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MINISTRY OF WATER AND ENERGY
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MINISTRY OF WATER AND ENERGY

TERMS OF REFERENC PREPARED FOR HIRING

Consultancy firm for the yerification of DLR 8.2 (INSTALLATION of Advanced Metering Infrastructure for 35,000 large customers) and DLR 8.5 (Program Description Implementation of the initial phase of customer indexing and low voltage network mapping for 150,000 customers by July 7, 2026.)

June, 2026

Background

The parent National Electrification Program (NEP) was financed by a combination of government and customer contributions, as well as US\$375 million in World Bank support under the Ethiopia Electrification Program, which was approved by the World Bank's Board of Directors on March 1, 2018, and signed between the Federal Democratic Republic of Ethiopia and the World Bank on March 9, 2018. ELEAP is one of the largest electrification programs in Sub-Saharan Africa and the first Program for Results (PforR) in the energy sector in Ethiopia. The parent Program has achieved remarkable results to date in provision of grid and off-grid connections, as well as in sector capacity strengthening.

In February 2023 the Government of Ethiopia (GoE) requested additional financing in the amount of SDR 188.2 million (US\$250 million equivalent) to increase the Program's development impact on the ground. The World Bank Executive Directors approved (March 2023) an additional credit of SDR 188.2 million (equal to US\$250 million) for the continuation of the Ethiopia Electrification Program (ELEAP, P160395) with an effectiveness date of November 8, 2023. The additional financing supports the financing of expenditures associated with: (a) an increase in grid connections to support the universal electricity target of the NEP; (b) the expansion and result modification (in response to lesson learnt during parent Program implementation) across other key disbursement linked indicators (DLIs) to incentivize investments around Program priorities and action-taking; and (c) the introduction of a new DLI in support of enhanced utility performance and revenue collection. The Program applies the PforR Instrument, which disburses funds based on results achieved. The Program has three results areas:

- i. increase access to on-grid electricity in areas covered by the power grid,
- ii. increase access to off-grid electricity and
- iii. Strengthen sector capacity and institutional reform.



Indicators and outcomes within each of the Results Areas have been defined to monitor the progress of the Program. A set of these indicators will be used as DLIs of the Program; the remaining will be monitored through the Program Results Framework.

Disbursements under ELEAP are governed by a set of Eight (8) Disbursement Linked Indicators (DLIs):

- i. DLI1: Establish on-grid electricity connections;
- ii. DLI2: Establish off-grid electricity access;
- iii. DLI3: Strengthen sector institutional capacity;
- iv. DLI4: Strengthen sector planning capacity;
- v. DLI5: Strengthen fiduciary systems;
- vi. DLI6: Improve gender and citizen engagement (CE) systems;
- vii. DLI7: Strengthen safeguards systems
- viii. DLI8: Strengthen operational and financial performance of the utility



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Technical requirements for achieving the DLIs have been included in the Program Action Plan as well as the Program Operation Manual. IDA¹ Credit proceeds will be disbursed against submission, to the World Bank, of the IVA's Program Results Verification Report (RVR) on the achievement of the disbursement linked results (DLRs) under each DLI. The EEILEO² will present the Program RVR to the World Bank by the end of the calendar year. In line with the World Bank's policy for PforR³, MoWE will retain independent verification agencies (IVAs) on terms of reference (ToRs) acceptable to the World Bank to verify the achievement of DLI results. Verification will be carried out on an annual basis.

Implementation Arrangements

Under the implementation arrangements of the ELEAP, Ministry of Water and Energy (MoWE) is responsible for verifying the achievement of the targets of the Program. Within MoWE, the EEILEO is responsible for Program oversight and monitoring progress. The EEILEO will rely on other sector agencies, including the Ethiopian Electric Utility (EEU), to facilitate the successful implementation of the goals and objectives of the ELEAP. In addition, a Steering Committee will provide high-level strategic direction and policy guidance to the EEILEO.

