



RJIL/TRAI/2026-27/086

4<sup>th</sup> June 2026

To,

**Shri Akhilesh Kumar Trivedi,**  
**Advisor (Networks, Spectrum and Licensing)**  
**Telecom Regulatory Authority of India,**  
Tower-F, World Trade Centre,  
Nauroji Nagar, New Delhi – 110029.

**Subject: RJIL’s comments on TRAI’s Consultation Paper on the Regulatory Framework for Vehicle-to-Everything (V2X) Communication.**

Dear Sir,

Please find enclosed the comments of Reliance Jio Infocomm Limited (RJIL) on the TRAI’s **Consultation Paper on the Regulatory Framework for Vehicle-to-Everything (V2X) Communication** dated 30.04.2026.

Thanking you,

Yours Sincerely,

For **Reliance Jio Infocomm Limited**

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GULIANI**

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Authorized Signatory

**Enclosure:** As above

1. Reliance Jio Infocomm Limited (RJIL) thanks the Authority for giving us an opportunity to offer comments on the important Consultation Paper on the Regulatory Framework for Vehicle-to-Everything (V2X) Communication.
2. We submit that the time is opportune for providing a framework for V2X services in the country, especially from public safety perspective. The count of 1.73 lakh road fatalities in 2023 itself, with over 92% caused by human error makes it a critical public safety challenge.
3. V2X services have the capability of addressing the human error by enabling proactive, pre-crash interventions like
  - a. **Collision Avoidance Alerts:** Vehicles receive real-time warnings about sudden braking ahead, even several vehicles ahead well before a driver can physically see the danger.
  - b. **Intersection Collision Warning:** Alerts for vehicles approaching blind intersections or running red lights (Red Light Violation Warning).
  - c. **Blind Spot & Pedestrian Protection:** V2P communication alerts drivers to the presence of pedestrians, cyclists, and two-wheelers even when they are not in the line of sight.
  - d. **Emergency Vehicle Alerts:** Vehicles receive advance notification of approaching ambulances or fire trucks, enabling timely lane clearance.
  - e. **360-Degree Situational Awareness:** Unlike radar or cameras limited to line-of-sight, V2X enables vehicles to "talk" to each other through obstacles and around corners.
4. V2X has multifaced benefits in traffic management and will enable intelligent, coordinated traffic flow that reduces stop-and-go driving and urban congestion by Green Light Optimal Speed Advisory (GLOSA), to minimize stops. It will help provide optimal speed guidance to pass through traffic signals without stopping, reducing fuel consumption and travel time and would provide real-time congestion alerts. The emergency brake alert can be instantaneously delivered several cars back to prevent

major traffic accidents and pile up that will be critical in fog and heavy rain like conditions.

5. V2X is a foundational technology for advancing India's autonomous vehicle ecosystem, as it will enhance the road network awareness of the onboard sensors (LiDAR, cameras) on autonomous vehicles that are limited by range and weather. V2X will help in creating tight, fuel-efficient convoys (platoons) by coordinating speed and braking wirelessly, reducing aerodynamic drag and fuel use.
6. Further the Vehicle to Network (V2N) connectivity enables the regular connect with the cloud systems and servers for remote vehicle diagnostics and Over-the-Air (OTA) software updates. We agree with the Authority that Cellular V2X (C-V2X) leveraging India's existing and expanding 4G/5G networks, will enable migration from basic safety features to fully autonomous driving capabilities over time.

#### **Regulatory framework for V2X services**

7. Considering the global momentum towards developing and utilizing V2X technology and the Central Government and Ministry of Road Transport and Highways (MoRTH) focus on utilizing this technology for road safety and traffic management, it is imperative that an optimum regulatory framework is recommended by the Authority. We submit that the regulatory framework to facilitate delivery of V2X services should be prescribed. This framework should be based on the principles of 'same service same rules; and 'ease of doing business'.
8. The most critical part of this is the Vehicle to Infrastructure (V2I) deployment as it will include all other aspects of V2X communication and will require installation of specific and dedicated road-side units (RSUs), that will be small scale, small range radiating radio units and would be akin to smaller variants of small cells used in 4G/5G networks. These will enable the Vehicles to connect with the cloud and telecom networks and will play key role in enabling the V2X features and advantages discussed above.
9. We submit that this has to be a licensed activity that will come under the communication services covered under Section 3(1)(a) of the Telecommunications Act, 2023. We submit that access service providers authorized under the Unified License and the access authorization holders under the Section 3(1)(a) of the Telecommunications Act, 2023 would suffice to meet the requirements for this service and there is no need for a separate authorisation for vehicle-to-infrastructure (V2I) communication service under Section 3(1)(a).

