

TECHNICAL SPECIFICATION AND SCOPE OF WORK FOR HIRING OF AGENCY FOR DESIGN, INSTALLATION, MONITORING, OPERATION & MAINTENANCE OF AI CAMERA-BASED SAFETY PLATFORM SYSTEM ON OPEX MODEL FOR CNG & LNG TRANSPORT FLEET OF GUJARAT ENERGY LIMITED

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Contents:

1. INTRODUCTION:.....5

2. OBJECTIVE:.....5

Fleet Details: 5

General Scope of Work:.....6

3. TECHNICAL SPECIFICATIONS:.....8

3.1 Cabin Mounted Dual Camera (ADAS + DMS) 8

3.2 Mobile App.....12

4. SCOPE OF WORK :.....13

4.1 Pre-Installation Activities.....13

4.2 Supply, Installation & Commissioning.....13

4.3 Training.....14

4.4 Vehicle Change Management.....15

4.5 Data Storage Requirements.....15

4.6 Vehicle Warranty Protection Clause 15

5. SCOPE OF WORK – MONITORING & MANPOWER DEPLOYMENT:.....17

5.1 Monitoring Centre Setup 17

5.2 Manpower Deployment but not limited to:- 18

5.3 Monitoring Responsibilities.....18

5.4 Escalation Matrix 19

6.1 Platform Architecture 20

6.2 Live Tracking & Map Features 21

6.3 Alerts & Notifications 22

6.4 Reports 23

6.5 Video Features 24

6.6 Driver Management.....25

6.7 API & Integration 25

7. AI / ADAS & DMS ALERT FEATURES:.....26

7.1 Outward Camera – ADAS Alerts-With real time feedback to driver 26

7.2 Inward Camera – DMS Alerts-With real time feedback to driver 27

7.3 Telematics / Inertial Alerts-With real time feedback to driver 28

8. KEY PERFORMANCE INDICATORS (KPIS)-FOR EACH GA 29

9. COMPREHENSIVE AMC SCOPE: 29

9.1 Preventive Maintenance 30

9.2 Breakdown Maintenance 30

9.3 Software & Cloud Maintenance 30

9.4 Exclusions from AMC (Chargeable) 30

10. SERVICE LEVEL AGREEMENT (SLA) & PENALTIES: 31

10.1 Data Availability SLA 31

10.2 Operational Penalties 31

11. PAYMENT TERMS: 33

12. QHSE REQUIREMENT 35

13. GEL SCOPE: 36

14. DATA MIGRATION: 36

15. FAT & SAT – Inspection, Testing and Acceptance 37

16. CONFIDENTIALITY: 38

17. CYBER SECURITY AND DATA PROTECTION REQUIREMENTS 39

GUJARAT ENERGY	**TECHNICAL SPECIFICATION AND SCOPE OF WORK FOR HIRING OF AGENCY FOR DESIGN, INSTALLATION, MONITORING, OPERATION & MAINTENANCE OF AI CAMERA-BASED SAFETY PLATFORM SYSTEM ON OPEX MODEL FOR CNG & LNG TRANSPORT FLEET OF GUJARAT ENERGY LIMITED**

1. INTRODUCTION:

Gujarat Energy Limited (erstwhile Gujarat Gas Limited) is an integrated energy company pursuant to Composite Scheme of Amalgamation & Arrangement involving GSPC Group of Companies which came to be finally approved by the Ministry of Corporate Affairs, Government of India in April 2026.

GEL continues to be India's Largest City Gas Distribution ("CGD") Company in terms of volume operating in 44 districts spread across 6 states in India i.e., Gujarat, Maharashtra, Rajasthan, Haryana, Punjab & Madhya Pradesh and 1 Union territory of Dadra & Nagar Haveli. GEL continues to hold the leadership position in CGD industry in terms of size and scale of operation. GEL has a successful track record of providing uninterrupted services for over 3 decades through a network of more than 44,540 KMs. of Natural Gas pipeline, distributing approx. 8.37 MMSCMD of Natural Gas in Q3 of FY 2025-26. GEL operates over 834 CNG stations and has connected more than 23.83 lakh households, over 15,900 commercial customers and more than 4,454 industrial customers.

GEL operates a large fleet of Mobile Cascade Vehicles (MCVs) and LNG transport vehicles for distribution of CNG from Mother Stations and Online Stations to Daughter Booster Stations (DBS) and CNG outlets.

2. OBJECTIVE:

GEL intends to implement an AI-based Camera Safety Platform on its fleet of MCVs and LNG vehicles to:

- Improve fleet operational efficiency and safety compliance
- Real-time driver behavior monitoring (distraction, drowsiness, over-speeding, rash driving, hard braking, hard acceleration, hard turns etc.)
- In-cab alerts to prevent incidents proactively
- Video analytics for post-incident investigation
- Provide proactive ADAS (Advanced driver assistance system) and DMS (Driver Monitoring System) alerts to drivers and fleet managers
- Support CNG O&M team with live monitoring through dedicated manpower deployed by the Bidder
- Generate actionable data for driver training, performance coaching

Fleet Details:

Sr. No.	Vehicle Category	Approximate Qty.
1	Mobile Cascade Vehicles (MCV) – CNG	846 Nos.
2	LNG Transport Vehicles	14 Nos.

	Total Fleet	**860 Nos.**

Zone Wise tentative MCV and LNG Tanker list is as per below:-

Zone	Total MCV's	Total LNG Tankers
1	175	
2	62	2
3	124	10
4	240	1
5	109	1
6	136	
Total	846	14

Zone 1 includes-Ahmedabad-R, Gandhinagar, Nadiad, Anand, Panchmahal and Dahod GA

Zone 2 includes-Surat, Hazira, Bharuch & Ankleshwar, Dahej, Narmada GA

Zone 3 includes- Valsad, DNH, Navsari and Thane GA

Zone 4 includes Rajkot, Morbi, Bhavnagar, Surendranagar, Jamnagar, Kutch(West), Amreli GA

Zone 5 Includes Ujjain, Dewas & Indore, Ratlam and Jhabua, Jalore & Sirohi, Banswara & Dungarpur GA

Zone 6 includes Amritsar, Hoshiarpur-Gurdaspur, Bathinda, Sirsa, Fatehabad & Mansa, Ferozepur-Faridkot, Shri Muktsar Sahib GA

Note: The fleet size is indicative. GEL reserves the right to increase or decrease the fleet covered under this contract. Rates shall remain applicable at the contracted unit rates.

General Scope of Work:

- Implement an AI based Camera safety platform to monitor GEL fleet of CNG and LNG to improve efficiency, adherence to safety norms having real-time information about the vehicles position, speed, stoppages, detours, driver behavior etc.
- The data shall be available in a central database where users are able to see the status of vehicles on digital maps, along with diagnostic reports and receive real-time alerts on mobile devices.
- The data shall be in a format that can be easily analyzed & utilized to monitor improvement in driver performance in terms of safe driving techniques & GEL Driving life saver practices.

- The scope of agency is to provide the hardware, software, installation, commissioning, post installation O&M services and service support for monitoring the movement of CNG transport vehicles and driver's behavior round the clock from control center/control tower.
- It will be based on Opex model (Build -Own-Operate).
- After expiry of the service validity of contract, service provider can take back their hardware and software from the CNG/LNG transport vehicles without disturbing vehicle operationality.
- Interfacing the GPS data on the map of Geographical areas(tracking accuracy: ±20 m or better)**.**
- Real time monitoring of vehicle position and development of effective monitoring system.
- Generation of various reports including exception reports as per the requirement of Gujarat Energy Limited as communicated from time to time.
- Training of GEL Technical O&M staff, Drivers & relevant stake holders of the proposed system hardware and software. Coordination with GEL EIC for smooth functioning.

Methodology:

- Real time monitoring of CNG and LNG fleet from Loading Point to Unloading Point and return. Interfacing the GPS data on a map of the geographical areas with AI based cameras, video recording, sensors.
- Digital Maps to visually represent the geographical locations of the vehicles enabling it to be tracked. Ability to provide accurate network wide location information of the entire fleet.
- Driver and Supervisor login for correlating generated data to each individual driver and corresponding supervisor.
- Recording of various events, unauthorized halt, deviation from predefined route (route fencing), geo-fencing to be highlighted through exception reports and alerts to be sent via SMS and email to GEL representatives as nominated by GEL EIC time to time.
- System has to be viewed by users at different locations and also with different set of vehicles (Grouping of Vehicles by GA, Circle or Zone).
- Face scanning of driver, an alert of unauthorized driver immediately to GEL EIC.
- Driver Behavior based monitoring system
- Sensitization to driver regarding hotspots/blind spots & accident-prone areas based on route risk assessment done by GEL(such coordinates will be provided by respective GEL EIC).

