RESPONSES TO ISSUES FOR CONSULTATION

Q1. Whether there is a need to introduce an authorisation for vehicleto-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.

Response: We suggest that TRAI should introduce a specific "Vehicle-to-Infrastructure (V2I) Communication Service Authorisation" under the Telecommunications Act, 2023. In our view, this should be a light-touch authorisation, distinct from full telecom access services, and tailored to the limited and safety-oriented nature of V2I deployments.

The Telecommunications Act, 2023 allows the Central Government to grant authorisations for telecommunication services. In our view, V2I communications would fall within that broad framework because they involve the transmission of messages through radio systems, even though their purpose is road safety and traffic management rather than ordinary consumer telecom services. At the same time, we suggest that TRAI should recognise that V2I is different from mainstream telecom services. These systems are usually deployed for specific roads, corridors or city projects, often by public authorities or their concessionaires, and are intended to improve safety and traffic flow rather than provide commercial voice or data services. For that reason, in our view, a separate and appropriately limited authorisation would be more suitable than trying to fit V2I within the existing framework for broader telecom services.

Eligibility and scope:

(i) **Eligible entities:** We suggest that eligibility should extend to government authorities responsible for roads and transport, public sector project vehicles, concessionaires implementing road or smart mobility projects, telecom service providers, and private entities that can demonstrate basic technical and financial capability.

(ii) **Service area:** In our view, the framework may permit both broader authorisations and corridor-specific or project-specific approvals, depending on the actual scope of the applicant's role.

(iii) **Scope of service:** We suggest that the authorisation should cover the deployment, operation and maintenance of roadside communication equipment and related systems for V2I use, while making clear that it does not permit general retail telecom or internet services.

Authorisation term and conditions:

(i) We suggest that the authorisation period should be long enough to support infrastructure investment and project planning, with an option for renewal subject to continued compliance.

(ii) In our view, the technical requirements should be left to the relevant standards and certification processes notified from time to time, rather than being exhaustively prescribed in the authorisation itself.

(iii) We also suggest that the framework should expressly refer to applicable data protection, cybersecurity and road safety laws, so that the boundaries between telecom regulation and automotive regulation remain clear.

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.

Response: If TRAI does not create a separate V2I authorisation, we suggest that V2I may still be enabled through an appropriate sub-category under the existing authorisation framework, supported by administrative spectrum assignment and technical compliance requirements. However, in our view, that would be a less satisfactory solution.

Under such an approach, V2I could be treated as a limited category within miscellaneous or auxiliary telecom services, with deployment permitted on the basis of registration or a simplified approval process rather than a stand-alone authorisation. The relevant authorities could then set out project areas, operational conditions and safety-related use cases through administrative arrangements.

That said, we suggest that TRAI should prefer a dedicated V2I authorisation. In our view, a separate authorisation would provide greater legal clarity, clearer compliance obligations and a more stable framework for both public authorities and private participants.

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

Response: The V2I authorisation should embed clear institutional roles, avoid duplication with automotive regulation, and ensure that law-enforcement uses of V2X data are subject to existing legal safeguards.

We also suggest that:

(i) Firstly, there should be explicit recognition of the respective mandates of the Department of Telecommunications ("**DoT**")/TRAI (spectrum and telecom), the Ministry of Road Transport and Highways ("**MoRTH**") (road safety, construction and vehicle standards), the Ministry of Electronics and Information Technology ("**MeitY**") (cybersecurity and IT Act), and the Controller of Certifying Authorities ("**CCA**") for Public Key Infrastructure ("**PKI**"). A formal coordination mechanism (e.g., a standing ITS/V2X coordination committee) may be envisaged in the explanatory material to ensure that future changes to Central Motor Vehicles Rules, 1989 ("**CMVR**")/ Automotive Industry Standards ("**AIS**") and telecom regulations remain aligned.

(ii) Secondly, conditions applicable to government/road-owning authorities should be simplified wherever possible. For entities such as the National Highways Authority of India ("**NHAI**") or State

Public Welfare Departments ("**State PWDs**") deploying Road-Side Units ("**RSUs**") purely for safety and traffic management, requirements such as high entry fees, large performance bank guarantees or stringent roll-out penalties may be disproportionate; prudential metrics are already assessed under public financing and rules for Public Private Partnership ("**PPP**").