10. Nevertheless, in case the Authority is keen to provide for a new authorization for this service then in the interest of level playing field and same service same rules, the licensing requirements, spectrum assignment methodology and levies and charges for the new authorization should be same as access service authorization under Section 3(1)(a) of Telecommunication Act 2023.

## **Spectrum as**

11. We submit that as the spectrum range from 5875 MHz to 5925 MHz has already been decided for the C-V2X (Cellular V2X) services, we submit that the entire spectrum for this service should be made available to service providers through spectrum auction. We do not agree that V2X services fall under the entry 6 of the First Schedule of Telecommunications Act, 2023 regarding 'Safety and operation of roads, railways, metro, regional rail, inland waterways, airports, ports, pipelines, shipping, and other transport systems' as this service will be offered by private entities for commercial purposes therefore the spectrum should be auctioned.

12. We also do not agree with the proposal of holding back 20 MHz spectrum for future deployment of ITS services and believe that complete spectrum for this service should be made available right now as this alone will foster the innovations and evolving of future standards. Holding back spectrum creates unnecessary scarcity and makes the available spectrum expensive and unviable in short term.

13. The minimum spectrum assignment should be of 5 MHz to each service provider for 20 years as per prevailing conditions with payment terms congruous with prevailing NIA provisions. Further, considering that the service is emerging and may not require widespread deployment in the beginning and would be deployed along with use case development, we recommend that no roll-out obligations can be mandated.

14. Further, in case a new V2I authorization is proposed, it should also be required to acquire spectrum through auction on licensed service area basis. However, in case these new authorized entities are provided with city level licenses, they should be required to acquire the spectrum through leasing or network slicing from the TSPs.

15. We agree with the Authority and the MoRTH task force view that there is a need for C-V2X devices to adhere to security frameworks supported by global standards, to ensure interoperability and compliance and agree with the judicious use of IEEE 1609.2 and ETSI ITS security stacks and other technical requirements.

## **16. Conclusions**

1. The regulatory framework for V2X services should be prescribed in adherence to the principles of 'same service same rules' and 'ease of doing business'.
2. There is no need for a separate V2I authorization and access services authorization should suffice for this purpose.
3. Spectrum in the range 5875 MHz to 5925 MHz should be made available in one go and should be assigned through auction.
4. Minimum spectrum bidding quantity should be 5 MHz and minimum assignment unit should be LSA.
5. The security stack and other technical requirements should be in line with global implementation. The IEEE 1609.2 and ETSI standards should be relied upon.
6. In case the Authority decides to implement a new V2I authorization, its security, financial and regulatory obligations should be as per access services authorization.
7. In case V2I authorization is given at city level, the spectrum assignment should be through lease and network slicing.

#### Issue wise response

**Q1. Whether there is a need to introduce an authorisation for vehicle-to-infrastructure (V2I) communication service under Section 3(1)(a) of the Telecommunications Act, 2023? If yes, please provide input with respect to the following aspects:**

- (a) Eligibility conditions for the authorisation;
- (b) Period of validity of the authorisation and conditions for its renewal;
- (c) Service area of the authorisation;
- (d) Scope of service of the authorisation;
- (e) Technical, operating, security related conditions etc. of the authorisation;
- (f) Any other related aspect. Kindly provide a detailed response with justification.

#### **RJIL Response:**

1. We do not believe that there is a need to introduce a separate authorisation for vehicle-to-infrastructure (V2I) communication service under Section 3(1)(a) of the Telecommunications Act, 2023. The access service providers under the Unified License and proposed Access Services authorization under the Telecommunication Act will suffice to meet the requirements under the V2X services.
2. We submit that the most critical aspect of the V2X communication is the Vehicle to Infrastructure (V2I) services, which are akin to a vehicle-based device communicating

## Reliance Jio Infocomm Limited

with the telecom radiating unit and is nothing different than any other telecommunication or IOT communication, thus, it clearly comes under the purview of the scope of Access Services. Thus, as submitted above there is no need for an additional authorization.

3. Nevertheless, in case it is decided that a V2I authorization is required, following submission may be taken into consideration.