Requirement for each vehicle covered under this contract:

Sr. No.	Component	Specification	Qty. per Vehicle

1	Cabin Mounted AI Dual Camera (ADAS + DMS)	1080p, 5G/4G LTE, Single Form Factor (SFF) ADAS & DMS based passive driver safety smart AI device	1 Set
2	Panic / SOS Button	With protective cover, anti-accidental	1 No.
3	GPS / GSM Antenna	Multi-constellation, embedded or external(tracking accuracy: ±20 m or better)	As required
4	In-built Audible Buzzer	Adequately audible, in-cabin voice alerts	1 No.
5	SIM Card & Network Connectivity	5G/4G-LTE MFF2 SIM, in scope of Bidder	Per device
6	Automotive-grade wiring harnesses and cables for installation	All cabling, connectors, mounting hardware	Per vehicle

The AI–Camera based safety platform contents should be placed in a suitable unit/enclosure (for water and dust ingress protection) with tamper detection.

3. TECHNICAL SPECIFICATIONS:

3.1 Cabin Mounted Dual Camera (ADAS + DMS)

Parameter	Outward (Road Facing) Camera	Inward (Driver Facing) Camera
Pixel Size	Minimum **2.4 µm × 2.4 µm**, or equivalent/superior image-quality performance demonstrated to meet the specified AI/ADAS functional requirements under daylight, low-light and varying illumination conditions.	Minimum **2.8 µm × 2.8 µm per pixel**, or equivalent/superior image quality and low-light/NIR sensing performance suitable for Driver Monitoring System (DMS) applications.

Field of View	The outward-facing camera shall provide a sufficiently wide field of view to capture the required forward road scene for the specified ADAS/safety functions without unacceptable blind zones. Minimum spec required:- ≥70° (H), ≥55° (V), ≥90° (D)	The driver-facing camera shall provide adequate coverage of the driver's face, head and upper body throughout the normal driving position and shall support reliable operation of all specified DMS functions. Minimum spec required:- ≥140° (H), ≥75° (V) ≥160° (D)
Construction / Optical Technology	Visible-spectrum imaging; spectral response: 400–700 nm or wider; suitable for daylight and varying illumination.	Visible + NIR imaging; NIR spectral sensitivity: 800–1000 nm or wider; suitable for DMS day/night operation. 850 nm / 940 nm NIR illumination or equivalent acceptable. The camera shall demonstrate reliable detection of specified DMS events under representative daytime, low-light and nighttime conditions, including operation with the vehicle cabin illumination switched off, wherever applicable
Video Recording Quality	1080p @ 30fps or higher	
Dynamic Range/HDR	≥100 dB HDR or equivalent image quality under high-contrast lighting conditions.	≥70 dB HDR or equivalent image quality under varying cabin illumination.
Night Vision	Low light sensitivity optics	IR LED for night vision
Processor / SoC / Edge Computing	The camera/edge device shall be equipped with a suitable 64-bit multi-core Sc incorporating dedicated AI acceleration (NPU/DSP/GPU or equivalent), capable executing all specified AI/DMS/ADAS functions in real time. The bidder sha	

	declare the SoC make/model, CPU architecture, number of cores, AI accelerat and processing capability	
Video Encoding	H.265/HEVC or equivalent**,** minimum 1920 × 1080 resolution @ 30 fps or higher, progressive scan, supporting real-time video recording, transmission and playback. Bidder shall declare actual codec, resolution, frame rate, encoding profile/level and bitrate range	
On-Device Storage	Min. 100 hours	Combined with outward
Buzzer/Speaker	An audible buzzer/alert shall be provided inside the vehicle cabin to notify the driver whenever a defined unsafe event is detected. The audible alert shall be clearly perceivable by the driver under normal vehicle operating conditions and shall have configurable alert duration and/or frequency, wherever applicable(in local language).	
Battery backup	The in-vehicle AI monitoring system shall be provided with a suitable inbuilt backup power arrangement, such as a rechargeable battery, supercapacitor or equivalent technology, to support essential tracking, communication, recording and safety-alert functions during interruption of the primary vehicle power supply. The backup arrangement shall automatically activate upon power interruption and ensure secure saving of ongoing recording/event data without corruption or loss. The system shall incorporate suitable power-management and protection features to prevent excessive discharge or adverse impact on the vehicle electrical system. Upon restoration of vehicle power, the system shall automatically resume normal operation without manual intervention.	

Connectivity

Interface	**Specification**
Cellular	4G LTE or higher, with embedded/eSIM or equivalent secure SIM, supporting automatic network reconnection and minimum 100 hours local data buffering

	during network unavailability, with automatic synchronization to the web application upon restoration of connectivity.
Wi-Fi	IEEE 802.11n (Wi-Fi 4) or higher with WPA3-Enterprise**,** supporting 2.4 GHz band or higher-frequency band**,** for local configuration, diagnostics, commissioning and data transfer. Bidder shall declare actual Wi-Fi standard, frequency band and security capability. Should be disabled by default at firmware level if not specifically required for implementation/design
Bluetooth	The device shall support v4.0 or higher with SSP with passkey, or equivalent technology**,** where required for local configuration, commissioning and diagnostics. Bidder shall declare the supported wireless communication technology and version. Should be disabled by default at firmware level and should be in non-discoverable mode immediately after pairing if not specifically required for implementation / design
GNSS	Multi-constellation GNSS (GPS/GLONASS/Galileo/BeiDou or equivalent) with continuous vehicle location tracking.
Vehicle Connectivity	The system shall support CAN Bus (J1939), OBD-II or equivalent vehicle interface**,** as applicable to the vehicle, for retrieval of required vehicle parameters such as vehicle speed, ignition status and engine-related information**.**
IMU	Minimum 6-axis (3-axis accelerometer + 3-axis gyroscope) for vehicle motion and event detection. 3-axis magnetometer/compass, temperature and ambient-light sensing, where required, shall be supported by the proposed system.
OTA Updates	Over-the-Air firmware and software updates supported. Signed with crypto by bidder / OEM with private key min RSA 4k or ECDSA P-384, also it should be verified by bootloader prior to installation. Dual image should be supported from rollback point of view

Input Voltage	9–36 V DC or wider, compatible with the vehicle electrical system, with suitable protection against voltage fluctuations, reverse polarity and transient voltage conditions.
Max Power Consumption	The complete in-vehicle AI camera/edge unit shall have a maximum power consumption of ≤20 W**,** inclusive of camera, AI processing, GNSS, cellular communication and other integrated functions under normal operating conditions. The bidder shall declare the rated and maximum power consumption.
Signal Input - High to Low range	36-0 V DC vehicle-compatible digital input with reliable detection of ignition ON/OFF status.
Physical Dimensions **Length x Width x Height (in mm)**	Compact vehicle-mounted design with maximum overall installation envelope of 130 mm × 100 mm × 100 mm, or smaller. The device shall not obstruct the driver's visibility, vehicle controls or safety equipment. Actual dimensions and mounting arrangement shall be declared by the bidder.
Applications Support (SaaS)	1. Web Application:-Centralized web-based platform for fleet monitoring, dashboards, alerts, reports, configuration, administration and analytics 2. Cellphone (mobile) Application for Fleet Administrators:-Android & iOS; monitoring, alerts, notifications, reports and fleet-management functions 3. Cellphone (mobile) application for Driver:-Android & iOS; driver-specific alerts, training/coaching, feedback and performance-related functions 4. Coaching tool:-AI-event-based driver performance analysis, coaching assignment, training/feedback, action tracking and improvement monitoring
Cloud Storage Support	The system shall provide a minimum 60-day rolling cloud storage and retrieval facility for recorded video, with video available for authorized viewing, search and download through the web & mobile application.

3.2 Mobile App

The mobile application shall provide, as a minimum:

- Alert notifications, video playback and other relevant DMS/ADAS or system features.
- Ability to share/push selected event videos to drivers and GEL representatives for review, feedback and safety coaching.
- Monitoring of high-impact safety events and driver-related reports.
- Ability to request and access event-related videos through the Event Access feature.

4. SCOPE OF WORK :

4.1 Pre-Installation Activities

- Survey and inspect all applicable vehicle makes/models prior to installation.
- Submit Zone/GA/Circle wise and vehicle-wise installation plan and schedule for GEL EIC approval.
- Identify suitable camera mounting locations and safe wiring/conduit routes.
- Assess vehicle electrical compatibility and provide all required adapters/protection devices.
- Ensure installation does not obstruct driver visibility, vehicle controls or safety systems and does not adversely affect the vehicle OEM warranty.

