also accommodate flexible business and financing arrangements, whereby the gateway operator need not be the owner of the ground equipment. For business or financial reasons, it may be useful to allow ground equipment to be bought and owned by one entity, but then contracted for the use by another party that would hold the license and be responsible for compliance with the applicable licence and regulatory requirements.

If India wants to take advantage of the full range of benefits available in the satellite sector, India’s licensing regime must be flexible enough to accommodate all the new technology, service, and business models observable in satellite markets around the world. Doing so would not involve any loss of regulatory supervision over the use of spectrum, operation of the gateway, or service to the public, as the activities in question would still be licensed.

Q4. What mechanism/framework should be put in place to regulate the access to satellite transponder capacity and satellite based resources of a Satellite operator/Earth Station licensee by the service licensees so as to get the resources in a time-bound, transparent, fair and non-discriminatory manner?

SES Response: SES supports a regulatory framework that allows service licensees access to satellite capacity directly from satellite operators, consistent with the TRAI’s past recommendations in 2004 and 2015. This ensures that service licensees can obtain access to the necessary satellite-based resources as quickly as possible to meet growing user demand, without too many layers of regulatory approval. Any national security or other concerns about the satellite operator or satellite capacity in question could be addressed one time as part of the first licensing process for the any service licensee’s ground segment (*i.e.*, gateways and/or remote sites). Once cleared, other service providers should be able to obtain access to the approved satellite resource on a streamlined basis.

However, the Department of Space’s (“DoS”) draft new Spacecom Policy, 2020, proposes a restrictive authorization process for Indian and non-Indian private satellite operators to be able to provide satellite capacity in India. It is unclear whether the proposed process will be time-bound, transparent, fair and non-discriminatory (as promised), or whether the process will continue to favour ISRO and deter or prevent entry by private satellite operators. After all, the existing Indian Satcom Policy, 1997, and associated Norms, Guidelines and Procedures, 2000, have allowed private Indian satellite systems to be authorized for 20 years, and yet none are authorized or in service today.

There are legitimate concerns as to whether the draft new Spacecom Policy, 2020, in its current form, will accelerate the availability of new and innovative satellite services in India. Elements of the draft Policy that could deter or prevent entry by Indian or non-Indian satellite operators include:

⁵ See, *e.g.*, Microsoft, *Introducing Azure Orbital*, <https://azure.microsoft.com/en-us/blog/introducing-azure-orbital-process-satellite-data-at-cloudscale/>; Amazon, *AWS Ground Station*, at <https://aws.amazon.com/ground-station/>.

- (1) the absence of an independent regulator that would create a level regulatory playing field for DoS and non-DoS satellite capacity;
- (2) the proposed transfer of DoS satellite assets to a PSU/CPSE (e.g., NSIL) at “no/notional cost” and creating unfair competition for private entrants that must actually finance and pay for their satellite assets;
- (3) the undue emphasis on protecting DoS’s existing spectrum and assets, regardless of international ITU priority;
- (4) the reservation of the strategic and societal development sectors exclusively to DoS, regardless of DoS’s available capacity or the needs or preferences of end users; and
- (5) the unprecedented, unique-to-India requirement on non-Indian GEO satellite operators to arrange with the foreign administration to bring non-Indian orbital resources under Indian administration through Indian ITU filing.

All of these conditions will likely limit entry by private satellite operators, and prevent or delay the provision of new and innovative satellite service to Indian end users, due to a combination of: (a) uncertainty as to whether a satellite system would be authorized, (b) the conditions and spectrum and other concessions required for authorization; (c) the restricted size of the addressable market (non-strategic, non-societal development sectors only) once finally approved, and (d) the prospect of unfair competition with DoS capacity sold through a PSU/CPSE.

Q5. Whether the Earth Station Licensee should be permitted to install baseband equipment also for providing satellite bandwidth to the service licensees as per need? Provide a detailed response.

