PART A REQUEST FOR INFORMATION (RFI)			
Tender number	**E1027DXMWP**		
Description of the works/goods/services	**RFI for Eskom Academy of Learning (EAL) Smart Village**		
Deadline for submission	**25 March 2025**	**At (South African Standard Time)**	**10h00am**
Tenders are to be submitted electronically via Eskom E- tendering site by the stipulated closing date and time. **Please note it is the responsibility of the supplier to ensure that the tender submission is submitted before the closing time.**	**Eskom E- tendering site: https://eTendering.eskom.co.za**		

Eskom Holdings SOC Ltd ("Eskom") invites you to submit an:

Request for information (RFI) to submit information for the works/goods/services as stated in the table. This RFI is a stand-alone information-gathering and market-testing exercise, intended only to inform and assist Eskom's further deliberation and development of a strategy for the Eskom Academy of Learning (EAL) Smart Village. Eskom may request indicative prices if so, stated in this RFI.

Introduction:

The Eskom Academy of Learning will be transformed into a Smart Campus, serving as a demonstration and development centre for the integration of cutting-edge digital technology to increase the reliability, security, efficiency and introduction of new products to customers. The EAL Smart campus will resemble a modernized Distribution power system that focuses on the development of new architectural concepts, digital transformation, tools, and technologies that measure, analyse, predict, protect, and control the grid of the future, as well as the facilitation of more rapid development skills and training that support the future digital workforce.

To further prepare the workforce and the entire country for these changes, Eskom Distribution and EAL will collaborate to create renewable training centres through supplier and educational institution partnerships. This will be a novel approach to spreading smart grid expertise across the entire country. The EAL renewable centres will act as a hub for idea sharing, collaboration, teaching, and training. It will also give staff, students, and industry partners access to a range of energy solutions and suppliers while displaying technology, knowledge, and services. Employees and other stakeholders (suppliers or vendors) are involved in the development of innovation in practical environments with a particular focus on employee, student, and industry partner empowerment and real-world experimentation. This SMART Campus will leverage their respective expertise and experiences in the technical and establishment of modernized grid for training purposes, as well as to develop skills relevant to their common objectives in building digital skills for the country considering the changing distribution energy landscape.

This RFI will focus on 3 main streams for the EAL Smart Campus initiative namely: Smart Campus, Training Centres (Legacy, Renewable and Smart Grid Labs) and IT/Telecoms.

The objective of the Request for Information (RFI) is to:

- To gain a holistic understanding of a smart city's development, operation, and impact, providing insights into its technological advancements
- To obtain industry best practices when developing a smart village.
- To obtain industry information on the latest technology within the three streams.

The objective of the smart village is to build digital skills for the country considering the changing distribution energy landscape.

Eskom Representative

Ms. Samukelisiwe Ngobese

Officer procurement

Tel: (017) 648 0079

Email: NgobesSu@eskom.co.za

RFI Clarification meeting:

Date: 14 March 2025

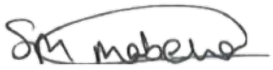
Venue: MS Teams

Link: **Join the meeting now**

Eskom has delegated the responsibility for this RFI to the signatory of this document, whose details can be found below.

We look forward to receipt of your response.

Yours faithfully

Name	Designation	Signature	Date
Susan Mabena	***Middle Manager Procurement***		**05 March 2025**
Telephone number	(013) 699 7431	**Fax and/or e-mail address**	mabenasu@eskom.co.za

PART B **RESPONSE SHEET IN TERMS OF A REQUEST FOR AN EXPRESSION OF INTEREST/ REQUEST FOR INFORMATION** **To be completed by the supplier**			
To	**Eskom Holdings SOC Ltd**	**Date**	
Attention	**Samukelisiwe Ngobese**		
Tel no	**017 648 0079**	**Fax no and /or e-mail address**	**NgobesSu@eskom.co.za**
From		**Address**	
Address			
Sender			
Description of the works/goods/services	**RFI for Eskom Academy of Learning (EAL) Smart Village**		

The Senders are requested to provide the below returnables:

- **Original response document plus one copy (both in paper form)**
- **USB**

NB: Senders should ensure that the details of the company name, company representative and contact details are submitted as Eskom would like to come to site or request the Senders to come to Eskom premisses to present their proposals.