4.2 Supply, Installation & Commissioning

- **Supply & Installation:** Supply, install and commission all hardware, software and accessories specified under Sections 2 and 3 on each designated vehicle.
- **Wiring:** All wiring shall use suitable automotive-grade cables/wiring harnesses, properly routed, secured, clamped, protected and labelled. Wiring shall not interfere with vehicle operation, maintenance or safety systems.
- **Camera Mounting:** Mount the camera/AI device at the GEL-approved location using secure, tamper-resistant mounting arrangements, without obstructing the driver's visibility or vehicle controls.
- **Vehicle Data Integration:** Interface with the vehicle's available CAN/J1939, OBD-II or equivalent interface, as applicable, for acquisition of required vehicle parameters such as speed, ignition status and other specified parameters.
- **Cellular Connectivity:** Install/configure the SIM/eSIM and verify 4G/5G/LTE or higher as applicable cellular connectivity and communication between each device and the cloud platform.
- **Driver Identification:** Configure driver identification through the specified face-recognition-based or equivalent driver identification mechanism, as applicable. The images is not required to be stored on edge/camera or cloud, locally only its hash should be processed. Local storage should be encrypted AES-256 with its keys in HSM or equivalent within camera. Driver Identification / Visual Login Accuracy should be ≥95%
- **Vehicle & Device Registration:** Register each vehicle and associated device on the cloud platform using a unique vehicle ID/device ID and vehicle registration number.
- **Geo-Fencing:** Configure required geo-fences for GEL operational areas as directed by the concerned GEL Representative / GEL GA EIC.
- **Route-Fencing:** Configure required route-fences for designated CNG/LNG loading, unloading and transportation routes as specified by GEL.

- **Alert Configuration:** Configure the specified alert thresholds for speed, harsh braking, harsh acceleration, ADAS, DMS and other applicable events, as finalized with GEL time to time to meet GEL operational requirements.
- **API Integration:** Provide API-based integration with GEL ICCC/SCADA/CTV or other designated GEL systems, wherever applicable and as per the approved integration requirements provided by GEL.
- **Testing & Commissioning:** Conduct complete end-to-end testing and validation of all hardware, software, communication, AI/DMS/ADAS functions, alerts, recording, data transmission and reporting features for each vehicle prior to handover**.** False Positive Rate for specified ADAS/DMS alerts: ≤10%
- **Reports:** The Contractor shall provide all specified reports, dashboards and exception reports as required by GEL and as stipulated in the Tender. GEL shall have the right to modify, amend or revise the reporting formats and requirements from time to time, as reasonably required, within the scope of the contracted system, without any additional cost to GEL. GEL shall be the final authority for approval and acceptance of the report formats and related requirements.
- **Installation Documentation:** Submit an installation completion report and vehicle/device configuration sheet for each commissioned vehicle.
- **Service Support:** No additional charges shall be levied for deputing service personnel/technicians to GEL offices or vehicle operating/service locations within the designated area for diagnosis and rectification of faults attributable to the supplied system.
- **Reporting Configuration:** Reporting formats shall be configurable and shall be modified/amended from time to time as reasonably required by GEL, without additional cost, subject to the scope of the contracted system.
- **Ingress Protection Requirement:** All installed equipment, connectors and wiring shall be suitably protected against water ingress, dust, vibration and normal vehicle operating conditions, as applicable to their installation location.
- **Additional Geo/Route Fencing:** Additional geo-fence and route-fence configurations required during the contract period shall be provided without additional cost to GEL, within the capabilities of the supplied system.
- **Statutory Approvals:** The bidder/service provider shall ensure all applicable statutory approvals, permissions and clearances required for installation, operation and integration of the supplied hardware and software, wherever applicable.
- **Vehicle Safety:** The complete system shall be installed and commissioned in such a manner that it does not adversely affect vehicle safety, electrical systems, OEM safety systems, driver visibility, vehicle controls or normal vehicle operation.

4.3 Training

- **GEL Technical Team and Relevant Stake Holders:** Training on software portal usage, dashboard navigation, report generation, alert management and escalation procedures.
- **GEL/Vendor's Monitoring Team:** Training on live vehicle tracking, dashboard monitoring, video access/playback, event review and alert management.
- **Driver Awareness:** Driver awareness sessions, in coordination with GEL, covering proper use of the driver identification/login mechanism, panic button and relevant in-vehicle safety features.

- **Training Material:** User manuals and training material shall be provided in English, Hindi, Gujarati, Marathi and Punjabi, as applicable to the respective users.
- **Refresher / Additional Training:** The bidder shall provide additional/refresher training sessions for GEL personnel and drivers, as and when reasonably required by GEL during the contract period, without any additional cost.

4.4 Vehicle Change Management

- **Vehicle Replacement / Fleet Change:** In case of vehicle replacement or fleet change, the Bidder shall de-install devices from the old vehicle and re-install on the new vehicle as per schedule agreed with GEL EIC as per SLA. Additional requirement whatsoever in nature for replacement device shall be included in replacement device cost.
- **SIM / Connectivity:** Any required SIM/eSIM provisioning, activation and data-plan transfer or replacement for the replacement vehicle/device shall be included in the applicable replacement/installation cost, with no additional charge for SIM activation**.**
- **Portal Update:** The bidder shall update the vehicle profile, device mapping, registration details and other relevant information on the portal within the same working day of receiving the required information/approval from GEL.
- **Geo-Fence / Route-Fence:** Required geo-fence and route-fence configurations associated with the replacement/additional vehicle or changed operational location shall be updated within the same working day, as instructed by GEL.

4.5 Data Storage Requirements

Data Type	Minimum Retention Requirement
GPS / Telematics event data	12 months, retrievable through web and mobile application
Video recordings (event-triggered)	Minimum 60 days rolling retention
Alert & exception reports	12 months, downloadable by GEL
Driver performance data	12 months, retrievable through web application & mobile application

4.6 Vehicle Warranty Protection Clause

The AI-Based Driver Monitoring System (DMS), ADAS cameras, video telematics system, and all associated hardware, wiring, sensors, communication devices, accessories and other equipment supplied and installed under this contract shall be designed, installed, integrated and maintained in a manner that does not

adversely affect, invalidate, restrict or compromise the vehicle manufacturers (OEM) warranty or the vehicle's AMC (Annual Maintenance Contract)**,** including coverage relating to the vehicle, chassis, engine, electrical/electronic systems, ECUs, telematics systems and other vehicle components.

The bidder shall be fully responsible for any loss, denial, restriction or voiding of OEM warranty or AMC coverage arising directly or indirectly from the supply, installation, wiring, integration, operation, maintenance or removal of the system**.** Any associated costs, repairs, replacement of components or restoration required to maintain/reinstate such warranty or AMC coverage shall be borne by the bidder, without any additional cost to GEL**.**

The bidder shall also ensure that installation is carried out using non-invasive and vehicle-compatible methods**,** without unauthorized modification of the vehicle's wiring harness, ECU or other critical vehicle systems.

The successful bidder shall:

1. **Vehicle Make/Model Compatibility:** Prior to installation, the bidder shall verify the compatibility of the proposed system with each applicable vehicle make/model and shall submit the installation methodology for GEL's approval wherever required. Any modification necessary to achieve safe and compliant installation shall be carried out by the bidder at no additional cost to GEL.
2. **Installation Practices:-** Ensure that installation is carried out using OEM-recommended/compatible and best industry-standard practices without unauthorized modification, cutting, splicing, drilling, or tampering with critical vehicle wiring harnesses, ECUs, CAN Bus systems, safety systems, or structural members unless specifically approved by the vehicle OEM.
3. **Compatibility & Documentation:** Provide documentary evidence, technical certification, OEM compatibility declaration, or any other supporting documents demonstrating that the proposed solution is suitable for installation on the specified vehicle models without affecting OEM warranty and AMC provisions.
4. **Electrical Protection:** Use approved power isolation/protection devices, fuse protection arrangements, and non-intrusive installation methods wherever feasible.
5. **Warranty & AMC Responsibility:** The bidder shall be solely responsible for any loss, rejection, restriction, denial or invalidation of vehicle OEM warranty or AMC coverage attributable to the supplied equipment, installation, wiring, integration, operation, maintenance or removal of the system.
6. **Indemnification:** Indemnify and hold harmless GEL and the vehicle owner/operator from any warranty/AMC rejection, repair cost, replacement cost, consequential loss, or claim raised by the vehicle OEM or AMC service provider that is directly attributable to the installation, operation, malfunction, or removal of the AI-based camera system.
7. **Warranty/AMC Claim Rejection:** In the event that any OEM warranty or AMC claim is denied wholly or partly due to the installed system or its installation, the bidder shall bear the full cost of repair/replacement of the affected component(s) and restore the vehicle to OEM specifications at no additional cost to GEL or the vehicle owner/operator.
8. **Installation Compliance Certificate:** Upon completion of installation, the bidder shall provide an Installation Compliance Certificate confirming that the installation has been carried out in

accordance with applicable OEM guidelines, approved installation practices and the requirements of this tender, and that the bidder has taken all reasonable measures to ensure that the installation does not adversely affect the applicable OEM warranty or AMC**.**