Verification

In line with the World Bank's policy for PforR, MoWE retains independent verification agencies (IVAs) under ToRs acceptable to the World Bank to verify the achievement of DLR results. MoWE will engage the awarded IVA of this ToR to conduct surveys with an agreeable sample size (determined by ISO standards for sampling or equivalent Ethiopian standards) for results to be verified under *DLR#8.2 Installation of Advanced Metering Infrastructure for 35,000 large customers by July 7, 2025 and DLR 8.5 Implementation of the initial phase of customer indexing and low voltage network mapping for 150,000 customers by July 7, 2026.*

¹ International Development Association, World Bank

² Electrification and Energy Information Lead Executive Office (formerly Directorate of Electrification)

³ Program-for-Results



General objectives of the Assignment

To undertake an independent verification of the achievement of **DLR 8.2** and **DLR 8.5** under the Program by assessing and validating the installation and operational status of Advanced Metering Infrastructure (AMI) for 35,000 large customers, and the implementation of the initial phase of customer indexing and low-voltage (LV) network mapping for 150,000 customers, in accordance with the agreed Program requirements, technical standards, and verification protocols.

Specific Objectives of the assignment

To ensure credibility, transparency, and effectiveness of the program, MOWE seeks an independent verification agent (IVA) consultant. The objective of the assignment is to verify and produce a Results Verification Report (RVR) for:

- (i) DLR#8.2 Installation of Advanced Metering Infrastructure for 35,000 large customers by July 7, 2025, and;
- (ii) DLR#8.5 Implementation of the initial phase of customer indexing and low voltage network mapping for 150,000 customers by July 7, 2026.

Scope of Work

The scope of work under this assignment includes desk-based data and documentation review, and field verification of achievements documents within MOWE and EEU to determine compliance with the program DLIs. The awarded IVA will prepare Program Results Verification Reports (RVR) satisfactory to the World Bank, MOWE, and EEU on results achieved under DLR#8.2.

Verification Guidelines for DLIs and DLRs under the Ethiopia Electrification Program (ELEAP)



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The following verification guidelines shall be followed and applied in the verification of the DLR. **These guidelines cover only DLR#8.2 under ELEAP.**

DLR#8.2: Installation of Advanced Metering Infrastructure for 35,000 large customers by July 7, 2025. The verification of DLR#8.2 must be done following the definitions, procedures, methodologies, timeline, and reporting guidelines presented below. The Independent Verification Agency (IVA) must ensure the availability of enough staff/personnel capacity and the right skillsets to complete the required tasks. For DLR#8.2, the person(s) leading the verification and reporting must have knowledge in sampling, survey design and applications, and be familiar with Advanced Metering Infrastructure (AMI) deployment, system configuration, network configuration and electrification and technical/quality standards. It is the duty and responsibility of the IVA to ensure the availability of adequate staff and application of the guidelines below.



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Disbursement Linked Result (DLR)	Definition of Achievement	Source of information	Procedure and Methodology	Timeline
DLR#8.2: Installation of Advanced Metering Infrastructure for 35,000 large customers by July 7, 2025.	Number of AMI metered customers, in compliance with EEU AMI quality standards (agreed with the WB).	(i) Owners Engineer and Internal EEU reports (ii) Phone survey sampling (iii) On-site verification of quality standards (using sub-sample)	(i) Review reports from the OE for the supply and installation of AMI for the 50,000 large customers (if existing) to confirm adequate execution of works for installation of the meters and functionalities of HES and MDM software. In case the contract was executed without participation of OE, internal reports of EEU should be reviewed. (ii) Conduct visual inspections of <i>representative (based on ISO standards for sampling or equivalent Ethiopian standards)</i> samples of the universe of customers with AMI to confirm integrity of the metering premises (smart meters and auxiliaries) and good performance of communication between meters and HES and MDMS.	The results verification report is expected to be completed by August 30, 2026.



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Scope of Work for DLR 8.5

The scope of work under this assignment includes desk-based data and documentation review, and field verification of achievements documented by the MOWE and EEU to determine compliance with the program DLIs. The contracted IVA will prepare Program Results Verification Reports (RVR) satisfactory to the World Bank, MoWE and EEU on results achieved under DLR#8.5.

Verification Guidelines for DLIs and DLRs under the Ethiopia Electrification Program (ELEAP)

The following verification guidelines (and their appendixes) shall be followed and applied in the verification of the DLI and DLR. **These guidelines cover only DLR#8.5 under ELEAP.**

DLR#8.5: Implementation of the initial phase of customer indexing and low voltage network mapping for 150,000 customers by July 7, 2026. The verification of DLR#8.5 must be done following the definitions, procedures, methodologies, timeline, and reporting guidelines presented below. The IVA must ensure the availability of enough staff/personnel capacity and the right skillsets to complete the required tasks. For DLR# 8.5, the IVA staff leading the verification and reporting must have knowledge in sampling, survey design and applications, and proven experience in electrical distribution network consultancy or similar assignments involving GIS and field-based data collection. Proven technical capacity to manage teams, conduct quality control, and deliver GIS-compatible datasets and GIS software. It is the duty and responsibility of the IVA to ensure the availability of adequate staff and application of the guidelines below.