Please submit the following information

No.	Please submit the following information
1.	Your contact's name and contact details.
2.	Company registration number
3.	Brief description of previous experience and Description of the solution that you can offer.
4.	Indicative prices (optional and only for use of RFI's)
5.	If your proposal aligns with Eskom's requirements, you may be requested to present the proposed solution.

6. Smart Campus

Eskom has identified the Eskom Academy of Learning in Midrand as a suitable site to be developed into a smart city. The Eskom Academy of Learning (EAL) is built on 105 hectares of land and surrounded by a 3.9km radius High Security Mesh Fence perimeter. There are 39 buildings on site, which cater for diverse business operations specialising in among others, training and development, conferencing, hospitality, accommodation, information and communication technology and a business office environment.

The aim of this RFI is to gain a holistic understanding of a smart city's development, operation, and impact, providing insights into its technological advancements. Developing this campus to function as a smart city will allow the development of a "digital twin" of the buildings, services and asset known as building information models (BIM). The 3D BIM model, which contains detailed information about the building's structure, systems, and components, forms the basis for visualisation and analysis in the digital twin.

This will allow asset managers to understand, manage, predict and optimise the performance of the buildings, services and functions in real time. A full understanding and break of what a smart city is and its functions is required. Some of the key smart city functional areas where detailed information is required include the following:

No.	Question	Please indicate your response in this column
1.	**General Overview** • What is the vision or primary objective of the smart city initiative? • How does the smart city framework align with sustainable development goals?	
2.	**Technology and Infrastructure** • What types of technologies are being implemented (e.g., IoT, AI, big data)? • What are the building information modelling and management requirements in order to achieve a digital twin of assets? • How is connectivity infrastructure managed (e.g., 5G, fiber-optic networks)? • What smart systems are used for traffic management and transportation? • What are the types of building management systems (BMS) that are available? • Are there individual BMS per building linked to a Central BMS? What are all the relevant services linked to the BMS (power, lighting, water, HVAC, fire systems, security, cctv, access control) and how do they function or integrate with each other? • What types of automated systems for controlling lighting, heating, and security in buildings are used?	
3.	**Energy and Environment** • What renewable energy *solutions* are integrated into the power reticulation? • How does the smart city manage energy efficiency and consumption in terms of Demand Side Management? • What measures are in place for sustainable waste management and recycling? • Air quality monitoring systems?	
4.	**Mobility and Transportation** • What smart transportation options are available (e.g. smart parking)? • How is traffic congestion monitored and reduced using smart technologies?	

	• Are there provisions for autonomous or connected vehicles and EV Charging management?	
5.	**Public Services and Governance** • What smart governance systems are used for public administration and employee/visitor engagement? • How does the city provide access to real-time data for residents, employees and visitors (open data initiatives)? • What platforms exist for employee/visitor participation and feedback?	
6.	**Safety and Security** • What technologies are in place for public safety (e.g., smart surveillance, emergency response systems)? • How is cybersecurity handled to protect smart infrastructure and citizen data? • What fire detection and protection systems form part of a smart city (BMS links)? • Is your system (PSIM) compatible with other hardware solutions? • Can your system be managed from a nerve centre and does it support remote access? • How often do you provide software updates, and will you consider including them in the package? • Do you offer maintenance plan and support for the systems?	
7.	**Education** • EAL serves to host and provide training facilities for students. How are smart technologies used in educational institutions and e-learning platforms? • Are there programs for digital literacy and training for residents?	
8.	**Sustainability** • How does the smart city manage its carbon footprint and climate resilience? • What strategies are in place for water conservation and pollution reduction? • What are the Predictive Maintenance and Optimisation functions?	
9.	**Accessibility and Inclusion** • How are smart city features designed to be inclusive for all demographics?	