5. SCOPE OF WORK – MONITORING & MANPOWER DEPLOYMENT:

5.1 Monitoring Centre Setup

- The bidder shall establish and maintain a dedicated fleet monitoring center/desk for continuous monitoring of GEL's MCV/LNG fleet. The monitoring center shall be located at a GEL-designated location(in Gandhinagar or any other location in Gujarat), subject to GEL's approval.
- All monitoring workstations, displays, network connectivity, hardware, software licenses and other infrastructure required for monitoring operations shall be provided, operated and maintained by the bidder within the contract scope.
- The Monitoring Centre shall, as a minimum, be equipped with:
  - Two (2) nos. commercial-grade display/TV screens of minimum 55-inch size for centralized display of dashboards, live monitoring status, alerts, events and other relevant information.
  - Three (3) desktop computer/workstation with minimum 21-inch monitor for monitoring operators, including keyboard, mouse and all necessary peripherals and accessories required for operation of the monitoring platform.
  - Adequate UPS/power backup for the monitoring workstations, displays, networking equipment and other critical monitoring infrastructure to ensure continuity of monitoring operations during power interruptions.
  - Adequate and reliable network connectivity, including necessary redundancy/backup arrangements, wherever required to ensure continuous access to the monitoring platform.
- The monitoring center shall operate 24×7×365 throughout the contract period, including Sundays and public holidays.
- The bidder shall deploy adequately trained and competent manpower in sufficient numbers to ensure uninterrupted monitoring and timely response to alerts. GEL may screen the manpower and provide their approval for deployment of manpower.
- GEL shall have the right to reject or require replacement of any deployed manpower who, in GEL's reasonable assessment, is found to be unsuitable, inadequately qualified/trained, incompetent, or whose performance or conduct is not satisfactory for the assigned responsibilities. The Bidder shall arrange a suitable replacement within the timeframe specified by GEL, without affecting continuity of the services.
- In addition to the minimum prescribed monitoring operators per shift, the Bidder shall deploy adequate reliever/backup manpower to ensure that the required minimum staffing level is maintained at all times. The reliever shall cover weekly offs, leave, absenteeism, training and other planned or unplanned absence of regular monitoring personnel. Under no circumstances shall the Monitoring Centre operate below the prescribed minimum staffing level due to non-availability of any operator. All costs associated with such reliever/backup manpower shall be included in the Bidder's quoted rates and no separate payment shall be made by GEL. Any additional manpower

required to meet the required monitoring, response and service levels shall be deployed by the bidder at no additional cost to GEL.

5.2 Manpower Deployment but not limited to:-

Role	Minimum Nos.	Responsibility
Fleet Monitoring Operator for 3 shifts (8 hrs./shift)	Minimum 3 operators per shift and 1 operator for night shift	Live vehicle tracking, monitoring of AI/DMS/ADAS alerts, event verification, alert acknowledgement and escalation to GEL O&M team as per escalation matrix
Client Manager / Coordinator	1 (dedicated)	Single point of contact for GEL; reporting, issue resolution, performance review and escalation management
Field Technicians	As required	Installation, commissioning, preventive/corrective maintenance, device troubleshooting, replacement and field support

5.3 Monitoring Responsibilities

- **Real-Time Fleet Monitoring:** Real-time tracking of all active MCVs and LNG vehicles on the GEL portal dashboard.
- **Critical Alert Monitoring & Escalation:-** Immediate alert notification to GEL CNG O&M team (by phone/WhatsApp/email as agreed) for:
  - SOS / panic button activation by driver.
  - Accident / collision event detection and alert.
  - Route deviation or geo-fence breach.
  - Vehicle stoppage at non-designated locations beyond threshold time.
  - Over-speed events above GEL-defined thresholds.
  - Other critical AI/DMS/ADAS safety events specified by GEL time to time.
- **Device Health Monitoring:-** Continuous monitoring of device health and data availability; proactive follow-up for offline or malfunctioning devices, defective/non-operational equipment.
- **Daily Monitoring Report:** Daily summary report to GEL CNG O&M team covering: fleet operational status, top alerts, driver score rankings and offline device list on Email. Daily operational reports shall be generated and made available/submitted to the designated GEL O&M team before 09:00 hrs. on the following day, in the prescribed format.
- Weekly and monthly fleet performance report as per GEL-specified format.

- **Incident Investigation Support:** Support for incident investigations by retrieving and sharing relevant video clips and event data on GEL's request.
- **Ad-hoc Information / Reports:** Provision of specific information, data, analysis and/or reports as requested by GEL from time to time to meet operational, management, regulatory and/or statutory requirements, in the format and within the timeline specified by GEL, unless otherwise specified in this SOW.

5.4 Escalation Matrix

Level	Event Type	Action	Escalation Time
L1	SOS / Panic, Accident Detection /Collision Detection	Immediate alert to driver and designated GEL CNG O&M contact through phone/approved communication channel; initiate escalation as per emergency response procedure.	Within 2 min
L2	Route deviation, Geo-fence breach, Critical DMS/ADAS Event	Call and Email Alert designated GEL CNG O&M team, verify/acknowledge event and log the event.	Within 5 min
L3	Continuous over-speed, Harsh Braking/Acceleration, Repeated Unsafe Driving Events	Call and Email Alert GEL CNG O&M team and record event for corrective/coaching action.	Within 10 min
L4	Device Offline / No Data Communication >30 minutes	Log the issue, initiate troubleshooting/follow-up and include unresolved cases in the daily device-health report.	Identification within 15 minutes; corrective action initiated immediately

Escalation Time shall be measured from the time the alert/event is received by the monitoring center/system to the time the designated GEL representative is notified.

6. SOFTWARE & WEB PORTAL REQUIREMENTS:

6.1 Platform Architecture

- **Web-based SaaS Platform:** Web-based SaaS platform accessible via standard internet browser (Chrome, Firefox, Edge etc.) without any plugin installation.
- **Role-Based Access Control:** The platform shall support multi-level, role-based access, including GEL Administrator, Zonal Head, Circle/GA Head, Technical/O&M Manager, Driver, Driver's Supervisor, Bidder/Service Provider and other user roles as required by GEL from time to time and must support SSO and / or Identity federation through GEL AD. For non SSO access over web / mobile MFA via TOTP/SMS/Email for all admin and monitoring accounts. Creation, modification and deactivation of users/roles shall be configurable by authorized GEL administrators and shall be provided at no additional cost.
- **Mobile Application:** Mobile application (Android and iOS) for GEL fleet administrators and drivers.
- **Data Security:** Data transmitted between vehicle devices, application servers and authorized users shall be encrypted using TLS 1.2 or higher or equivalent industry-accepted secure protocols. Data stored on servers/cloud infrastructure shall be encrypted at rest using industry-standard encryption mechanisms. (encrypted with AES-256)
- **Data Hosting:** All contract-related data shall be hosted and processed within India, subject to applicable Indian laws, regulations and regulatory requirements, including the Digital Personal Data Protection Act, 2023**,** as applicable from time to time.
- **Data Ownership:** All data generated, collected, processed or stored in connection with GEL vehicles and operations under this contract, including GPS/telematics data, video recordings, AI event data, alerts, driver-related data, driver performance scores, reports and associated metadata**,** shall remain the property of GEL.
- **Data Processing Agreement (DPA):** The successful bidder shall execute **a** Data Processing Agreement (DPA) with GEL after award of the contract and before commencement of data processing. The DPA shall, at a minimum, address:

  - lawful processing and consent mechanism for driver-related personal/biometric data, wherever applicable;
  - data security and access controls;
  - data retention and deletion requirements;
  - data breach/incident notification;
  - restrictions on unauthorized disclosure or use of GEL data; and
  - data return/handover and secure deletion upon expiry/termination of the contract.

- **Communication Service Provider (CSP) Flexibility:** The solution shall support the replacement/change of Communication Service Provider (CSP)/SIM/eSIM service provider**,** whenever required by GEL for service availability, coverage, operational reasons, without requiring replacement of the complete AI camera/vehicle monitoring system, subject to technical compatibility. The bidder shall provide all necessary configuration, provisioning and integration support for such change at no additional cost to GEL, wherever the change is within the supported architecture.
- **Data Portability & Exit Management:** The platform shall provide GEL with the capability to export and retrieve its data in commonly usable, machine-readable formats during the contract period and

upon expiry/termination of the contract. The bidder shall provide necessary assistance for data migration/handover and subsequent deletion of GEL data from the bidder's systems, subject to applicable legal/regulatory retention requirements.

