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இலங்கைப் பொதுப் பயன்பாடுகள் ஆணைக்குழு
PUBLIC UTILITIES COMMISSION OF SRI LANKA



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திகதி } 10th February 2023
Date }

Authorized officer
For License No. EL/T/09-002
Additional General Manager - Transmission
Ceylon Electricity Board,
Sir Chittampalam A. Gardiner Mawatha,
Colombo 02.

Long Term Generation Expansion Plan 2023-2042

This refers to the submission of Draft Long Term Generation Expansion Plan 2023-2042 vide the letter (Ref: DGM (CS & RA)/GEN/05-07) dated 14th September 2022.

The Commission herewith grants the approval for the Long Term Generation Expansion Plan 2023-2042, subject to the following conditions,

The followings shall be included in the plan, and the final document shall be submitted to the Commission to be published in the Commission's website.

1. Include the impact on the operational cost and details of renewable energy curtailment under different SNSP limits beyond 65% (for 75%, 80% & 85%)
2. Mention the Annual GDP Growth used for demand projection
3. If there is no impact in the exchange rate to the optimization process and to the cost figures used as input in the optimization process, it is recommended to mention the latest exchange rates in the current plan
4. Change the title column (2) to "Sales (GWh)" in the Table 3.1: Electricity Demand in Sri Lanka, 2007–2021, to clearly distinguish between energy and capacity
5. Update Table 3.4 (Main & Sub Sector Breakdown for MAED) to include Railway Electrification Project Under the transport sub sector.
6. Mention whether the calculation of System Load Factor Forecast 2023-2047 excludes
 - Potential installation of battery storage by customers
 - implementation of TOU pricing to LV customers
 - Other demand management (DM) and demand response (DR) measures
 - Contribution of Pumped storage
7. Add a note under Table E3 and Table 8.1 (Base Case) mentioning that the Renewable, Thermal and Storage Power Additions as mentioned in Base Case should be commissioned within the year specified and is sufficient to be made available by the end of respective year.

8. Include the calculation made in deriving the reserve margin mentioning the capacity contribution from intermittent renewable energy sources, pump hydro and battery storage facilities for reserve margin.

The following shall be considered/ incorporated in the next planning study and the next plan shall be submitted before 30th April 2024.

1. Consider the impact of following in the Demand Forecast.
 - Increase in end user tariff
 - Economic contraction of the country
 - Trend in installation of Off-grid solutions
 - Potential domestic battery storage installations by customers
 - Historical slow demand growth and accuracy in historical predictions in previous plans
2. Further refine the saturation value of T&D losses considering the future penetration of the distributed renewable developments and targeted DSM measures.
3. Align the next plan to be complied with the policy target of reaching the carbon neutrality in electricity sector by 2050, and include a pathway until 2050 to demonstrate achieving the above policy target.
4. It is recommended to keep the a SNSP level at 80% or above for the first decade of the next plan. However, if the SNSP level of 80% cannot be reached, it is required to demonstrate that 80% is technically infeasible. Also, it is recommended to conduct further studies to analyze the maximum SNSP limit that can be reached by optimizing the existing assets of the system and conduct a separate study to map the required modifications (and costs) to the grid to increase the SNSP limit to the maximum.
5. Identify the specific DSM initiatives including scale of implementation, and add to the Plan with timelines and implementing authorities
6. Ensure that the System LOLP limits are met
7. Use only a proper forecast done by a renowned party in deriving future fuel prices. It is not recommended to consider historical prices and applying additional weight for historical fuel prices when deriving the future fuel prices.
8. Consider the impact of the delay in the implementation of required LNG infrastructure with associated natural gas distribution network
9. Develop a separate scenario for the use of locally developed Natural Gas, using timelines and indicative prices from the Petroleum Development Authority.
10. Evaluate the Cost of externalities on a globally acceptable basis (for both thermal and renewable) and include in the plan. The study conducted by SLEMA can be used as interim values until further studies are established.
11. Consider the contribution of non-telemetered NCRE and rooftop solar for the
 - a. Comparison of load curves in past years
 - b. Analysis of Night peak, Day peak and Off Peak Trends in past years
 - c. Load profile shape forecast in future years



12. Include the rooftop solar energy contribution of LECO consumers in the net generation figures.
13. Consider the technological alternatives such as export to India and introduction of Green Hydrogen to utilize the curtailed renewable energy
14. Coordinate with Sri Lanka Atomic Energy Board to verify the characteristics of candidate nuclear plants
15. Coordinate with economists and Central Bank of Sri Lanka to work out more reasonable GDP growth scenarios
16. Further study on the possibility of converting the existing unused gas/steam turbines and retiring gas/steam turbines to synchronous condensers in order to support the system in renewable penetration.
17. Consider the impact of the new feed in tariff granted for rooftop solar schemes on projected rooftop solar capacity.
18. Analyze the actual wholesale price of energy in India to use more appropriate landed cost of energy in the scenario modeled for India – Sri Lanka interconnection
19. Present the detailed annual capex and opex expenditure for all scenarios

Further, you are informed to submit the following inputs to be used in the next planning study to the Commission for verification purpose prior to the next planning study.

1. Cost Details, operation characteristics and construction duration of the Thermal Expansion Candidates with relevant sources
2. Cost Details (Capital and Fixed O&M Costs) and construction duration of the ORE Technologies with relevant sources
3. Fuel prices with the basis of deriving the prices
4. Cost of externalities (for both thermal and renewable technologies)
5. Capacity contribution from renewable energy sources, pump hydro and battery storage facilities for deriving reserve margin

Also, please note that the Commission is in the process of revising the Least-Cost Generation Expansion Planning Code in order to capture and incorporate in the next planning study the variations in fuel prices, changes in cost of renewable technologies & battery storage technology, improvement in performance of battery storage technology and the changes in the economic conditions during the planning horizon.



Damitha Kumarasinghe
Director General

Copy: General Manager, CEB