	• What programs support equal access to technology and services?	
10.	**Performance Metrics and Impact** • How is Performance Monitoring and Analysis achieved? • How is the success of the smart city initiative measured? • What key performance indicators (KPIs) are tracked?	
11.	**Data collection and processes** • How is data collected and assessed? (data can be gathered from various sources, such as BIM models, IoT sensors, facility management systems, and historical records)? • How is data processing and integration achieved when taking the raw sensor data and merging it with the BIM data in order to make it meaningful to the end user? • What platforms are used to visualise and interact with? (i.e user-friendly interface that allows stakeholders to interact with the virtual representation.)	

7. Training Centres and Smart Grid Labs

7.1. Training Centre (Legacy and Renewable)

Eskom endeavors to establish a renewable energy training centre at its Academy of Learning. Currently there is a building called Hi-bay which will be converted into a renewable energy training centre. The centre will provide training from an advanced engineering level down to basic renewable energy skills such as mounting solar panels. The centre will also provide a laboratory capability for testing technologies and principles as well as experimentation. The centre will serve as a dual-purpose renewable energy hub to be used for providing electricity to the complex by means of renewable sources and serve as a training centre of excellence for renewable energy.
Training in the theory, design, installation, operation, and maintenance of renewable energy systems, such as solar photovoltaic, battery energy storage systems, wind energy, the hydrogen economy and Gas as well as hydroelectric and pump storage schemes. The centre will also make use of modern digital technologies such as virtual reality and artificial intelligence.

Changes to the energy landscape and modernization of the Eskom Distribution Grid require that Quality of Supply (QoS) also monitors the changing landscape. The effects of new technologies must be quantified. Eskom therefore endeavors to establish a smart grid training laboratory at its Academy of Learning. The Smart Campus will provide an opportunity for Eskom to interrogate QoS. For example, in a collective grid modernization environment, artificial intelligence electric vehicles

etc. be considered. In a controlled environment with all new technologies – including a platform for QoS Installation authorizations in future, new instruments can be taught.

No.	Question	Please indicate your response in this column
1.	Eskom seeks to establish a modern renewable energy training centre equipped with state-of-the-art technologies, offering a sleek, refined design, futuristic look, and ambiance at its academy of learning. A building called Hi-bay within the academy will be transformed into the renewable energy training centre. What is available on the market (tools, hardware, software, workbenches, training benches etc.)? - Can you provide visual architectural rendering of how the training labs of the future that you may offer will look like - this gives an idea of the look and feel of the training lab environment - it should look and feel different. -What renewable technologies are available for training? (Eskom are considering, solar photovoltaic, wind energy, battery energy storage systems, hydro, green hydrogen, virtual reality training tools, gamification for training, modern digital training technologies)	
2.	What renewable energy and smart grid training programme(s) (and courses) are available? - Assessment of existing renewable energy and smart grid related (registered and non-registered) courses to be included in the programme(s). - Provide information on courses (description, approximate costs, duration, accreditations etc.). - What training is available, how is it delivered and provide information on the training material? - Include information on solar photovoltaic, battery energy storage systems, wind, modernised smart grid technologies. - Are there “Train the trainer” initiatives? - Provide information on course and programme accreditations, registrations, NQF levels, certification, SAQA etc. What will the student have to show when they have completed the programme/courses? - What accreditations will the training institution need to deliver these programmes/courses. - Accreditation of QCTO occupational learning programmes	

3.	Eskom seeks to establish a digital training centre and digitalisation of learning programmes and platforms. What is available to achieve this? - To provide digitalised learning experiences through adaptive learning software and interactive platforms. - Online learning modules and assessments - Personalised feedback and progress tracking - Virtual collaboration tools - Automated training cost recoveries - Training curriculums delivery, assessment, and moderation -Equipe classrooms with interactive whiteboards/smart boards (IT department are willing to purchase these as an IT asset), high speed wi-fi, Virtual Reality technology, and collaboration learning tools. - Data analytics to track student performance, optimise resource allocation, and improve administrative processes. - Simulators	
4.	Eskom seeks to establish digital transmission and distribution substations for training. What is available on the market? Is this feasible?	
5.	Eskom seeks to procure/develop a Mobile simulator of a power station (on a trailer) or virtual power station that personnel can interact with using goggles. What is available on the market?	
6.	What Information Technology upgrade are required to meet these technological training advancements?	
7.	What is available for the processing of payments for external students/learners i.e. students that are not Eskom employees.	
8.	Digital technologies have a shorter lifespan. What are the typical lifecycles for these new technologies?	
9.	Eskom would like to adopt interactive smart boards for administrations and learning at its academy of learning. What specifications are available on the market?	