- Bidder must get an Annual VAPT certificate by CERT-iN empaneled 3rd party auditor for SaaS and Mobile application and all critical points must be remediated within 15 days with no extra cost to GEL

6.2 Live Tracking & Map Features

- **Real-Time Vehicle Tracking:** The platform shall display the real-time location of active GEL vehicles on a digital map with a location update/refresh interval of 30 seconds or better, subject to availability of cellular/GNSS connectivity.
- **Location Accuracy:** The system shall provide vehicle location accuracy of ±20 metres or better under normal GNSS reception conditions.
- **Map Views:** The platform shall provide road/street and satellite map views, with zoom functionality sufficient for vehicle tracking and operational monitoring. Minimum 5 zoom levels shall be supported.
- **Multi-Vehicle Monitoring:** The platform shall support simultaneous display of multiple vehicles on a single map screen, with clearly identifiable status indicators such as Moving, Idle, Parked/Stopped and Offline.
- **Recent Driving Path:** The system shall display the vehicle's driving path for at least the preceding 15 minutes on the map.
- Historical Route Replay: The platform shall provide a route replay facility for historical trips, including vehicle movement and corresponding date/time information.
- **GEL Locations:** All GEL-designated stations, offices, CNG/LNG facilities and other operational locations, as provided by GEL, shall be pre-configured on the map. The system shall also support addition/modification of such locations during the contract period.
- **Vehicle & Group Management:** Authorized GEL users shall be able to create/update vehicle and driver profiles and manage vehicle groups, vehicle types and operational categories, as applicable.
- **Distance Monitoring:** The platform shall provide:

  - Total distance travelled by vehicle;
  - Distance travelled between defined stops/locations; and
  - Trip-wise distance travelled.

- **Time Monitoring:** The platform shall provide:

  - Total trip duration;
  - Time taken between defined stops/locations; and
  - Time spent during individual trips.

- **Stoppage Reporting:** The platform shall provide stoppage reports, including vehicle, location, date/time, start time, end time and stoppage duration.

6.3 Alerts & Notifications

- **Real-Time Alerts:** All alerts to be immediately notified to designated GEL personnel via email and configurable push notifications on mobile app.
- **In-Cabin Safety Alerts:** For applicable DMS/ADAS and driver-safety events, the system shall provide real-time audible alerts to the driver through the in-vehicle device. Such in-cabin alerts shall not depend solely on availability of cellular network connectivity.
- Alert categories as minimum but not limited to:

Driver & DMS Alerts

- Driver Drowsiness
- Driver Distraction
- Seatbelt Non-Compliance
- Unauthorized Driver
- SOS/Panic
- Unauthorized passengers in driver cabin

ADAS / Driving Behaviour Alerts

- Over-speed
- Harsh Braking
- Harsh Acceleration
- Sharp Turn
- Collision/Forward Collision Warning, as supported by the system
- Tailgating
- Lane Weaving/Departure, as applicable
- Wrong side Driving
- Provision for section-wise overspeed alert mapping, allowing different speed thresholds to be configured for different road sections as applicable based on requirements. Overspeed alert to be generated whenever the vehicle exceeds the configured speed limit for the respective road section.

Vehicle & Device Alerts

- Camera Obstruction/Tampering
- Vehicle Tilt
- Device Offline/Communication Failure
- Other critical device/system health alerts

Route & Location Alerts

- Route Fence Breach
- Geo-Fence Breach
- Unauthorized/Unplanned Halt

- Entry/Exit from designated locations

Environmental / Road Safety Alerts

- Hotspots/blind spots/accident-prone locations, where such locations are configured in the system and supported by available map/road-safety data)

- **Configurable Thresholds**: Alert threshold values (speed limits, g-values, time durations) to be configurable by GEL admin.
- **Alert Escalation:** The platform shall support configurable alert escalation based on alert severity, including designated recipients, escalation levels and response timelines, as defined by GEL. The monitoring center shall record the generation, acknowledgement, notification and escalation time of critical alerts.
- **Configurable Recipients:** GEL shall have the capability to configure, add, modify or deactivate designated e-mail IDs and mobile users/recipients for different alert categories, zones/GAs and operational requirements.
- **Alert History:** All generated alerts shall be logged in the platform with relevant details such as vehicle ID, driver ID where applicable, alert type, date/time, location, alert status and acknowledgement/action status, and shall be retrievable for reporting and investigation.
- **Alert Acknowledgement:** The system shall support acknowledgement/closure of configurable alerts by authorized users, along with recording of the acknowledgement time and user details.

6.4 Reports

- **Standard Reports:** Daily, weekly and monthly reports accessible and downloadable on portal.
- **Report Filters:** Should provide reports by Date, Vehicle ID/Registration no., Driver ID/name, Zone/GA, Vehicle group/type, Alert/Event type.
- Trip Summary, Driver Behavior (RAG report), Over-Speed, Harsh Events, Stoppage, Duty Hours, Vehicle Utilization, Alert Summary, Driver Score Leaderboard, Fleet Availability/ Device Status Report, Driver Performance/Rating Report.
- **Incident/Event Investigation Report:** The platform shall provide an event-wise report linking, wherever available, vehicle/driver details, GPS location, date/time, speed, relevant AI/DMS/ADAS event, associated video recording and related telematics data for investigation and analysis.
- Driver Green Safety Score / Driver Rating report – updated daily, based on configurable safety parameters and relevant AI/DMS/ADAS/telematics events. The scoring methodology and parameters shall be configurable by authorized GEL users, wherever supported by the platform.
- Filling / decanting point identification using camera data and capture of filled quantity, wherever technically feasible and as mutually agreed with GEL.
- All reports downloadable in Excel / CSV / PDF formats.
- Raw data download facility to GEL local database.
- Email scheduling of reports from portal to GEL departments.

- Facility to create / modify / activate/deactivate and view all the above parameters by GEL Admin to Email any of the above reports to other departments / individual within the organization straight from the software.
- **Report Distribution:** Authorized GEL users shall be able to send/share generated reports through the platform to designated GEL departments/users or configured official e-mail IDs.
- **Historical Data:** Reports shall be generated from the data retained in the system as per the data retention requirements specified in the tender.
- Provision for development of master database of Drivers containing statutory details of drivers and MCV for monitoring within the application/portal.

6.5 Video Features

- **Live Video Streaming:** The platform shall provide live streaming of both inward-facing and outward-facing cameras for authorized users as communicated by GEL EIC through Web portal and Mobile application platform, with a minimum continuous viewing duration of 10 minutes per session per vehicle**.** The feature shall be subject to availability of adequate network connectivity.
- **Event-Triggered Video:** The system shall automatically record and make available event-triggered video clips associated with configured AI/DMS/ADAS/telematics events. The system shall support a minimum of 30 event-triggered video clips of 1-minute duration per vehicle per month, or higher.
- **Pre- and Post-Event Recording:** For configurable safety events, the system shall support video recording covering the period before and after the event**,** wherever technically supported, so that the circumstances leading to the event can be reviewed.
- **On-Demand Video Retrieval / Event Access:** The platform shall provide on-demand retrieval of recorded video for authorized GEL users, with a minimum of 10 video retrievals per vehicle per month**,** including relevant GPS/location and date/time information associated with the video.
- **GPS/Video Synchronization:** Retrieved event videos shall, wherever applicable, provide synchronized information such as vehicle ID, date/time, GPS location(tracking accuracy: ±20 m or better), speed and relevant event/alert details**.**
- **Driver Coaching:** Authorized users shall be able to select/share individual event videos with the concerned driver through the driver application for safety coaching, review and corrective feedback. The system should support recording of coaching/feedback actions against the relevant event, wherever available.
- **Emergency Video Retrieval:** Additional on-demand video retrievals beyond the monthly limit shall be provided by the bidder at no additional cost to GEL for emergency, accident, incident investigation, regulatory or other safety-critical cases designated by GEL**.**
- **Video Download:** Authorized GEL users shall be able to download permitted video recordings in a commonly usable format for incident investigation, internal review, regulatory requirements and evidence preservation**,** subject to applicable access controls.
- **Video Access Control:** Access to live and recorded video shall be restricted to authorized users based on role-based access permissions**.**

- **Video Availability:** Video retrieval shall be subject to the availability of recorded video within the specified data-retention period and availability of communication/network connectivity at the vehicle/device**.**

Note:- 30 clips and 10 retrievals are system capacity/service commitments and not limitations on GEL's access to safety-critical event data. Where a video/event is required for investigation, litigation, regulatory submission or other evidence preservation, GEL may instruct the bidder to preserve such data beyond the standard retention period until written release by GEL.