SES Response: The licensing regime should be flexible as to who can own or install baseband equipment at a satellite gateway earth station, whether satellite operator, service licensee, or some other party. Ultimately, the earth station licensee would be responsible for ensuring that the operation of the gateway earth station (including the baseband equipment) is in accordance with the licensed technical parameters. The provision of services to the Indian public would, of course, still require the appropriate service license, regardless of who owns or installs the baseband equipment.

Providing such flexibility will enable multiple service providers to share the same earth station facility and the emergence of new and innovative technological, business and service models in the satellite industry in India. As TRAI notes, in the international context, satellite operators can offer either “MHz” capacity or “Mbps” data rate services, which tends to delineate (to some extent) the party responsible for the baseband equipment. However, other business or service models possible, including per-subscriber, per-device or revenue-sharing models that do not necessarily conform to the historical division of responsibilities for baseband equipment in a satellite earth station gateway. The Indian regulatory framework should be flexible enough to accommodate historical and new service models among market participants, and thereby allow the vibrant Indian marketplace to devise models to suit end user needs.

Q6. What amendments will be required to be made in the existing terms and conditions of the relevant service authorizations of Unified License, DTH License/Teleport permission to enable the service licensee to connect to the Satellite Earth Station Gateway established by Earth Station Licensee/Service Licensee, for obtaining and using the satellite transponder bandwidth and satellite-based resources? Do justify your answer.

SES Response: Service licensees should be given the express option under their licence to establish and operate their own satellite gateway earth stations or to contract with a third-party earth station licensee for such functionality. TRAI should also allow use of a wider range of satellite frequencies (e.g., BSS, Ka-, Q- and V-bands) than those currently used or planned to be used by DoS to enable Indian service licensees and end users to benefit from all the satellite capacity available for use in India.

As noted above, there is an opportunity here to consolidate (as appropriate) the gateway licensing requirements for different satellite services under the Unified Licenses. There is value in ensuring that different licensees performing the same function are subject to same requirements, unless there are good reasons to treat them differently. As suggested above, “satellite gateway service” could be made its own distinct service (with distinct requirements) under the Unified Licence. A VSAT or DTH service license seeking to operate its own gateway would seek to add the gateway service to its service license, while one seeking to use a third-party gateway would not. Instead, the third-party gateway operator would hold the necessary gateway license.

Q7. Whether the sharing of Earth Station among the licensees (between proposed Earth Station licensee and Service Licensee; and among service licensees) should be permitted? Do provide the details with justification.

SES Response: SES supports voluntary sharing of an earth station among licensees by commercial agreement. As explained in Responses to Q1, Q3 and Q5 above, the satellite industry is rapidly evolving with many new and innovative technological, business and service models deployed or emerging across the world. In some instances, it will be economically efficient for multiple service licensees to share a single gateway earth station on a given satellite system. In other instances, service licensees will prefer to operate separate gateways for their respective system. In some instances, the end user would want to operate a private gateway. There is no single ideal business or service model, and a given satellite system may support multiple configurations.

Accordingly, the Indian regulatory framework should be flexible enough to accommodate the different arrangements that market participants may choose to make to deliver their services to the public. As suggested above, the creation of a separate “satellite gateway service” category under the Unified Licence that could be either standalone or added to an existing satellite service license would help support both historical service and business models, as well as new ones.

Q8. To whom should the frequency carriers be assigned: the Earth Station Licensee, or the Service Licensee, or whoever establishes the Satellite Earth Station? Do justify your answer.

SES Response: In SES’s view, the earth station licensee is responsible for the operation of the license and should be authorized to operate a range of spectrum as appropriate to their needs, with associated antenna characteristics and power levels. The authorized frequency range need not correspond to the actual radio frequency carriers that the Earth Station Licensee would use. Instead, it would allow the earth station licensee to flexibly operate within the authorized range, as circumstances and demand require, as long as operations do not exceed the authorized parameters.