7.2. Smart Grid Labs

The South African electrical distribution grid land scape is evolving and requires a modern grid design that incorporates distributed energy resources, a participative energy market, and increased customer awareness to meet their expectations. This requires modern technologies and systems that can integrate seamlessly, has controllability, visibility, and has modernized technology components that will unlock significant new value for the Distribution grid and its customers.

To respond to these changes, Eskom needs to develop a Smart Grid Laboratory with integrated technologies. The Lab is aimed at co-creating innovation through the involvement of employees in a real-life setting. Smart Grid training Lab will provide a training environment to test and demonstrate the real-time operation of Smart Grid solutions that will make it possible to safely assess different scenarios, such as very high Distributed Energy Resources (DER) penetrations, contingencies, etc.

This project focuses on the establishment of a smart grid training laboratory for skills development.
Target users:

- Eskom workforce
- Higher Learning Students
- Municipalities
- Industry partners
- High School Learners

No.	Question	Please indicate your response in this column
1.	Develop an advanced multi-disciplinary laboratory that leverage cross-supplier expertise to facilitate training, skills development and knowledge transfer of smart grid skills and competencies required to modernize the power grid. Designed to perform advanced training, testing and evaluation of smart grid enabling technologies and energy systems. To include a real-time digital simulator that can perform smart grid device functional testing, system integration, real-time power system analysis.	
2.	Provide undergraduate, post-graduate, and professional training in grid modernization as well as hardware (protective relays, smart meters) and software training. Training laboratory for testing high-speed communications and real-time system studies.	
3.	**Project Components** • Supervisory, Control and Data Acquisition (SCADA) - Network Manager • Advanced Distribution Management System (ADMS) • Protection • Automation	

	• Telecommunication and Telecontrol • Last Mile Telecommunication • Metering • Direct Current (DC) Supply • RTDS – Simulators • Substation Networks – Network Tools • Custom Development environment (Python scripts, etc) • Cyber security	

8. IT and Telecommunications

Four workstreams have been established for the program and the Eskom Group IT division will need to capacitate each stream from a Digitalisation and technology perspective.

- Workstreams: The SMART Village initiative for EAL has been finalised into 4 main streams namely:
- Smart Village (includes digitisation, PV roof tops and DS Management)
- Smart Training and Training Facilities (includes training centres and smart labs)
- Information Technology and Telecommunications (includes all IT upgrades for EAL site)
- E-Mobility (includes distribution fleet electrification and charging infrastructure)

8.1. General Questions (Applicable to All Work Streams)

No.	Question	Please indicate your response in this column
1.	How would your organization approach the development and implementation of a Smart Village within the energy sector, ensuring alignment with industry's best practices?	
2.	What key success factors would you prioritize in delivering a Smart Village project?	

3.	How can sustainability and energy efficiency be embedded across the four work streams?	
4.	What innovative business models would you recommend to ensure financial sustainability and revenue generation for the Smart Village?	
5.	What challenges have you encountered in similar projects, and how would you propose mitigating them?	
6.	What key performance indicators (KPIs) would you suggest to measure the success of the Smart Village initiative?	
7.	How would you ensure compliance with regulatory requirements and industry standards in South Africa?	
8.	What partnerships or collaborations would you recommend for a successful Smart Village implementation?	