6.6 Driver Management

- **Automated Driver Identification:** The system shall support camera-based driver face identification/recognition for automated identification of the driver assigned to the vehicle. Driver identification shall be mapped with the corresponding vehicle and trip/event data.
- Driver Profile Management: The platform shall allow authorized GEL users/Control Centre to create, update and manage driver profiles, including, as applicable; but not limited to;
  1. Driver Name/ID
  2. Driving Licence Number
  3. Contact Details
  4. Vehicle/MCV Assignment
  5. Assignment/Deployment History
  6. Driver status (Active/Inactive).
- Automated driver scoring updated after each trip.
- Driver notification, recognition and coaching workflows on portal.
- The system shall provide driver duty-hours/driving-hours reports based on available vehicle, driver identification and trip data.
- **Unauthorized Driver Alert:** The system shall generate an alert where a vehicle is operated by an unrecognized or unauthorized driver**,** subject to successful driver identification and the driver master maintained by GEL.

6.7 API & Integration

- **REST API:** The solution shall provide secure REST API access for integration of relevant telematics, vehicle tracking, AI event, alert, driver and other applicable data with GEL CTV software, ICCC and other designated GEL systems.
- **API Documentation:** The bidder shall provide complete and up-to-date **API documentation**, including available endpoints, data fields, request/response formats, authentication mechanism, data formats, error codes and applicable usage limitations.
- **Webhooks / Event Push:** The platform shall support configurable webhooks or equivalent event-based interfaces for real-time/near-real-time transmission of configured alerts and events to designated GEL systems.

- **API Configuration:** Authorized GEL users/administrators or designated GEL IT personnel shall be able to configure API credentials, endpoints and applicable event/data subscriptions, with bidder support as required.
- **Future Integration:** The solution shall be capable of supporting integration with additional GEL applications/systems introduced during the contract period**,** subject to technical feasibility and the agreed scope of integration.

7. AI / ADAS & DMS ALERT FEATURES:

7.1 Outward Camera – ADAS Alerts-With real time feedback to driver

Feature	Description	Threshold / Notes	Real-time (RT) in cab alert type	Dashboard alert
Collision Warning	Forward collision risk – vehicle in front slowing or cutting or entering the vehicle's path from either side	Severe: <0.6s TTC (Time to Collision); Moderate: 0.6–1.2s TTC; Speed >24 kmph	**Severe:** Voice alert **Moderate:** Voice alert / audible warning	Yes
Tailgating / Following Distance	Detection of insufficient following distance from the vehicle ahead	Persistence ≥15 sec; Vehicle speed >24 km/h	**Severe:** Voice alert **Moderate:** Audible beep	Yes
Lane Weaving / Departure	Frequent lane changes: 3+ within 20 seconds	Speed >24 kmph	Audible/voice alert	Yes

Note:-

The above ADAS functions shall operate in real time and provide appropriate in-cabin alerts to the driver, wherever specified. Alert generation shall be based on configurable thresholds and shall be supported by the offered AI/ADAS technology. The bidder shall declare the applicable detection conditions, limitations and supported thresholds.

7.2 Inward Camera – DMS Alerts-With real time feedback to driver

Feature	Description	Threshold	Real-time (RT) i cab alert type	Dashboard aler
Driver Drowsiness-- advanced Drowsy, excessive yawns detection	Advanced Drowsy, 3+ yawns within 5 consecutive minutes of driving	Speed >24 kmph; Voiceover alert	Voiceover	Yes
Distracted Driving	Looking down, looking at phone, or talking on phone	Persistence 5s; Speed >24 kmph	Voiceover	Yes
Seatbelt Non-compliance	Driver not wearing seatbelt while driving	Speed >24 kmph; Voiceover alert	Voiceover	Yes
Suspected Driver Impairment / Reduce Alertness	Detection of observable visual/behavioral indicators potentially associated with reduced driver alertness or suspected impairment, such as abnormal eye movement, prolonged/abnormal eye closure, unusual head movement, reduced alertness or other abnormal driving/driver behavior.	Combination of ≥2 impairment indicators detected within a defined observation window**,** with vehicle speed >24 kmph**.** Alert to be generated only when the condition persists beyond the configurable detection period (e.g., 5–10 seconds**).**	Voiceover	Yes

7.3 Telematics / Inertial Alerts-With real time feedback to driver

Feature	Description	Moderate Threshold	Real-time (RT) i cab alert type	Dashboard ale
Harsh Start/Acceleration	Sudden throttle application	**Severe Threshold-**≥3.5 m/s² (0.36g) **Moderate Threshold** -≥2.5 m/s² (0.25g)	Voiceover	Yes
Harsh Braking	Sudden deceleration	**Severe Threshold-**≥5.5 m/s² (0.56g) **Moderate Threshold** -≥3.5 m/s² (0.36g)	Voiceover	Yes
Sharp Turn	Lateral g-force on turn	**Severe Threshold-**≥4.5 m/s² (0.46g) **Moderate Threshold-** ≥3.3 m/s² (0.34g)	Voiceover	Yes
Over-Speeding	Speed exceeds GEL-defined limit	Configurable	Voiceover	Yes
Vehicle Tilt	Abnormal tilt angle (rollover risk)	GEL-defined	Voiceover	Yes
Accident / Collision Detection	Sudden impact detected by IMU	Auto-notification to Safety Manager/Representative	Voiceover	Yes
Driver initiated alert	Emergency button for video recording of special events	On button activation	Audible/voice confirmation to driver	Yes + immediate notification to designated GEL personnel

Camera obstruction alert	Obstruction of Any Camera	Alert when condition persists beyond configurable period	Voiceover	Yes

Note: All threshold values are indicative. Final set points to be mutually agreed with GEL CNG O&M team before commissioning.

8. KEY PERFORMANCE INDICATORS (KPIS)-FOR EACH GA

Sr. No.	KPI	Target
1	Device availability (data uptime) per vehicle	≥ 97%
2	Video retrieval turnaround (on-demand)	≤ 30 minutes from request
3	Monitoring desk response to L1 SOS event	≤ 2 minutes
4	Field technician response to reported device fault	≤ 24 hours
5	Critical Device Fault Restoration	≤48 hrs.
6	Event Video Availability Event Video Availability = Number of valid safety events for which the corresponding video is successfully available/retrievable ÷ Total number of valid safety events requiring video × 100.	≥95%
7	Central SaaS Platform Availability	≥99%

9. COMPREHENSIVE AMC SCOPE:

The Bidder shall be responsible for comprehensive maintenance of all installed hardware and software throughout the contract period. AMC scope includes but is not limited to:

9.1 Preventive Maintenance

- Quarterly physical inspection of all installed devices on each vehicle, or more frequently if required based on equipment condition or OEM recommendations.
- Checking and cleaning of camera lenses, connector integrity, wiring condition and mounting security.
- Firmware / software updates on all devices via OTA or field visit as required.
- Validation of GNSS (Global Navigation Satellite System) lock quality and cellular connectivity.
- Verification of alert thresholds and report formats; re-configuration as directed by GEL.
- The Bidder shall maintain preventive maintenance records for each vehicle/device and provide such records to GEL on request.

9.2 Breakdown Maintenance

- All hardware failures attributable to the Bidder (manufacturing defect, software bug, connectivity failure, device malfunction) shall be rectified at no additional cost to GEL within SLA timelines.
- All spare parts, replacement units, cabling and consumables required for corrective maintenance shall be in the scope of the Bidder.
- No additional visit charges shall be levied for deputing service technicians to any GEL location across GEL GA's.
- Temporary replacement unit to be provided within 24 hours if the primary unit cannot be repaired on-site.

9.3 Software & Cloud Maintenance

- The portal and all application software shall be maintained, updated and upgraded throughout the contract period at no additional cost.
- New software versions, features and security patches to be deployed within 30 days of release.
- Cloud storage, SIM/data connectivity and server uptime are included in AMC scope.
- API availability and documentation updates as required by GEL.

9.4 Exclusions from AMC (Chargeable)

- Physical damage to devices caused by accidents, theft, fire or vandalism (i.e., external factors not attributable to Bidder).
- De-installation / re-installation charges for vehicle change-over are defined separately in Schedule of Rates.

In all excluded cases, the Bidder shall submit details of the fault/damage, photographs/evidence and estimated cost to GEL. Prior written approval from GEL's Engineer-in-Charge (EIC) shall be obtained before carrying out work and raising a charge.

10. SERVICE LEVEL AGREEMENT (SLA) & PENALTIES:

10.1 Data Availability SLA

Data Availability = (Total hours during which the vehicle device successfully communicates/transmits required data to the platform ÷ Total scheduled service hours for the device during the month) × 100

Data Availability (per device, per month)	Deduction from Monthly Charge
≥97.00%	Nil
Between 96.99% – 95.00% (incl. lower limit)	10% of monthly charge per device
Between 94.99% – 90.00% (incl. lower limit)	20% of monthly charge per device
Less than 90.00%	30% of monthly charge per device

Note:- Data availability shall be calculated based on system-generated logs. Periods attributable to approved preventive maintenance, vehicle being unavailable for operation, vehicle power isolation by GEL/vehicle operator, accident/physical damage not attributable to the Bidder, force majeure and proven external communication/network outages beyond the Bidder's reasonable control may be excluded, subject to verification by GEL.

