



Request for Proposal (RFP)
Load flow and Grid Stability Analysis for
Indonesia Power System with Early Coal
Retirements Implementation

Institute for Essential Services Reform

Tebet Timur Raya 48B

Jakarta Selatan

Indonesia

16 November 2023

OVERVIEW AND BACKGROUND

Institute for Essential Services Reform (IESR), a think tank based in Jakarta, Indonesia, has been working intensively to promote the acceleration of low carbon energy transition in Indonesia, through evidence-based policy advocacy. IESR also has been contributing significantly to promote energy transition discourse in Indonesia and has been working with national and local governments, associations, and civil society organizations. Since 2022, IESR is supporting the Ministry of Energy and Mineral Resources (MEMR) in formulating the early coal retirement roadmap and as mandated by the Presidential Regulation 112/2022 and with the agreement of the Ministry of Finance (MoF), and Ministry of State-Owned Enterprise (MSoE). Now, the draft of the regulation is being finalized and might be stipulated at the end of 2023 or early 2024.

IESR has conducted power capacity expansion analysis for several scenarios of early coal retirement utilizing PLEXOS. To further complement the analysis, IESR would like to understand the grid stability and load flow analysis of each resulting scenario of the power capacity expansion analysis. The analysis would inform additional factors concerning grid stability, additional investment and costs required (for grid, or for auxiliary service, etc) between each of the scenarios.

The load flow and grid stability analysis would be conducted on several data points in each scenario. This would help to understand the gap between each scenario and inform IESR on how to improve the power grid to enable the implementation of early coal retirement. The analysis would support IESR fact-based advocacy for the power sector transition in Indonesia.

1. PROJECT SUMMARY

This project will focus on power flow study (load flow analysis, frequency response, and voltage stability analysis) to ensure the technical feasibility and reliability of different early coal-retirement roadmap. IESR would provide four different scenarios of capacity expansion as the basis of the load flow analysis. Therefore, the following are the steps considered to complete the analysis:

- a. Translation of each capacity expansion scenario to power grid situation in 2030 and 2040 for Sumatera and Java system.
- b. Conducting load flow and grid stability analysis on each data point (2030 and 2040) for each of the three scenarios.
- c. Summary of the analysis including needs of grid stability, costs additional investments and any other relevant indicators/parameter difference between each scenario.

The power capacity expansion scenario to be analyzed would consist of:

- a. Natural CFPP retirement scenario from the MEMR
- b. GoI and PLN planned CFPP retirement scenario (extracted from JETP and ETM initiative)
- c. Paris-Agreement compatible retirement scenario from IESR
- d. Optimized cost for CFPP retirement scenario from IESR

The basis of the power grid infrastructure development would follow the latest RUPTL and RUKN of Indonesia when the study is initiated.



With this RFP, IESR is soliciting proposals from experts, or institutions with extensive experience and portfolio in power flow and grid stability analysis. IESR will evaluate all the proposals submitted. Following review of all proposals, IESR will select the experts/institutions that brings suitable expertise, most closely aligns with project objectives, and articulates a clear, achievable research plan to meet those objectives within the required timeframe.

2. PROPOSAL GUIDELINES

Proposals will be accepted until 10:00 p.m. Indonesian Western Standard Time (WIB, GMT+0700) on Monday, 4 December 2023. Any proposals received after this date and time will be regarded inadmissible. All proposals must be signed by an official agent or representative of the company submitting the proposal.

Main proposals should not be more than 10 pages in length. The annex of proposal should include following item:

- 1) brief company/institution profile.
- 2) Portfolio of previous power flow analysis in Indonesia
- 3) the latest Curriculum Vitae (CV) of team leader. CV of other team member with relevant experience is optional.

The consultant should state where the data is available or confidential, or limited and how they would like to address this to meet the objectives.

If the individual/organization submitting a proposal must outsource or contract any work to meet the requirements, this must be clearly stated in the proposal. Additionally, costs included in proposals must include any outsourced or contracted work. Any outsourcing or contracting organization must be named and described in the proposal.

Please describe the limitations and assumptions that would potentially be used in the study as well as software/tool to be used. The use of a Power Factory tool or similar tool is preferable.