8.2. Smart Village (Digitization, PV Rooftops, and Demand-Side Management)

No.	Question	Please indicate your response in this column
1.	How would your organization implement digitization to optimize Smart Village operations and improve energy efficiency?	
2.	What proven Capability and Technology is available and effectively used in the Market to improve Learner / Visitor Experience as well as Ambience Management at the Smart Campus?	
3.	What strategies would you propose to effectively integrate PV rooftop installations with the existing grid infrastructure?	
4.	How would you manage demand-side energy consumption to enhance sustainability and reduce costs?	
5.	What technologies and platforms would you recommend for real-time energy monitoring and optimization?	
6.	Which non-intrusive Technology and Solutions exist to effectively manage Campus Security?	
7.	How would you leverage IoT and Digital Twins to improve operational efficiency within the Smart Village?	
8.	How can the Smart, IoT and End-Point Devices be securely managed and effectively tracked with the least amount of effort (including Smart Equipment for Labs and Classrooms)?	
9.	How can the different Platforms and Software used for PV, DMS, EV, IoT, Digital Twins, etc be integrated to have a holistic Control Centre overview of all these Operational Insights?	
10.	As there are a myriad of Use Cases and Scenarios for gathering Data and Insights, what Analytics would add real value to the Learner, the Operational Management	

	of Learning as well as the Operational Management of the Smart Campus and its Infrastructure?	
11.	What financing models would you suggest for deploying renewable energy solutions?	

8.3. Smart Training and Training Facilities (Training Centres & Smart Labs)

No.	Question	Please indicate your response in this column
1.	How would you propose modernizing training facilities to incorporate smart technologies and digital learning methods?	
2.	What solutions would you recommend for incorporating virtual and augmented reality (VR/AR) into technical training programs?	
3.	How would you integrate smart labs with real-world operational environments to enhance hands-on learning?	
4.	What infrastructure and technologies would you suggest for developing a future-ready training center?	
5.	How would you address potential challenges in implementing a digital learning environment for technical skills?	
6.	Which aspects of Personalisation of a Smart Campus and Smart Learning Offerings would be effective to improve User Experience?	
7.	What measures can be put in place to ensure Technology advancement in Labs and Training Centres remain abreast of emerging Technology and remain relevant?	
8.	What partnerships or industry collaborations would you suggest to enhance training outcomes?	

8.4. Information Technology and Telecommunications (IT Upgrades for EAL Site)

No.	Question	Please indicate your response in this column
1.	How would you recommend upgrading IT infrastructure to support the Smart Village initiative effectively?	
2.	What cybersecurity measures would you propose to protect critical infrastructure and IoT and ensure data privacy?	
3.	How would you leverage 5G and edge computing to enhance connectivity and operational efficiency?	
4.	What strategies would you suggest for integrating IoT devices with existing IT systems?	
5.	How would you propose utilizing cloud computing to manage Smart Village operations?	
6.	What network architectures would you recommend to support interconnected smart systems?	
7.	What AI Capabilities currently exist for typical Smart Campus offerings that improve and enhance User and Learner Experience?	
8.	How would you implement predictive maintenance and AI-driven analytics for operational efficiency?	
9.	What proven options are available to enhance situational awareness for Visitors on Campus Sites?	

8.5. E-Mobility (Fleet Electrification & Charging Infrastructure)

No.	Question	Please indicate your response in this column
1.	How would you approach the transition of our organization's fleet to electric vehicles (EVs)?	
2.	What infrastructure would you recommend for supporting a large-scale EV fleet deployment?	
3.	How would you strategically deploy EV charging stations to maximize coverage and efficiency?	
4.	What technologies would you suggest for integrating EV infrastructure with renewable energy sources?	
5.	What proven Digital Platforms are available for the African Market that Eskom can adopt to effectively deliver and manage, the Sales and Payment, the Charging, the Distribution and the Coordination of Infrastructure Suppliers for Electric Vehicle Charging Services?	
6.	How would you optimize charging schedules to balance energy demand and supply?	
7.	What financial models and incentives would you recommend supporting fleet electrification?	
8.	How would you address operational challenges related to EV adoption and infrastructure rollout?	

Yours faithfully

Name	Designation	Signature	Date
Telephone number		**Fax and/or e-mail address**	