10.2 Operational Penalties

Sr.	Non-conformance	Penalty
1	Non-submission of daily report to GEL EIC by 09:00 hrs.	₹ 200/- per instance
2	L1 alert (SOS/Accident) not escalated to designated GEL personnel within 2 minutes of receipt of the alert at the monitoring center	₹ 500/- per instance
3	Delay in vehicle device change-over beyond the agreed timeline of 24 hours/1 working day from receipt of complete instruction and vehicle availability	₹ 500/- per vehicle per delayed day
4	Field technician not deployed within 24 hours of confirmed fault report, where field visit is required	₹ 300/- per instance per delayed day

5	Monitoring desk not manned as per agreed shift schedule	₹ 1,000/- per shift per instance
6	Preventive maintenance not completed within the agreed schedule without approved extension	₹ 1000/- per delayed day
7	Maintenance/service report not submitted to GEL EIC within 15 days of completion of the maintenance job	₹ 500/- per delayed day
8	Deviation from GEL Life Saving Rules or applicable HSE requirements attributable to the Bidder/personnel deployed by the Bidder	₹ 2,000/- per instance
9	Failure to provide a requested on-demand video within the specified 30-minute SLA, except for documented network/device-related circumstances beyond Bidder's control	₹ 1,000/- per instance
10	Failure of API/integration services affecting agreed GEL system integration beyond the permitted availability threshold	Contract Termination
11	Failure to restore/replace a critical device within the specified restoration SLA after identification of a device fault	₹ 1000/- per delayed day

Important Note for Penalty deduction:-

1. In case of any damage to Owner's/GEL's material, vehicle or other asset attributable to the Bidder or its personnel during execution of the work, GEL shall be entitled to recover the actual cost of repair/replacement of the damaged asset from the Bidder's bills, based on the assessed actual loss.
2. All applicable SLA/service-level penalties shall be deducted from the Bidder's monthly invoice. The aggregate SLA/service-level penalties applicable for any invoice period shall be limited to a maximum of 25% of the total invoice value for that invoice period**.**
3. Recovery of actual costs/losses/damages to Owner/GEL assets shall be in addition to the above SLA penalty ceiling and shall not be considered as part of the SLA/service-level penalties.
4. GEL may, at its sole discretion, waive or reduce the applicable penalty, wholly or partly, if the Bidder demonstrates genuine, unavoidable and duly substantiated reasons for the delay/non-compliance beyond its reasonable control. Such waiver shall be subject to GEL's assessment and approval and shall not constitute a precedent for any subsequent instance.

11. PAYMENT TERMS:

11.1 General Conditions

- Invoicing shall be on a monthly basis per device that is installed, commissioned and operationally live during that month in each GA.
- Where a device becomes operationally live during the month, billing shall be made on a pro-rata basis from the date of successful commissioning/acceptance.
- Monthly invoice to be submitted by the Bidder as per schedule agreed with GEL GA EIC of the following month along with, but not limited to;
  - Device availability report (GA-wise and vehicle-wise)
  - Data logs for the billing month
  - Service Report for respective GA
- The Bidder shall submit invoice on GEL VISA Portal and send all original documents along with covering letter to the respective location EIC.
- Devices installed but not operationally live (offline, unconfigured, or pending GEL acceptance) shall not be counted for billing purposes in that month. “Operationally Live” shall mean that the device has been installed and commissioned, vehicle/device registration and required configuration have been completed, communication with the central platform has been established, specified tracking/AI-camera functions have been successfully tested through SAT, and the device has been accepted/declared operational by the designated GEL EIC.
- No escalation in rates shall be permitted during the contract period for any reason including increase in fuel, manpower, SIM/data costs or any other input cost.

11.2 Phased Go-Live & Billing Commencement

11.2.1 Installation Plan Submission

- Within 30 days of receipt of contract, the Bidder shall submit a Zone-wise / GA-wise Installation Plan, with vehicle-wise schedule, for approval by GEL's designated Engineer-in-Charge (EIC).
- The plan shall be prepared in consultation with GEL's EIC and shall account for vehicle availability, operational schedules and geographic spread.
- Once approved by GEL EIC, this plan shall become the baseline for milestone monitoring throughout the installation phase.

11.2.2 GA-wise Billing Commencement

- Billing shall commence on a GA-wise basis for operationally Live Vehicles.
- A GA shall be considered Go-Live when a minimum of 70% of vehicles in that GA are installed, commissioned and operationally live on the GEL portal by the respective GEL EIC.
- For the purpose of calculating the Go-Live percentage, the eligible vehicle population shall exclude vehicles formally recorded as unavailable for installation due to reasons attributable to GEL or the hired fleet contractor.

- Only vehicles confirmed as operationally live by the respective GEL EIC shall be counted for billing in that month.
- For vehicles installed and live beyond the 70% GA threshold, billing for those additional vehicles shall be included in the same month's invoice for that GA.
- Achievement of the 70% Go-Live threshold shall be treated only as the billing commencement milestone and shall not relieve the Bidder of its obligation to complete the remaining eligible vehicles as per the approved Installation Plan.

11.2.3 Overall Fleet Completion Target

- The Bidder shall achieve overall 100% of the eligible vehicle population handed over/identified by GEL for implementation across all GAs within 180 days from date of Contract.
- GEL may grant a further extension of up to 60 days, subject to satisfactory progress and valid reasons acceptable to GEL EIC.
- Beyond the extended period, delay shall attract Liquidated Damages @Rs. 5000/- per day per GA pending Go-Live, to be deducted from the Bidder's monthly GA invoice.
- The overall fleet completion target and LD provisions shall not apply to vehicles that are unavailable for installation due to reasons attributable to GEL or the hired fleet contractor, provided the Bidder has given prior written intimation to GEL EIC of such unavailability.
- The Bidder shall, however, remain responsible for completing 100% of the eligible vehicle population as per the approved Installation Plan and within the overall implementation period specified in the contract.

Vehicle Go-Live acceptance criterion:- A vehicle shall be considered operationally live only after successful installation and commissioning of the device/devices, device registration, communication with the central platform, GPS tracking, required camera functionality, applicable AI/DMS/ADAS alerts, data transmission and other mandatory functionalities specified in the tender have been successfully verified.

11.2.4 Milestone Monitoring

Across 6 Zones and 31 GAs, milestone monitoring shall be a two-tier structure:

Level	Role	Responsibility	Authority
GA Level	GEL GA Head and CNG O&M EIC	CNG O&M EIC:- Verify and certi vehicle-wise installatio commissioning and operation readiness in GA; sign installatic completion report per vehicle.	**GA Head:-** GA Go-Liv approval

Level	Role	Responsibility	Authority
Zonal Level	GEL Zonal Head	Review GA-wise installation and Go-Liv progress, identify delays/bottlenec and review compliance with th approved installation plan.	Confirm Zone-level Go-Live status based on the Go-Live status of the GA under the Zone.

- The Bidder's Client Manager/Coordinator (ref. Section 5.2) shall be the single point of contact for milestone coordination and shall maintain a live installation tracker on the GEL portal, updated daily, showing GA-wise and vehicle-wise installation status accessible to all GEL stakeholders.
- A fortnightly review meeting between the Bidder's coordinator and GEL EIC shall be held during the installation phase to review progress and resolve bottlenecks. Minutes of such meetings shall be recorded and shared with GEL EIC within 2 working days. Any delay identified during milestone monitoring shall be recorded in the installation tracker along with the reason for delay, responsible party, proposed corrective action and revised target date, wherever applicable.

12. QHSE REQUIREMENT

QHSE GUIDELINE (AS APPLICABLE)

1 Contractor/Service provider…

a) shall ensure that all staff/work force comply with the requirements of the GEL HSE Management System, QHSE policy, standard, procedures, guideline, plan & Life Savers rules at offices / work sites

b) shall ensure issuance of Identity Card to their team members

c) shall arrange work related Personal Protective Equipment (PPEs) for their staff/work force and ensure proper use during the execution of job

d) shall carry out the work within the duty hours/office hours.

e) shall ensure that all Hazards, Near miss, accident, incident, injuries are reported promptly to GEL**.**

f) shall deploy staff & work force trained, qualified and competent for the work and well aware of risks and mitigation action/s for the activities undertaken

g) shall initiate immediate actions to hospitalize injured person(s) in case of any incident / injury case

h) shall ensure use of seatbelts while driving four-wheeler / travelling in four-wheeler and use of crash helmet for Two-wheeler riders during job execution

i) staff/work force shall not smoke or resort to misuse of drugs, medicines or alcohol while on duty

2 Any breach of the QHSE requirements shall be deemed by the company to be a material breach of the terms & condition of the contract. GEL shall be entitled to take appropriate actions including instructing the contractor / service provider to (a) remedy the breach; (b) suspend the work or (c) terminate the contract.