(iii) Third, the authorisation should clarify that: (a) any use of V2X data for traffic enforcement or accident investigation is governed by the Motor Vehicles Act, 1988, Bharatiya Nagarik Suraksha Sanhita, 2023 and sectoral laws; and (b) V2I operators do not acquire independent policing powers by virtue of the authorisation. Data access for law-enforcement should comply with due process and the Digital Personal Data Protection Act, 2023 ("**DPDP Act**") safeguards, including necessity and proportionality, and appropriate data retention limits should be specified.

Q4. Whether a specific technology (such as LTE-based C-V2X, NRbased 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.

Response: We suggest that TRAI should avoid prescribing one fixed technology in the regulatory framework. In our view, it would be better to adopt a technology-neutral approach that sets broad performance and interoperability requirements, while allowing the relevant standards bodies to update the technical baseline over time.

There are multiple evolving technology options within the broader Cellular Vehicle-to-Everything ("**C-V2X**") ecosystem. We therefore suggest that the regulations should not lock India into a specific technical version too early. A better approach would be to require interoperability and compliance with standards as notified from time to time, so that the framework remains future-ready.

In practical terms, India may begin with a commonly accepted baseline for initial deployments and allow more advanced technologies to be introduced gradually as the ecosystem matures. In our view, this phased approach would support interoperability without unnecessarily restricting future development. Accordingly, we suggest that the regulatory framework should refer generally to compliance with standards notified by the relevant authorities, rather than naming specific technical releases in the regulation itself.

Q5. Whether there is a need to bring road-side units (RSUs) and onboard 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.

Response: We suggest that RSUs and On-Board Units ("**OBUs**") used for V2I services should be brought within an appropriate testing and certification framework provided in Mandatory Testing and Certification of Telecommunication Equipment ("**MTCTE**"). The Telecom Engineering Centre ("**TEC**") should administer MTCTE to ensure that telecom/ Information and Communication Technology ("**ICT**") equipment sold or used in India meets essential requirements relating to safety, electromagnetic compatibility, radio parameters and security. RSUs and OBUs are radio-based communication devices

operating in licensed/administratively assigned spectrum and interacting with public telecommunication networks; they fall naturally within MTCTE's scope.

MTCTE coverage of RSUs/OBUs would advance multiple objectives: (a) prevent degradation of existing networks due to non-conforming devices; (b) ensure compliance with RF exposure norms for the general public; and (c) embed baseline cybersecurity requirements at the device level. TEC has already recommended development of specifications for RSUs and OBUs in its report on ITS technologies and standards, reinforcing this direction. In our view, this is important to ensure safety, reliability and basic security standards. Because these devices are part of a communications system and are likely to operate in a regulated spectrum environment, we suggest that they should meet minimum telecom-related standards before deployment. This would help avoid technical inconsistency and reduce risks to the wider communications environment.

We also suggest that certification should serve practical objectives such as device safety, compatibility and baseline cybersecurity, rather than becoming an unnecessarily burdensome compliance exercise. At the same time, we suggest that telecom certification and automotive approval should remain clearly separated. Telecom authorities may deal with communication-related requirements, while vehicle regulators should continue to address issues relating to vehicle integration and road safety.

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.

Response: Without getting into heavy technicality to this, at a very high level we suggest that India should adopt a common higher-layer ITS framework for V2X so that devices and systems from different manufacturers can work together reliably. Interoperability cannot be achieved only at the radio level. If different systems use different message formats, security arrangements or application layers, roadside units and vehicles may not be able to understand each other properly, which would reduce the value of the framework.

We suggest that India may adopt a single national profile for the higher-layer ITS stack, drawing from recognised international standards such as the European Telecommunications Standards Institute ("**ETSI**"), but adapted where necessary for Indian road, traffic and regulatory conditions.

At the same time, we suggest that the framework should allow reasonable mechanisms for compatibility with imported vehicles and other systems that may use different standards, so that India does not create unnecessary barriers to interoperability.

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.

Response: Without getting into heavy technicality to this, at a very high level we suggest that India should put in place a dedicated security framework for ITS and C-V2X, supported by a suitable public key infrastructure, so that communications can be trusted while also protecting user privacy. Such a framework is necessary because V2X systems exchange sensitive operational information on a continuous basis. The security framework should therefore ensure that messages are authentic, systems are protected against misuse, and personal data is handled with appropriate safeguards.