- a. **Eligibility Conditions:** should be similar to access services authorization.
- b. **Period of Validity and Renewal:** We recommend a validity period of 20 years and renewal as per prevailing practices.
- c. **Service Area:** As V2I services may not be required everywhere and in initial years may be relevant only in dense urban areas, a city wise service area can be created. However, they will require LSA authorization, if they seek to acquire right to use spectrum.
- d. **Scope of Service:** The scope of service should primarily include the operation of Roadside Units (RSUs) for V2I and V2V (via infrastructure-mediated broadcast) communication in the 5875-5925 MHz band. Additionally, the Authorized entity should be required to be capable of broadcasting of safety-critical messages including Basic Safety Messages (BSMs), Cooperative Awareness Messages (CAMs), Decentralised Environmental Notification Messages (DENMs), Signal Phase and Timing (SPaT) messages, and Map Data (MAP) messages.

**Q2. In case your reply to Q1 is no, what should be the mechanism for enabling, facilitating and regulating vehicle-to-infrastructure (V2I) communication service in India? Kindly provide a detailed response with justification.**

**And**

**Q3. Any other suggestions relevant to the authorisation for vehicle-to-infrastructure (V2I) communication service may be submitted with proper explanation and justification.**

### **RJIL Response:**

As mentioned in previous response the V2X services should be provided by the Unified License holders with Access service authorization and/or the access/unified services authorized entities under Section 3(1)(a) of the Telecommunications Act, 2023. These entities will be enabled for offering vehicle-to-infrastructure (V2I)

communication service by inclusion of these services in their scope of service. We reiterate that there is no need to license the V2V services.

**Q4. Whether a specific technology (such as LTE-based C-V2X, NR-based C-V2X etc.) should be prescribed for the implementation of C-V2X in India? If yes, which technology should be adopted for the implementation of C-V2X? If no, in what manner, the issues related to inter-operability between different technologies should be addressed? Kindly provide a detailed response with justification.**

**RJIL Response:**

1. We do not believe that there is a need to restrict the V2X service to a specific technology. The access service provided will acquire the spectrum through auction and as per the prevailing practice, spectrum should be assigned in a technology neutral manner.
2. However, we agree that there is a need to move with forward looking technologies like LTE-based C-V2X and NR-based C-V2X and V2X communications are just starting in the country, it is important that these technologies be treated like baseline and we move forward ahead from this baseline.
3. At current stage, LTE-V2X is aligned with the global ecosystem maturity, available certified devices, and the dominant global deployment trend and is already embedded in numerous vehicle models globally, with 3GPP Release 14 PC5 being the de facto V2X standard for safety applications. The FCC Second Report and Order (November 2024) has mandated C-V2X (PC5) as the sole standard for the upper 30 MHz of the 5.9 GHz band, replacing DSRC.
4. However, going forward for ultra-low latency and higher bandwidth use cases, NR-V2X (5G NR, 3GPP Release 16 and beyond) needs to be integrated for advanced use cases (cooperative perception, remote driving, platooning).
5. Further, interoperability will not be a concern with forward looking technology outlook as LTE-V2X and NR-V2X are designed to coexist on the same 5.9 GHz band and can operate in the same channels without interference, per 3GPP specifications.
6. We agree with the proposals that the ITS stack above the access layer should be standardised using ETSI standards, which are technology-neutral and support both generations of C-V2X. China's MIIT mandated C-V2X (LTE-V2X PC5) in its 2018 spectrum allocation for 5905–5925 MHz, and China's deployment of C-V2X on

national highways and urban intersections demonstrates the viability of this approach and would also enable the device ecosystem for Indian implementation.

**Q5. Whether there is a need to bring road-side units (RSUs) and on-board units (OBUs) under the regime of Mandatory Testing Certification of Telecom Equipment (MTCTE)? If no, in what manner, Electromagnetic Interference (EMI), Electromagnetic Compatibility (EMC), safety, technical and security requirements prescribed by TEC/ DoT may be ensured? Kindly provide a detailed response with justification.**

**RJIL Response:**

Yes, we support bringing both RSUs and OBUs under the MTCTE regime with appropriate Essential Requirements framed by TEC/DoT for C-V2X equipment. Since both RSUs and OBUs transmit and receive radio signals and form part of a safety-critical communications ecosystem, it is important that their compliance with technical, safety, EMI/EMC, security and EMF exposure requirements is ensured before deployment in India. The Government can adopt the global standards as discussed in the task force report for India to ensure alignment with global standards.