Please itemize all costs and include a description of associated services. Contract terms and conditions will be negotiated upon selection of the winning bidder for this RFP.

3. PROJECT PURPOSE AND DESCRIPTION

IESR would like to conduct load flow and grid stability analysis for possible future power system conditions in Indonesia. The main output of the analysis is as follows:

Load flow analysis on two data points for four different scenarios and report that summarize the resulting analysis and difference between scenarios.

Minimum information's to be included in load flow and grid stability reports are:

- Methodology, assumptions, and key data source and tools used.
- Translation of power capacity expansion information to relevant data point in 2030 and 2040. The four scenarios to be modelled and translated to be used in the load flow analysis are:
 - Natural CFPP retirement scenario from the MEMR
 - Gol and PLN planned CFPP retirement scenario (extracted from JETP and ETM initiative).
 - Paris-Agreement compatible retirement scenario from IESR.
 - Optimized cost for CFPP retirement scenario from IESR.

- Power grid conditions for each scenario and data points which would encompass:
 - Load distribution analysis and assumptions
 - Power grid information in 2030: based on the latest RUPTL and RUKN at the very least from the substation of 150 KVA and connecting transmission in Sumatera and Java.
 - Power grid information in 2040: will utilize the 2030 results of analysis including additional substation and connecting transmission required based on the 2030 analysis (gap of power grid infrastructure identified in the previous 2030 analysis is added as basis of the 2040 grid conditions).
- Load flow analysis results which include the voltage stability and frequency response for a scenario with extreme RE and load condition (high RE, low load or vice versa)
- Gap and additional cost required for grid improvement in 2040 in four different scenarios.
- Summary of analysis results from different scenarios including the additional grid improvement needed, the cost, the stability of the grid in each analysis and other relevant indicators related to the grid performance and cost.

The study results will be used to support IESR’s advocacy work with relevant power sector stakeholders, including the national government, utility, and local government.

4. REQUEST FOR PROPOSAL AND PROJECT TIMELINE

Proposal Timeline:

Proposals will be accepted until 10:00 p.m. Indonesian Western Standard Time (WIB, GMT+0700), Monday, 4 December 2023. Kindly address Program Manager Energy Transformation IESR at deon@iesr.or.id and Program Officer Energy Transformation at rahmat@iesr.or.id for inquiries.

Evaluation of proposals will be conducted from 5 November through 7 November 2023. Follow up with the top three candidates will be conducted within this window to obtain any necessary clarification on items described within proposals.

The selection decision for the winning bidder will be made by 8 December 2023.

Upon notification, the contract negotiation with the winning bidder will begin immediately and must proceed extremely quickly to meet the project timeline.

Project Timeline:

The project must commence before 11 December 2023 and results of the project must be finalized no later than 23 February 2024.

A draft timeline is presented below. Internal changes may be made if mutually agreed.

Milestone	
<i>Kickoff meeting</i>	11 December 2023
<i>Translation of IESR scenario to load flow analysis</i>	12-20 December 2023
<i>Load Flow analysis</i>	12 December 2023 – 02 February 2024
<i>Results presented to IESR</i>	05 February 2024

Unless otherwise noted, work will be completed by the end of month identified above.

5. BUDGET

All proposals must include proposed costs (in Indonesian Rupiah/IDR) to complete the tasks described in the project scope. Costs should be stated as one-time or non-recurring costs (NRC).

NOTE: All costs and fees must be clearly described in each proposal.

6. BIDDER QUALIFICATIONS

Bidders should provide the following items as part of their proposal:

- Description of experience in power system planning and grid integration research,
- Examples of three or more similar projects conducted by you/your organization
- Anticipated resources you will assign to this project (total number, role, title, experience)
- Confirmation of timeframe for completion of the project
- Brief description on methodology, tools (preferably open-source tool), and assumptions used

Bidders must submit a digital copy of their proposal via email to Program Manager Energy Transformation IESR at deon@iesr.or.id and Program Officer Energy Transformation at rahmat@iesr.or.id by 10:00 p.m. Indonesian Western Standard Time (WIB, GMT +0700) on 4 December 2023. Please include "RFP Response – Power Flow Analysis" in the subject line.