Disbursement Linked Result (DLR)	Definition of Achievement	Source of information	Procedure and Methodology	Timeline
<p>DLR#8.5: Implementation of the initial phase of customer indexing and low voltage network mapping for 150,000 customers by July 7, 2026.</p>	<p>Implementation of GIS based consumer indexing (customer network links) and asset mapping Mapping of all customer connection cables and addition of customers with their connection cables to EEU connectivity model Completion of a geodatabase for all EEU customers. Establish customer data post processing mechanism The network database (Geo database) to be linked with the customer database.</p>	<p>(i) Analysis of the consultant deliverables received from the client on desktop review. (ii) On-site verification of quality standards (using sub-sample)</p>	<p>(i) Verification methodology for GIS-based network modeling involves systematic steps (<i>data verification, topology verification, model logic verification, cross-validation with external data, etc</i>) to ensure that the network model accurately represents the real-world spatial and attribute data and functions as intended. (ii) Verify GPS coordinates of point of supply and DT and connectivity indicated in EEU's GIS database (<i>20 meters tolerance is accepted</i>) of a representative (based on ISO standards for sampling or equivalent Ethiopian standards) sample of the universe of 150,000 points of supply (customers) connected to DTs through overhead/aerial lines.</p>	<p>The results verification report is expected to be completed by August 30, 2026.</p>



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Deliverables

Deliverables will be in the form of a results verification report and will be submitted in English. The report should be submitted through 3 hard copies and soft copies as well. In addition, all the data and information collected should also be submitted.

- Inception Report submitted within one month to MoWE. The inception report should provide the detailed methodology for verification of DLR#8.2, and 8.5 including methodology for establishing or verifying baselines, work plan, staffing plan, detailed templates for verification, random sampling procedures where applicable, and specific needs from the Ministry and EEU to enable implementation
- The Results Verification Report (RVR) submitted to MoWE. The report details progress made toward DLR#8.2 per planned schedule and in accordance with the verification protocols. The report shall include:
 - Executive Summary of key findings, including the figures for the annual targets achieved for DLR#8.2 and 8.5;
 - Methodology used for verification and analysis of data collected;
 - Summary descriptive statistics for each verification sites in the form of tables, figures and related writings;
 - Demonstration and assessment of the accuracy of the information reported by EEU, regions and centers using appropriate statistical tests, in accordance with the verification protocol;
 - Evidence verifying the achievement of DLR#8.2. and 8.5
 - Annex materials including final data collection tools, completed and clean data in tab-delimited format
- Final Report at the end of the program to be submitted to MoWE with overall description of all activities and results achieved under the Program.

Assignment Duration

The assignment will be carried out immediately after the date of contract signing. Within this period, the Independent Verification Agent (IVA) will complete all verification activities,



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including desk review, field verification, and data analysis, preparation of draft and final Program Results Verification Reports (RVRs).

Team Composition and Required Qualifications

To perform the required verification tasks, the IVA will need to demonstrate the ability to verify DLR 8.2, Installation of Advanced Metering Infrastructure for 35,000 large customers by July 7, 2025. DLR 8.5, Implementation of the initial phase of customer indexing and low voltage network mapping for 150,000 customers by July 7, 2026. More specifically, the IVA should possess:

- (i) Legal status recognized by the GoE, enabling the Agency to perform the verification process.
- (ii) Extensive technical auditing expertise with international and/or local experience
- (iii) Extensive experience in the implementation of Advanced Metering Infrastructure (AMI) for revenue protection in emerging countries.
- (iv) Knowledge of local formalities and customs in the implementation of audits and surveys, including interviewing rural households and businesses and the ability to obtain all the necessary permissions and permits needed.
- (v) Demonstrated experience in sample design and inferential statistics.
- (vi) Ability to clearly communicate, both oral and written, in English and Amharic.