We also suggest that the CCA, or another appropriate government body working with the relevant ministries, may play a central role in anchoring this framework, given India's existing institutional experience with digital trust infrastructure. Furthermore, V2X security framework should be designed to work alongside India's existing certificate-based systems, rather than replacing them. This would make implementation easier and help avoid unnecessary duplication.

Q8. What should be the regulatory framework for the assignment of frequency spectrum to the entities holding the proposed V2I communication service authorisation? Specifically, - (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)"? (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? (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? (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)? (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? (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 OOBE 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 OOBE limits? (g) What should be the maximum period of assignment of spectrum to the entities holding the proposed V2I communication service authorisation? (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? (i) Whether there is a need to

introduce a provision for the surrender of frequency spectrum? Kindly provide a detailed response with justification.

Response: Without getting into heavy technicality to this, at a very high level we suggest that spectrum for V2I should be assigned administratively and on a shared basis, with clear priority for safety-related uses and a simple regulatory structure for deployment. This spectrum may not be assigned through auction, because the purpose of V2I is closely linked to road safety and public mobility rather than ordinary commercial telecom use. A shared framework would also be more suitable, since multiple authorised entities may need to operate in the same area.

We also suggest that TRAI may recommend reserving priority within the band for safety-related applications, while allowing other operational uses in an orderly manner. In our view, this would strike a reasonable balance between public-interest use and efficient spectrum management. Technical conditions for managing interference may be set separately by the relevant authorities. We suggest that the deployment process itself should remain relatively simple, for example through registration of roadside units and post-deployment oversight, rather than a highly burdensome site-by-site clearance mechanism.

We also suggest that the period of spectrum assignment should broadly align with the underlying authorisation period and allow for renewal, modification and surrender on reasonable terms.

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.

Response: We suggest that clear timelines should be prescribed for processing spectrum assignment requests for V2I deployments. In our view, this is important because V2I projects will often depend on road and infrastructure timelines. Delays in regulatory approvals could slow down deployment and create uncertainty for both public authorities and private participants. We suggest that complete applications should be processed within a defined outer timeline, with a simpler and faster route available where the applicant is a public authority deploying V2I for safety and traffic management.

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.

Response: We suggest that the spectrum framework should clearly distinguish between public-interest deployments and more commercial V2I use cases, while also supporting pilots and test projects.

In our view, public authorities (including private entities) using V2I for road safety and traffic management should face minimal regulatory and financial burden. A different approach may be taken where entities seek to build commercial services on top of the same framework. We also suggest that TRAI and DoT should make room for pilot projects and experimental deployments through short-term, simplified assignments. This would help develop the ecosystem before full-scale rollout. Finally, any existing users or regulatory constraints in the relevant band should be identified early, so that V2I deployment can proceed with appropriate coordination and without avoidable interference issues.

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

Response: We suggest that the overall V2X framework should expressly address coordination across sectors, interoperability with wider systems and a sensible allocation of responsibilities. In our view, V2X sits across telecom, transport, automotive regulation, data protection and cybersecurity. For that reason, we suggest that the relevant ministries and regulators should work through a clear coordination mechanism so that the framework develops consistently. We also suggest that the framework should remain broadly aligned with international practice where possible, so that vehicles and systems from outside India can operate without unnecessary incompatibility.

Finally, we suggest that the framework should make clear that V2X is a tool to support safety and traffic management, and not a substitute for existing legal duties of drivers, vehicle owners or public authorities. In our view, questions of liability should continue to be governed by the broader legal framework unless specifically addressed by future policy.

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.

Response: We suggest that recurring spectrum charges should generally not be imposed on safety-oriented V2I deployments, particularly where they are carried out by in the public interest. The principal purpose of this framework is road safety and public mobility and for that reason, the charging structure should not resemble the model used for ordinary commercial telecom services. We suggest that public and non-commercial V2I deployments should either be exempt from recurring spectrum charges or be subject only to a token amount, so that cost does not become a barrier to adoption.

However, where private entities use the framework for more commercial offerings, a modest administrative charge may be considered. However, in our view, any such charge should remain low and should not discourage early investment.

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.