**Q6. To ensure inter-operability among different RSUs/ OBUs, whether there is a need to standardize the layered communication framework (stack) for higher layers (other than the access layer in which C-V2X will be used) of Intelligent Transportation System (ITS)? If yes, which standard for ITS stack and security should be adopted? Specifically, whether the ETSI standard for ITS stack and security, as recommended by the Task Force on Intelligent Transportation System for the use of 5.9 GHz (mentioned at para 3.5 of this consultation paper) should be adopted? If no, in what manner, inter-operability among different RSUs/ OBUs can be ensured? Kindly provide a detailed response with justification.**

**RJIL Response:**

1. Yes. Standardisation of the Intelligent Transportation System (ITS) stack for higher layers above the access layer (PC5/Uu) is essential for end-to-end interoperability across India's V2X ecosystem. As also discussed in the consultation paper, we recommend adopting the ETSI ITS stack as the baseline standard, supplemented by select IEEE standards or other relevant international or national standards where applicable.

2. As noted in the consultation paper, the Task Force on ITS constituted by DoT has already recommended the ETSI standard for ITS stack and security and we endorse this recommendation. The ETSI standard has several advantages: it is technology-neutral (supports both ITS-G5 and C-V2X), widely deployed in Europe, and has been adopted or referenced by Japan (ETSI-aligned ARIB standards), South Korea (ETSI-aligned TTAK standards), and Australia (ETSI reference in ACMA framework). This global convergence reduces India's risk of ecosystem isolation.
3. We additionally request that TEC should also publish an Indian ITS Stack Profile document (similar to ETSI TS 102 940 for European deployments) that specifies the mandatory and optional elements from the ETSI stack for Indian deployments, including any India-specific adaptations such as multilingual roadside signage messages, livestock hazard warnings, and unmanned level crossing alerts.
4. Recommended ITS Stack (Layer-by-Layer) based on the reports shared in consultation is as below:
  - a. **Access Layer (Layer 1/2):** C-V2X PC5 (3GPP Release 14 and above), as also noted in Q4.
  - b. **Network/Transport Layer:** ETSI EN 302 636-4-1 (GeoNetworking) and ETSI EN 302 636-5-1 (BTP-Basic Transport Protocol). These are the ETSI-standardised alternatives to IPv6 for V2X, optimised for low-latency broadcast communication.
  - c. **Facilities Layer:** ETSI TS 102 894-2 (ITS-S Facility Layer- Common Data Dictionary), ETSI EN 302 637-2 (CAM-Cooperative Awareness Message), ETSI EN 302 637-3 (DENM-Decentralised Environmental Notification Message), and ETSI TS 103 301 (SPaT/MAP messages).
  - d. **Security Layer:** ETSI TS 103 097 (V2X Security Headers and Certificate Formats) and ETSI EN 302 637-2/3 security extensions.
  - e. **Applications:** ETSI TS 103 300 series for cooperative and automated mobility applications.

**Q7. Whether there is a need for prescribing a security framework for ITS/ C-V2X in India? If yes,**

**(a) What should be the security framework for ITS/ C-V2X?**

**(b) Which agency [such as Controller of Certifying Authorities (CCA), Ministry of Electronics & Information Technology (MeitY)] should implement the Public Key Infrastructure (PKI) framework for ITS/ C-V2X in India?**

**(c) How to ensure coexistence of V2X PKI certificates with the legacy PKI mechanism in India i.e. based on X.509, operated by Root Certifying Authority of India (RCAI)?**