The IVA shall present evidence of adequate practical experience of the Agency in conducting verification assignments related to electrification programs. Personnel in the Consultant's team should together have demonstrably proven in-depth experience in addressing the full range of functional and technical expertise outlined in this TOR, to successfully undertake this assignment and on a timely basis:

Team Leader: The scope of the Team Leader will include the following: (i) Liaise with EEU and MoWE with regards to timely preparation of annual progress reports and disbursement linked results (DLRs); (ii) Coordinate inputs from team members as per agreed work program and ensuring deliverables of team members are prepared in a timely and satisfactory manner; (iii) Oversee the verification process as per Program Operational Manual; (iv) Review, revising and



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up-dating of RVRs prepared by team members; (v) undertake all necessary tasks related to the monitoring and verification of results indicators under the Program. The Team Leader should have at least 15 years of experience in verification and monitoring of result-based programs; preferably World Bank Program-for-Results. The Team Leader must have effective communications and writing skills.

Senior Power Engineers/Verification Specialists: The Senior Power Engineers/Verification Specialists will support the Team Leader in monitoring, evaluation and verification of results indicator under the Program, including the following: (i) conduct physical inspection of results to be achieved under DLR#8.5; (ii) prepare the RVRs as per template satisfactory to the World Bank and EEU; (iii) undertake all necessary tasks related to monitoring and verification of results indicators under the Program per agreed work program.

Research/Data Analyst: The Research Analyst will support the team through the following tasks: (i) am gathering and compilation of information, data, and documentation confirming achievement of the results indicators; (iii) support the team in preparation of RVRs.

Required Firm experience

The consulting firm shall have at least three (3) years of general experience in providing consultancy services and shall have successfully completed at least two (2) similar assignments of comparable size, type, and complexity.



No.	Position/Title	Minimum Educational Requirement	No. Required	Minimum Experience	Required Relevant Experience and Responsibilities
1	Team Leader	MSc or above in Master's degree in Electrical Engineering, Power Systems Engineering, Energy Management, Monitoring and Evaluation, Project Management, or a related field.	1	Minimum 15 years	Successfully led and completed at 4 four projects of similar scope, size, and complexity as team leader
2	Senior Power Engineers/Verification Specialists	MSc or above in Master's degree in Electrical Engineering, Power Systems Engineering, Energy Engineering, or a related field.	1	Minimum 10 years	Participated as an Senior Power Engineers/Verification Specialists Specialist in at least 2 projects of similar nature, size, and complexity."
3	Research/Data Analyst	MA or above in <input type="checkbox"/> Statistics, Data Science, Economics, Information Systems, Computer Science, Mathematics, GIS, Engineering, or a related field.	1	Minimum 10 years	Participated as an Reaserch or Data analyst Specialist in at Two projects of similar nature, size, and complexity



Working Arrangements, Services and Facilities to be provided by the Client

No services or facilities will be provided for use of IVA by the client. However, the client will facilitate access to reports, documents, other pertinent information, relevant government personnel, and permissions as needed. Liaison staff will also be identified to work with the IVA on the assignment. The IVA is expected to provide its own facilities like office space, office furnishing and computing/photocopying equipment, payment of utility bills, etc.

Consultant's Service Administration

The consultant firm is accountable to the Ministry of Water and Energy, The Electrification and Energy Information Lead Executive has responsible to monitor & support the consultant throughout the assignment period.

9. Budget:

The budget for this consultancy shall cover all costs associated with conducting the verification, including travel expenses, data collection, and reporting.

10. Client's Input for the Service

- ❖ Access to Documentation and Facilities for Verification
- ❖ will assign counterpart staff for the assignment; and
- ❖ Shall send out communications to all stakeholders informing them of the consultant's appointment and requesting them to facilitate the verification in the respective woredas/villages.
- ❖ Support the consulting firm team throughout the performance of the service.
- ❖ The Ministry team (EEILE) of experts for review of the deliverables, for timely feedback and submission of respective final reports by the firm.



11. Reporting Procedures

consultant will report to MoWE and provide copies of the Annual Results Verification Report (RVR) and the DLR-specific reports. The Ministry will be in charge of follow-up of the activities of the consultants

Remark:-

- All reports are submitted in 3 hard and soft copies in CD.
- The consultant is required to communicate with the Ministry throughout the process.
- The consultant is required to undertake the assignment as per the requirement of this ToR and acceptable verification practices with its entirety.

12. Annex

A1 –Financing Agreement

A2 – Verification Protocol

A3 – Program Operation Manual

A4- program appraisal document