Response: If TRAI decides to prescribe spectrum charges, we suggest that any existing DoT charging framework should be used only as a broad reference point and not applied mechanically to V2I. In our view, V2I should be treated differently from mainstream telecom services because its purpose, revenue profile and public-interest character are materially different.

We therefore suggest that, if charges are introduced, V2I should be placed in a separate low-charge category, with suitable exemptions or relaxations for public-safety deployments.

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.

Response: We suggest that spectrum charges for V2I should not be linked to AGR. In our view, many V2I deployments will not have a clear revenue stream of the kind normally associated with telecom services. Applying an AGR-based model would therefore create complexity without much practical benefit. We suggest that, if any charge is imposed, a fixed or nominal administrative model would be more suitable than a revenue-linked approach.

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.

Response: We suggest a simple two-part approach: no recurring charge, or only a token charge, for public safety-oriented deployments; and a modest fixed charge for more commercial V2I uses. In our view, public authorities deploying V2I as part of their safety and mobility responsibilities should not face recurring financial burdens that could delay adoption.

(i) Public authorities (central/state road agencies, Urban Local Bodies ("**ULBs**"), smart city Special Purpose Vehicles ("**SPVs**")) deploying V2I as part of statutory road-safety functions would receive spectrum free of recurring charge or at a token fee, recognising the public-good nature of their deployments.

(ii) Private entities offering commercial V2I-based services would pay a modest flat annual amount per megahertz per defined service area (e.g., per district or per corridor), with rates calibrated to cover administrative cost without deterring investment.

For commercial uses, we suggest a modest fixed charge with possible concessions during the initial years, so that the framework encourages early participation rather than discouraging it.

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.

Response: Payment terms for any spectrum charges should be flexible and aligned with existing practice for administrative assignments, with annual payments as default and options for upfront payment.

DoT's existing administrative assignment frameworks typically envisage annual payment of charges in advance, with scope for upfront payment in some cases. For V2I, similar terms are appropriate: V2I entities could pay charges annually in advance, with the option of paying for the full assignment period upfront at a discounted rate, where that suits their financing structures.

For small testbeds and pilot deployments, pro-rated charges for short-term assignments (e.g., six months or one year) together with simplified invoicing can ease experimentation and proof-of-concept work.

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.

Response: We suggest that direct revenue under a V2I authorisation is likely to be limited, and where it exists it will usually come from support services built around V2I rather than from the core safety function itself. In our view, most safety-related V2I functions will be funded as part of public infrastructure, public-private partnership arrangements or broader mobility programmes, rather than through direct user charges.

(i) **Data and analytics services**: providing anonymised or aggregated traffic data, congestion analytics, and road-use statistics to government agencies, urban planners, logistics providers and mobility platforms.

(ii) **Managed services**: offering end-to-end V2I infrastructure management, integration and maintenance services to road authorities and vehicle Original Equipment Manufacturers ("**OEMs**") on a contract basis.

(iii) **Informational and convenience services**: such as parking availability notifications, dynamic route guidance, or contextual information services delivered via V2X, subject to user consent and compliance with the DPDP Act.

Where revenue does arise, it may come from managed services, data insights, integration support or other value-added offerings. We suggest that the regulatory framework should recognise the limited and indirect nature of such revenue.

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.

Response: If revenue-based concepts such as GR, ApGR or AGR are used at all for V2I, we suggest that they should be defined very narrowly. In our view, the usual telecom revenue definitions do not fit V2I particularly well. If TRAI nevertheless adopts them, only revenue directly and specifically linked to commercial V2I services should be considered.

(i) **GR for V2I** should capture only receipts directly attributable to V2I communication services (e.g., fees for V2I-based data and analytics, managed V2I services), and should explicitly exclude: (a) budgetary grants and subsidies; (b) viability gap funding and annuity payments from authorities; (c) tolls, farebox collections, parking fees and similar non-telecom revenues; and (d) receipts from unrelated business lines.

(ii) **ApGR** could then be defined as the subset of GR on which any charges are proposed to be levied, excluding revenues from safety-related services (see response to Q20 below) and pass-through payments to other authorised entities for wholesale V2I connectivity.

(iii) **AGR** would be ApGR minus permitted deductions (e.g., taxes, inter-operator charges), but in line with the response to Q14 above, any AGR-linked charge is not favoured at this stage.