**Please provide a detailed response with justifications.**

**RJIL Response:**

1. We submit that the entire premise of ITS/V2X services is the safety. Thus, it is important to have a security framework in these safety critical services as any lapse or outside cyber-attacks in the form of spoofing and denial of service can lead to vehicle collisions and massive traffic issues including fatalities.
2. Security Framework: We proposed the following security framework based on the ETSI ITS Trust and Privacy Management standard (ETSI TS 102 940), adapted for India:
  - a. **IEEE 1609.2 / ETSI TS 103 097 for V2X certificate format:** V2X certificates are fundamentally different from traditional X.509 certificates, they are pseudonymous, short-lived (7-day validity), and support unlinkability to protect vehicle occupant privacy.
  - b. **Two-level certificate hierarchy:** Root Certificate Authority (Root CA) → Intermediate Certificate Authorities (Enrollment Authority + Authorization Authority) → End-Entity Certificates (for OBUs and RSUs).
  - c. **Enrollment Authority (EA):** Issues long-lived Enrollment Credentials (EC) to OBU/RSU hardware at the time of manufacture or registration.
  - d. **Authorization Authority (AA):** Issues short-lived Pseudonym Certificates (PC) to OBUs for message signing, a new pseudonym certificate set is issued at regular intervals to prevent vehicle tracking.
  - e. **Misbehaviour Detection System (MDS):** A centralised Misbehaviour Authority (MA) should be established to receive reports of suspicious V2X behaviour and revoke certificates of misbehaving vehicles, as deployed in the EU's CCMS (C-ITS Credential Management System).
  - f. **Minimum message authentication:** All V2X messages (CAM, DENM, SPaT, MAP, BSM) must be digitally signed with a valid pseudonym certificate. Unsigned messages must be rejected by all receivers.

3. **Implementing Agency for PKI:** We proposed a multi-agency structure as discussed below:
  - a. **Controller of Certifying Authorities (CCA), MeitY:** as the Root CA for the Indian ITS PKI, leveraging its existing RCAI infrastructure and expertise. CCA's existing mandate under the IT Act 2000 for public key infrastructure management makes it the natural root trust anchor.
  - b. **CERT-In:** as the Misbehaviour Authority (MA), responsible for receiving misbehaviour reports, coordinating investigation, and directing certificate revocation. CERT-In's existing incident response capabilities are directly relevant.
  - c. **TEC:** as the technical standards body, responsible for publishing the Indian ITS PKI Profile, certifying Enrollment Authorities (EAs) and Authorization Authorities (AAs), and conducting audits.
  - d. **Vehicle manufacturers and RSU operators:** as Registration Authorities (RAs), responsible for initiating the enrollment process for their devices.
4. Coexistence with Legacy X.509 PKI-Coexistence between V2X IEEE 1609.2/ETSI TS 103 097 certificates and legacy X.509 certificates (as used by RCAI) should be ensured through following measures:
  - a. **Separate certificate stores:** V2X-capable devices must maintain a separate V2X certificate store, distinct from the device's general-purpose X.509 certificate store. Modern HSM (Hardware Security Module) architectures already support this.
  - b. **RCAI as Root CA anchor:** The CCA can issue a V2X-specific root certificate from RCAI that cross-certifies the Indian ITS Root CA, enabling a trust bridge between the X.509 and IEEE 1609.2 worlds for V2N applications that need to interact with national PKI infrastructure (e.g., police emergency vehicle authentication).
  - c. **V2N authentication:** For V2N communications (vehicle to network, via Uu interface), standard X.509 TLS/mTLS certificates used by network operators may be employed, with V2X pseudonym certificates used only for PC5 direct communication.
5. It is submitted that the above proposal is based on global experience, for instance, EU's CCMS, operational since 2019, provides the most mature example of V2X PKI deployment. Japan's UTMS (Universal Traffic Management Systems) PKI and the

USA's SCMS (Security Credentials Management System), operated by OmniAir, provide additional reference models. We can build our governance model based on the best practices under these global examples for trust model, misbehaviour reporting mechanism, and data privacy design.

**Q8. What should be the regulatory framework for the assignment of frequency spectrum to the entities holding the proposed V2I communication service authorisation? Specifically,**

**RJIL Response:**

We submit that spectrum should be assigned only through auction to access service providers and to authorized V2I entities, in case the authorization is implemented. The entire spectrum range from 5875-5925 MHz should be harmonized for IMT services and made available through auction in blocks of 5 MHz.

**(a) Whether there is a need for partitioning the 30 MHz spectrum (5,875-5,905 MHz) for specific applications such as “safety applications” and “operational applications (non-safety applications)”?**

**RJIL Response:**

No, there is no need to partition the spectrum range and create unnatural scarcity of spectrum. We reiterate that full spectrum range should be made available as this alone will foster development of appropriate business models and innovations.

**(b) In case more than one authorised entity has to operate in the same geographical area, what should be the mechanism for simultaneous use of the spectrum? Specifically, whether the spectrum should be divided amongst the authorised entities in an exclusive manner, or should the authorised entities utilize the spectrum in a shared manner?**

**RJIL Response:**

We submit that auction-based assignment methodology will ensure exclusive assignment and these issues will be addressed automatically.

