

**SECTION B - SCOPE OF SERVICES:****5.1. Background:**

MCDOT is seeking a qualified Contractor to design, develop, and implement a state-of-the-art Bus Simulator System to enhance training, skill development, and evaluation of bus drivers. The simulator aims to replicate real-world driving conditions in a controlled, immersive environment, preparing drivers for various operational challenges, safety procedures, and emergency responses. The system must include advanced AI-based traffic control, dynamic weather effects, and realistic bus handling. It should also support real-time analytics and performance tracking to assess driver behavior and provide actionable feedback.

**5.2. Intent:**

The intent of this RFP is to procure a best-in-breed, highly capable Bus Simulator System for the purpose of enhancing training capability. The system must be able to emulate specific (or dynamic) driving conditions and scenarios, produce and provide operator training content, quizzes, and tests, and provide actionable reporting and feedback of the same.

The system must be able to retain and report individual and group testing scores and other real-time and historical analytics.

The system should include advanced AI-based traffic control, dynamic weather effects, and realistic bus handling.

**5.3. Scope of Services:**

The scope of this project includes the end-to-end design, development, installation, and commissioning of a Bus Simulator system, ensuring comprehensive training, evaluation, and certification capabilities for bus operators. The Contractor will be responsible for hardware, software, testing, training, and ongoing maintenance, support, & any associated software licensing.

**5.4. Contractor's Qualifications**

The Contractor shall possess the required experience, staffing, skills, and knowledge to meet the objectives as outlined and defined below.

**5.4.1. Design and Specifications:**

- Define and document detailed system architecture, covering hardware, software, network, and integration aspects.
- Develop high-fidelity simulation models that incorporate accurate physics-based vehicle dynamics.
- Design an ergonomic and user-friendly dashboard, control interfaces, and adjustable driver seat.
- Integrate multi-sensory feedback mechanisms such as vibration, sound, and force feedback for an immersive experience.
- Ensure sustained compliance and interoperability with current and evolving national and international transit training standards applicable to bus operations and safety, including but not limited to FTA and NHTSA guidelines. The proposer must demonstrate the ability to integrate with future bus technologies to include:
  - New vehicle models – To cover most, if not all major bus brands (Gillig, NewFlyer, Proterra, etc.)
  - Safety systems – To cover all federal, state, and local published safety
  - Operational features— To cover all federal, state, and locally required features and standards.

- All relevant simulator model upgrades, maintenance, and software updates for the duration of the contract and any subsequent extension of the contract term.

#### **5.4.2. Hardware Supply and Installation:**

Provide and install the full simulator setup, including:

- Driver seat with force-feedback steering, pedals, and adjustable mirrors.
- Realistic dashboard with functional controls, indicators, and displays.
- Multi-screen visual display system for an immersive experience.
- Sound system simulating road noise, vehicle alerts, and environmental sounds.
- Ensure ADA compliance and accessibility options.

#### **5.4.3. Software Development and Configuration:**

- Develop customized simulation software supporting:
  - Urban, suburban, rural, and highway driving scenarios.
  - Dynamic weather (rain, fog, snow, etc.) and lighting conditions.
  - Traffic AI simulating real-world driving behavior and rule compliance.
  - Emergency handling, including mechanical failures, tire blowouts, and road hazards.
  - Integrated training modules with interactive scenarios and real-time feedback.
  - Include a user management system for tracking individual driver progress.
  - Provide remote system management capabilities for trainers and administrators.

#### **5.4.4. Testing and Quality Assurance**

- Conduct hardware-software integration testing.
- Perform system stress testing under extreme conditions.
- Execute User Acceptance Testing (UAT) with MCDOT representatives.
- Validate accuracy of simulation physics, traffic AI, and environmental interactions.

#### **5.4.5. Training and Documentation**

- Vendor to provide manual and documents (e.g. Users' Guide, Useful Tips, Quick Start) as related to the bus simulator product to the County. This includes any available online training and diagnostic help for the hardware and software.

#### **5.4.6. Support and Maintenance**

- Offer 24/7 remote and on-site technical support for at least one-year post-deployment.
- Provide software and/or hardware roadmap for future release that include future functionality
- Provide regular software updates as they become available to improve simulator performance and training modules.
- Implement preventive maintenance schedule for hardware longevity.

### **5.5. Contractor's Responsivities**

- Allocate qualified technical and project management personnel.
- Provide regular progress updates and participate in review meetings.
- Ensure compliance with safety, quality, and regulatory standards.
- Handle installation, integration, and deployment of the simulator.

## 5.6. County/MCDOT Responsibilities

- Provide access to project stakeholders and training personnel.  
Ensure timely approvals for deliverables and design milestones.5Facilitate end-user participation in UAT and feedback sessions

## 5.7. Reports/Deliverables

Project completion will be based on:

- Successful delivery and installation of all hardware and software components.
- Passage of system testing, stress testing, and UAT.
- Operational training completion and documentation handover.
- Final sign-off from MCDOT on full system functionality.

### 5.7.1 Documentation Deliverables:

The Contractor shall provide the following deliverables:

- Documentation Deliverables:
  - Design Documents – System specifications and technical architecture.
  - Testing Reports – Integration testing, performance validation, and UAT results.
- Deliver detailed manuals, including:
  - Instructor Guide: Operating procedures, training programs, and troubleshooting.
  - Technical Guide: System maintenance, software updates, and hardware servicing.
  - User Guide: Driver interface, scenario navigation, and performance feedback interpretation.

### 5.7.2 Hardware Deliverables:

- Fully installed and operational simulator system with all components.

### 5.7.3 Software Deliverables:

- Fully developed bus simulation software with dynamic AI traffic and pedestrian interactions.
- Weather effects, day-night cycle, and emergency handling.
- User management, instructor tools, and performance analytics.

### 5.7.4 Training and Support Deliverables:

- Training sessions for instructors and administrators.
- Post-deployment support plan, including software updates and maintenance schedule.

### 5.7.5 Project Timeline and payment schedule:

Offerors to provide a detailed project schedule that conforms to the deliverable table below.

See table below for deliverables & payment schedule. Durations commence at Notice-To-Proceed (NTP):

<b>Milestone</b>	<b>Due Date (Days)</b>	<b>Payment Milestone</b>
Project Kickoff	NTP + 14	10%
Project Schedule	NTP + 14	-
Requirements Document	NTP + 14	-
Design Documents (As-Builts)	NTP + 26	-
Testing Reports	NTP + 26	-
System Prototype Installation & Acceptance	NTP + 29	30%
Simulation Operating Software Acceptance	NTP + 56	20%
System Prototype Testing/QA	NTP + 66	-
Training Schedule, Syllabus & Training Material	NTP + 69	-
Final Acceptance & Go-Live	NTP + 70	40%

Note: System warranty and support to be billed annually on contract anniversary date beginning Year 2 (first year warranty and support to be included in price). For contract duration plus five (5) additional years.