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.

Response: We suggest that only clearly identifiable commercial revenue from V2I-related services should be included for any fee or charge calculation, and that public funding and unrelated income should be excluded. In our view, revenue from commercial support services, such as managed services or data-based offerings, may be included where it is directly connected to the V2I authorisation.

At the same time, we suggest that grants, subsidies, public funding, tolls, parking revenue and other unrelated receipts should be kept outside the calculation.

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.

Response: We suggest that revenue, if any, from safety-related V2X functions should be excluded from AGR or similar calculations. In our view, this follows from the public-interest nature of such functions. Charging against safety-related activity would sit uneasily with the objective of encouraging deployment to reduce accidents and improve mobility.

We therefore suggest that safety-oriented functions should be kept outside revenue-based charging models altogether.

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.

Response: We suggest that any entry fee for the V2I authorisation should be nominal and proportionate. In our view, public authorities and similar entities acting in the public interest should

either be exempt from entry fees or face only a token amount. For private applicants, a modest fee may be justified to cover administration and discourage non-serious applications, but it should remain low.

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.

Response: Bank Guarantee ("**BG**") requirements, if any, should be minimal and risk-based, with exemptions or substantial relaxation for government and statutory entities.

For government and statutory authorities (including wholly-owned special purpose vehicles), BGs may not be necessary or could be purely symbolic, as their financial and performance risk is already managed through public finance controls and audit mechanisms.

For private/commercial entities, a modest performance BG may be required to secure compliance with key terms (roll-out milestones, security obligations), and a separate financial BG may be considered for any charge obligations. However, the quantum should be calibrated to the smaller scale and lower revenue potential of V2I compared to access services, and duplicative BGs should be avoided where the entity already has BGs under other telecom authorisations or PPP contracts.

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.

Response: We suggest that minimum equity or net worth requirements should be applied, if at all, only in a limited and proportionate manner. In our view, it would be disproportionate to apply the same financial thresholds used for large telecom services to V2I. Any requirement should instead reflect the limited scale and project-based nature of many deployments. We also suggest that government entities and similar public bodies should be exempt from separate equity or net worth conditions under the authorisation.

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.

Response: We suggest that application processing fees should be modest and based only on administrative cost. A fixed processing fee per V2I authorisation application can be levied to defray scrutiny and administrative costs, but it should be modest and not scaled by service area, given that much of the complexity lies in technical and policy evaluation rather than geographic spread. To encourage adoption by smaller urban local bodies and state agencies, TRAI/DoT may consider reduced fees or waivers for government-led applications, particularly during an initial promotion period.

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

Response: We suggest that the authorisation fee, if any, should be purely nominal. Draft rules for miscellaneous telecommunication services suggest that Machine-to-Machine ("**M2M**") service

authorisation may attract no authorisation fee and that some auxiliary service authorisations (In-Flight and Maritime Connectivity ("**IFMC**"), aeronautical data communication) may attract a token fee (e.g., INR 1 (Indian Rupee One only) annually). Adopting a similar approach for V2I would be consistent with its auxiliary, enabling role and public-good orientation. In our view, this would be consistent with the limited and enabling nature of the V2I framework. A token fee would also signal that the regulatory purpose is facilitative rather than revenue-driven.

Q26. Apart from the financial provisions discussed earlier, are there any other financial terms and conditions that should be made applicable for the proposed V2I communication service authorisation? Please provide detailed justification in support of your response

Response: We suggest that any additional financial conditions should continue to reflect the public-interest nature of V2I and should avoid unnecessary duplication.

In our view, contributions designed for mainstream telecom services should not automatically be extended to V2I. We also suggest that grants, subsidies and similar public funding should not be treated as revenue for charging purposes. Finally, the framework should recognise that compliance with privacy, cybersecurity and related obligations carries real cost, and financial conditions should be designed with that in mind.

CONCLUSION

The proposed V2I communication service authorisation, combined with administrative spectrum assignment in the ITS band and a light-touch financial regime, can provide a robust yet enabling framework for V2X deployment in India. By clearly delineating responsibilities between telecom and motor-vehicle regulators, leveraging existing standardisation and PKI, and recognising the public-good nature of safety-oriented applications, India can foster rapid, interoperable roll-out of V2X communication in support of national road-safety, mobility and climate goals.