**(c) If your response to part (b) is “in an exclusive manner”, what should be the minimum quantity of spectrum to be assigned to each entity holding the proposed V2I communication service authorisation? If your response to part (b)**

**is “in a shared manner”, whether there is a need to prescribe a mechanism for interference management?**

**RJIL Response:**

We submit minimum 5 MHz spectrum should be assigned to an entity in an LSA. The proposed V2I entities, in case not licensed for the whole LSA can acquire the spectrum through lease or network slicing from the access service providers.

**(d) For interference management, whether there is a need to prescribe –  
(i) minimum directionality of road-side unit (RSU), or  
(ii) protection distance between the RSUs, or  
(iii) maximum antenna height for RSUs? If yes, what should be such parameter(s)?**

**RJIL Response:**

No, there is no need to prescribe these requirements as the exclusive spectrum assignment and network designs will take care of these issues.

**(e) Whether there is need to mandate a mechanism for obtaining prior approval (analogous to SACFA clearance) for the establishment of RSUs by the entities holding the proposed V2I communication service authorisation? If no, in what manner, the establishment of RSUs should be regulated?**

**RJIL Response:**

No, the RSU units will be even smaller than small cells will very low radiation and therefore there is no need to mandate a mechanism for obtaining prior approval (analogous to SACFA clearance) for the establishment of RSUs by the access service providers and entities holding the proposed V2I communication service authorisation, however, a mandatory intimation for each RSU should be required, which can be done through Saral Sanchar portal.

**(f) For avoiding (i) interference between RSUs, (ii) interference between RSUs and OBUs, and (iii) interference between OBUs, whether the radiated power limits for OBUs and RSUs and OOB limits, recommended by the Task Force on Intelligent Transportation System for the use of 5.9 GHz (mentioned at para 3.4 of this consultation paper) should be adopted? If no, what should be the radiated power limits for OBUs and RSUs and OOB limits?**

**RJIL Response:**

Yes, the radiated power limits for OBUs and RSUs and OOB limits, recommended by the Task Force on Intelligent Transportation System are based on global standards and should be adopted.

**(g) What should be the maximum period of assignment of spectrum to the entities holding the proposed V2I communication service authorisation?**

**RJIL Response:**

Currently, the maximum period of assignment for auction-based spectrum is 20 years and the same should continue. It may be modified as and when the policy is changed.

**(h) Whether there is a need to prescribe roll-out obligations associated with the assignment of spectrum to the entities holding the proposed V2I communication service authorisation?**

**RJIL Response:**

No there is no need for prescribing roll-out obligations for a completely new service, and we should wait for requirement-based deployments.

**(i) Whether there is a need to introduce a provision for the surrender of frequency spectrum? Kindly provide a detailed response with justification.**

**RJIL Response:**

No there is no need to introduce a separate provision for the surrender of this frequency spectrum.

**Q9. Whether there is a need for prescribing timelines for processing the applications for the assignment of spectrum to the entities holding the proposed V2I communication service authorisation? Kindly provide a detailed response with justification.**

**RJIL Response:**

Yes, all applications should be processed in 30 days' time.

**Q10. Whether there are any other suggestions related to assignment of spectrum to the entities holding the proposed V2I communication service authorisation? Please provide a detailed response with justification.**

And

**Q11. Any other issues/ suggestions relevant to the regulatory framework for V2X communication may be submitted with proper explanation and justification.**

**RJIL Response:** None

**Q12. In view of the public welfare-oriented nature of V2X applications and the need to encourage the deployment of such infrastructure and services, should there be spectrum charges levied on spectrum assigned to the V2I communication service authorised entities under the proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**RJIL Response:**

We submit that there are two aspects of the spectrum assignment to V2X services. The entity holding RSUs should be assigned exclusive spectrum through auction and there are no spectrum usage charges for auctioned spectrum.

**Q13. If answer to Q12 is affirmative, whether the spectrum charges for the V2I communication service authorised entities under the proposed V2I communication service authorisation should be determined based on the spectrum charging methodology prescribed by the Department of Telecommunications (DoT) vide its order dated 11.12.2023? If yes, then which of the radiocommunication services specified in the said order, should be taken as basis for calculation of spectrum Charges? Please provide detailed justification in support of your response.**

**RJIL Response:**

No spectrum charges will be applicable as explained above.