Such flexibility is a feature of modern satellite systems, which use adaptive coding and modulation to adjust for congestion and rain fade, or that have beam forming capabilities. Such flexibility should also simplify earth station licensing through the establishment of a power “envelope” for authorized earth station operations without the need for assessing every possible carrier that may be transmitted.

Such an approach would be consistent with international practice, where (as TRAI notes) most administrations separate earth station operation from service provisioning.

Q9. What should be the methodology for the assignment of spectrum for establishing satellite Earth Station? Provide a detailed justification.

SES Response: SES supports administrative assignment of spectrum for satellite earth stations. SES as a global operator is not aware of any administration in the world that attempts or has attempted to assign spectrum for earth stations via auction; they all assign such spectrum by administrative process. This is the correct approach as the assignment of spectrum for a satellite earth station is generally not preclusive of the assignment of the same spectrum for another satellite earth station, even if near a previously licensed earth station. The absence of any preclusive effect makes assignment of earth station spectrum by auction (which typically creates exclusive rights) unnecessary and inappropriate.

Q10. What should be the charging mechanism for the spectrum assigned to the satellite Earth Station licensee? Elaborate your answer with justification.

SES Response: In general, SES supports the same spectrum usage fee regime for essentially the same function (in this case, the provision of satellite gateway service), regardless of the type of end service that the gateway is being used to provide, unless there are good reasons for disparate treatment.

In addition, SES supports lower spectrum usage fees and fee structures for satellite-based services that would support large scale deployments of satellite services under a variety of business models. In other parts of the world, satellite-based connectivity has proven to be a cost-competitive and efficient method for the provision of broadband, especially in places that would otherwise be difficult or impossible to reach with terrestrial infrastructure. Around the world, for example, SES’s satellite solutions have been used to support 4G networks in Africa⁶ and provide broadband to over a million people in hundreds of municipalities across Colombia.⁷ Our satellite solutions also stand ready to support the deployment 5G and cloud-enabled networks.⁸ The key is to ensure that the licensing and fees framework do not become barriers to providing affordable broadband across India.

⁶ See, e.g., SES, *iSAT Africa and SES Networks to Provide Reliable 4G Services in East Africa via O3b mPOWER*, <https://www.ses.com/press-release/isat-africa-and-ses-networks-provide-reliable-4g-services-east-africa-o3b-mpower>; SES, *How the O3b Constellation Helped Catapult the DRC Into the Digital Era* (22 Sep. 2020), <https://www.ses.com/how-o3b-constellation-helped-catapult-drc-digital-era>.

⁷ See, e.g., SES, *INRED Partners with SES Networks to Enable 1,000 Free Wi-Fi Hotspots to Connect Colombia* (3 July 2019), at <https://www.ses.com/press-release/inred-partners-ses-networks-enable-1000-free-wi-fi-hotspots-connect-colombia>; SES, *INRED and SES Networks Expand Wi-Fi Access Across Colombia, Connect Nearly One Million People in 424 Municipalities* (4 Nov. 2020), available at <https://www.ses.com/press-release/inred-and-ses-networks-expand-wi-fi-access-across-colombia-connect-nearly-one-million>.

⁸ SES, *SES Leads Satellite-enabled 5G Tests* (13 July 2021), <https://www.ses.com/blog/ses-leads-satellite-enabled-5g-tests>.



For instance, as recommended by TRAI, providing for a flat 1% AGR fee, regardless of data rates or spectrum used, to replace the current web of annual license fees, spectrum usage charges and spectrum royalty fees (applicable to different services) would greatly lower and simplify the fee structure and incentivize rapid deployment of satellite broadband services across India.⁹

Q11. Give your comments on any related matter that is not covered in this Consultation Paper.

SES Response: SES has no other comments at this time.

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Please contact me (daniel.mah@ses.com) or my colleague, Tare Brisibe (tare.brisibe@ses.com), if you have any questions regarding these comments.

Yours Sincerely,

Daniel C.H. Mah
Vice President, Legal & Regulatory Affairs

⁹ See TRAI Satellite IoT Recommendations; TRAI Spectrum Usage Recommendations.