3 All activities shall be carried out as per GEL's documented procedures and QHSE requirements, deviation from it shall be dealt with very strictly

13. GEL SCOPE:

- GEL shall provide GA wise Fleet (CNG LCV/MCV/HCV/LNG Tanker) details along with respective GEL EIC details.
- GEL shall provide vehicle access for installation of the device.
- GEL shall coordinate with fleet operators for vehicle availability.
- GEL will review and provide confirmation/comments on the Reports and documentation submitted by the Bidder. The Bidder shall incorporate the comments/observations of GEL and submit the revised/final Reports and documentation within the stipulated timeline.
- GEL shall provide air-conditioned space with electricity for set up of control centre/room. All other infrastructure is in the Bidder's scope.
- All vehicles are preinstalled with fleet operator provided Vehicle Tracking Device (VTS). Availability of the existing VTS shall not relieve the Bidder of its responsibility to provide all tracking, telematics and vehicle-monitoring functionalities specified under this Scope of Work.
- All Vehicles are also deployed with reverse camera system with parking sensor and functioning LED/LCD screen installed in driver cabin.
- The Bidder shall, wherever required, carry out the installation of the AI Camera-based Vehicle Monitoring System without adversely affecting the functionality of existing vehicle systems, including VTS, reverse camera, parking sensors, LED/LCD display and other OEM/vehicle safety systems. Any integration with existing systems shall be carried out only where specifically required under the Scope of Work.

14. DATA MIGRATION:

In case of Contract Closure/Termination, bidder shall:-

a) Return/transfer all GEL data generated, collected, processed or stored under the Contract to GEL in a commonly usable, structured and machine-readable format, including but not limited to:

- Vehicle and driver master data;
- GPS/telematics data;
- AI/DMS/ADAS event and alert data;
- Driver performance and safety scores;
- Trip and route history;

- Reports and analytics data;
- Event/incident records;
- Video recordings, wherever available and retained under the Contract; and
- Other project-related data/configuration information required by GEL.

b) Data shall be provided in standard, commonly usable formats, such as CSV/XLSX for structured data and MP4 or equivalent standard format for video, along with the required metadata, timestamps and vehicle/driver identifiers to enable further use of the data by GEL.

c) The Bidder shall provide GEL with at least 90 days of read-only access to the portal/system after Contract Closure/Termination, or until completion of data migration, whichever is later, without any additional cost to GEL.

d) During the exit period, the Bidder shall provide reasonable technical assistance to GEL for data extraction, validation, transfer and migration to GEL or to a successor service provider, including required documentation/data dictionaries/API details, wherever applicable.

e) The Bidder shall provide the latest available system configuration, vehicle/device mapping, driver mapping, alert/threshold configuration, report configuration and other relevant project configuration details required for continuity of service.

f) The Bidder shall de-install the devices/equipment supplied under the contract and take back the equipment at no cost to GEL, without any additional cost to GEL. Deinstallation shall be carried out safely without damaging the vehicle or existing vehicle systems.

g) The Bidder shall not withhold, restrict or disable access to GEL's data due to expiry or termination of the Contract, subject to applicable contractual/legal provisions.

h) Upon contract closure, termination or decommissioning of camera/edge unit’s bidder must securely purge/permanent erasure beyond recovery of all data logs and video clippings from their SaaS, local/edge storage and on any backup and a certificate must be issued to GEL for same within 15 days

15. FAT & SAT – Inspection, Testing and Acceptance

Factory Acceptance Test (FAT) and Site Acceptance Test (SAT):

The successful bidder shall carry out Factory Acceptance Test (FAT) and Site Acceptance Test (SAT) of the AI Camera-Based Safety Platform System in accordance with the technical specifications, Scope of Work, approved implementation plan and acceptance criteria specified by GEL.

FAT: Prior to commencement of mass installation/deployment, the bidder shall demonstrate the proposed hardware, software platform and relevant functionalities to GEL at the bidder's premises or at any other location mutually agreed with GEL. The FAT shall include, as applicable, verification of the major hardware

components, AI/DMS/ADAS functionalities, GPS/telematics, communication, in-cabin alerts, SOS functionality, video recording/retrieval, dashboard, reporting, mobile applications, data transmission, alert generation, API/interface capabilities and other critical functionalities specified in the tender.

FAT shall be carried out on a representative system/configuration of the offered solution. Successful completion of FAT shall be recorded through a FAT Report jointly signed by GEL and the bidder**.** FAT shall not constitute final acceptance of the system or release the bidder from its obligation to successfully complete SAT for each vehicle/system deployed.

SAT: Following installation and commissioning, the bidder shall conduct SAT for each vehicle/device and associated platform functionalities at the designated GEL/fleet location. SAT shall verify, as applicable, installation quality, device registration, GPS tracking, communication, camera functionality, AI/DMS/ADAS alerts, in-cabin alerts, SOS/panic functionality, video recording and retrieval, driver identification, data transmission, dashboard visibility, reporting and other applicable functionalities specified in the tender.

The SAT shall be conducted in accordance with an approved SAT checklist/protocol and shall be witnessed/verified by GEL's designated Engineer-in-Charge (EIC). A vehicle/device shall be considered "Operationally Live" only upon successful completion of the applicable SAT and acceptance/certification by the designated GEL EIC.

Any failure/non-conformity observed during FAT or SAT shall be rectified by the bidder at no additional cost to GEL. Re-testing shall be carried out after rectification. Any additional time or cost arising due to rectification of deficiencies attributable to the bidder shall be borne by the bidder and shall not relieve the bidder of the applicable contractual timelines, SLA or other obligations.

GEL may require repeat FAT/SAT or additional verification of any functionality where the demonstrated performance does not conform to the tender requirements. No separate charges shall be payable by GEL for FAT, SAT, re-testing or associated testing activities.

The detailed FAT/SAT checklist and test procedure shall be submitted by the successful bidder and shall be finalized in consultation with and approved by GEL prior to commencement of FAT. GEL reserves the right to verify any parameter/functionality specified in the tender during FAT/SAT.

16. CONFIDENTIALITY:

The Bidder and their personnel shall not, either during the term or after the expiration of this Contract, disclose any proprietary or confidential information related to Service/project, this Contract, or Employer’s business or operations without the prior written consent of the Employer. The Bidder /his employees/agents/representatives shall not communicate or use in advertising, publicity, sales releases or in any other medium, photographs, or other reproduction of the work under this contract or descriptions of the site dimensions, quantity, quality or other information concerning the work unless prior written permission has been obtained from the Owner.

17. CYBER SECURITY AND DATA PROTECTION REQUIREMENTS

Edge/Camera hardware & firmware security

- All camera housings must have active physical tamper-detection microswitch. any unauthorized opening of the unit enclosure must immediately generate a level 1 critical alert on the dashboard and trigger an alert to the GEL O&M team. all physical debug ports (e.g., UART, JTAG, USB diagnostic ports) must be permanently disabled, locked, or protected by unique, non-default cryptographic keys / passwords at the factory level
- The device must execute a secure boot process. the bootloader must crypto validate the signature of the operating system/firmware image using a public key hardcoded into read-only memory (rom) before execution.
- Unused cellular protocols, ad-hoc wireless features, and diagnostic interfaces must be disabled by default. network probing, local network discovery protocols, and unauthenticated control interfaces on the device are strictly prohibited.
- Data privacy & compliance
- The system must strictly avoid storing, transmitting, or processing raw facial images for driver identification. the bidder's ai system must transform facial parameters into an un-reversible biometric template hash.
- The bidder's SaaS portal and mobile apps must provide explicit, multi-lingual consent screen workflows compliant with the DPDP act 2023 prior to capturing driver facial templates
- The bidder guarantees that GEL’s telemetry data, live video records, vehicle trails, and driver metrics are logically isolated within SaaS infrastructure using different DB schemas and crypto local keys. No aggregation, ML baseline training on GEL data for any other purpose for any 3rd party is permitted.
- Logging, auditing & incident response
- The SaaS platform must generate comprehensive application logs for all user activities, including configurations, video download requests, live stream sessions, account creation, and threshold adjustments. audit logs must be retained for 12 months, protected from unauthorized modification or deletion, and forwarded to GEL's central command and control system via API endpoints.
- In the event of a suspected or confirmed security breach, unauthorized data access, cloud leak, or device-level compromise within the bidder's ecosystem, the bidder must notify GEL’s SPOC and the Contract in Charge within six (6) hours of detection.
- The bidder shall fully indemnify, defend, and hold harmless GEL from and against any direct financial penalties, legal liabilities, compliance fines under the DPDP act 2023, and remediation costs resulting directly from data breaches, software vulnerabilities, or credential leaks attributable to the negligence or architectural deficiencies of the bidder's platform.