**Q14. If answer to Q12 is affirmative, whether the spectrum charges for the V2I communication service authorised entities under the proposed V2I communication service authorisation should be levied as a percentage of Adjusted Gross Revenue (AGR)? If yes, are there any specific operational/ non-operational revenue items that should be included in/ excluded from AGR for the**

**purpose of determination of spectrum charges? Please provide your response with detailed justification.**

**RJIL Response:**

Not Applicable in view of the above.

**Q15. If response to questions 13 and 14 is negative, then what should be the appropriate methodology for determination of spectrum charges for the V2I communication service authorised entities under the proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**And**

**Q16. For spectrum assigned to the V2I communication service authorised entities under the proposed V2I communication service authorisation, what should be the appropriate payment terms for spectrum charges, if any? Please provide your response with detailed justification.**

**RJIL Response:**

Not Applicable in view of the above.

**Q17. What are the potential sources of revenue, if any, for an V2I communication service authorised entity under the proposed V2I communication service authorisation? Please provide your response with detailed justification.**

**RJIL Response:**

1. At the outset, we reiterate that V2I authorization is not required, as these are primarily safety specific services with long gestation period thus, the TSPs with experience in such long-term projects should be allowed to offer these services.
2. Nevertheless, the TSPs and standalone V2I authorized entities can look to monetize the service by offering these services directly to the Government and PSUs like NHAI, Municipalities, and Smart Cities Missions.
3. These services can also be offered to fleet operators, dynamic routing information services, Electronic Toll Collection (ETC) integration fees, parking guidance services, roadside commercial infotainment services.

4. These entities can also offer Infrastructure as a Service (IaaS) to generate revenue by leasing RSU pole space and power connections to third parties (e.g., to EV charging station operators, IoT sensor networks).
5. V2X RSU sites can be hosted for Edge computing services for autonomous vehicle data processing, high-definition mapping, and collaborative perception, charged to automotive OEMs on a per-query or subscription basis.

**Q18. What should be the definitions of Gross Revenue (GR), Applicable Gross Revenue (ApGR), and Adjusted Gross Revenue (AGR) for V2I communication service authorised entity under the proposed V2I communication service authorisation? Further, what should be the relevant items of revenue, exclusions and deductions and consequent definitions of GR, AGR and ApGR? Please provide your response with detailed justification.**

**And**

**Q19. What revenue components should be included in, or excluded from, the computation of Gross Revenue (GR), Applicable Gross Revenue (ApGR) and Adjusted Gross Revenue (AGR) for the purpose of determining authorisation fees or spectrum charges for the proposed V2I communication service authorisation? Please provide your response with detailed justification.**

**RJIL Response:**

There is no need for specific Gross Revenue (GR), Applicable Gross Revenue (ApGR), and Adjusted Gross Revenue (AGR) for V2I communication service and the existing definitions under the Unified License and main service authorization under Telecommunication Act 2023.

**Q20. Whether revenue derived from safety-related V2X services under the proposed V2I communication service authorisation should be excluded from the computation of AGR, in view of their public interest and non-commercial nature? Please provide your response with detailed justification.**

**RJIL Response:**

There is no need for any exclusions for revenue derived from safety-related V2X services under the proposed V2I communication service authorisation or access services. **However, the revenue generated from non-telecom services should be excluded from computation of AGR.**

**Q21. What should be the appropriate entry fee for V2I communication service authorised entities under the proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**RJIL Response:**

The entry fee for proposed V2I communication service authorisation, should be same as access services authorization, in case the same are implemented.

**Q22. What should be the appropriate terms and conditions for bank guarantees for the proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**RJIL Response:**

We are strongly against the Bank Guarantees (BGs) in telecom sector, and no BGs should be required from proposed V2I communication service authorisation.

**Q23. What should be the applicable minimum equity and minimum net worth requirements for authorised entities under the proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**RJIL Response:**

In case the V2I authorized entity is instituted then the minimum paid-up equity capital of Rs. 1 crore and minimum net worth of Rs. 2 crores should be applicable at the time of application, in line with M2M-SP registration.

**Q24. What should be the applicable application processing fee for the proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**RJIL Response:**

The application processing fee shall cover only the administrative expenses and in no case should be more than Rs. 1 lac.

**Q25. What should be the applicable rate of authorisation fee for proposed V2I communication service authorisation? Please provide detailed justification in support of your response.**

**RJIL Response:**

In view of the level playing field considerations, the authorisation fee for proposed V2I communication service authorisation should be 8% of the AGR.

**Q26. Apart from the finan**

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**RJIL Response:** None ù