Your ref: PUC/L1/AP19/01 My ref:AGM(CS)/DGM(CSRA)/GEN/4 Date: November 25, 2019

The Chairman
Public Utilities Commission of Sri Lanka
6th Floor, BOC Merchant Tower
No.28, St, Michael's Road,
Colombo 3.

Least Cost Long-Term Generation Expansion Plan 2020-2039

This has reference to your letter PUC/L1/AP19/01 dated 2019-10-31 giving your observations to the inputs used to prepare the LCLTGEP 2020-2039. We wish to give our comments to your observations as below.

Compliance to Reserve Margin Criterion

We agree with you that the LCLTGEP need to be prepared meeting the technical and reliability requirements of the electricity network as approved by the commission. A detailed look at the draft LCLTGEP 2020-2039 submitted to your approval would reveal that the plan had not effectively violated the reserve margin requirement published by the commission.

Generation planning involves economically optimizing capacity requirement subjected to a large number of constraints. Reserve margin requirement is one such constraint and is specified as a range (instead of a single hard constraint), within which transmission licensee is free to carry out the optimization. For the entire 20-year period, the base case plan does not violate the minimum reserve margin requirement of 2.5%. However, it would appear to exceed the upper reserve margin requirement (of 20%) during two years out of the 20, namely in 2028 and 2029. In both years, the higher than required reserve margin is caused by two new 200 MW pumped storage hydro plant additions.

Even for conventional storage hydro plants, the installed capacity is not directly taken as it is to calculate the reserve margin due to unavailability of the full capacity owing to uncertain hydrology. It is common knowledge that a pumped storage plant does not add any additional energy to the system. Thus, it is our view that exceeding upper reserve margin for just two years due to considering the full installed capacity of the two pumped storage hydro power plants as it is can be ignored and is not a major violation.

However, if the commission still maintain the position that we should strictly follow the margins as stipulated in the gazette, even for pumped storage hydro plants, we can do such revision in the next plan to be submitted for the period 2022 – 2041.

We also would like the commission to consider the following prior to requesting for a revision to draft LCLTGEP 2020-2039 due to the aforesaid reason.

I. Section 2.5.2 of the least cost generation expansion planning code as approved by the commission in April 2011 has stated a reserve margin requirement of 10%-35%, which is far in excess of the upper limit reached during the above two years.

II. Considering that the largest unit size in the plan/system is 300MW, the minimum reserve margin of 2.5% is too low even to accommodate a single unit outage.

III. The enhanced reserve margin requirement of 10%-25% used by CEB in preparing the LCLTGEP 2020-2039 is not an arbitrary value but was due to a request from the ministry of Power, energy and business development to maintain a sufficient reserve capacity in the system as required by the government to face for future contingencies. This request has been informed to you through letter ref. PE/TECH/D/03/09 dated 2019-04-06 by secretary, ministry of power, energy and business development before the submission of draft LTGEP 2020-2039 to the commission.

Incorporation of Economic Cost

We agree with you that as per section 43(8) of the Electricity Act, the capacity as stated in the LCLTGEP need to be determined on the basis of economic costs. Additionally, section 43(5), 43(6) states that new power plants can only be developed in compliance with the technical and economic parameters of the transmission licensee.

The economic parameters that we need to use to prepare the plan is published in the Least Cost Generation Expansion Planning Code. We have complied with all requirements contained under section 2.6 titled Economic Parameters"", of the commission approved planning code published in 2011-04-25. Further, in order to comply to environmental laws, regulations, social obligations and other policy requirements, CEB had altered the specifications of future power plants and had already included additional costs in to capital costs of such candidate options. Thus, all external costs (other than direct capital and operating costs) that CEB need to consider to meet our legal, social and environmental obligations have already been factored in to project cost and hence are already a consideration. Thus, planning process has already included economic costs of environmental and social impacts and thus we do not agree to the observation of the commission.

Further, transmission licensee has to ensure a given generation mix as mandated by the policy guidelines of the government to meet energy security and fuel diversity needs. Such energy security requirements come ahead of any economic consideration. Any economic optimization could only be carried out after incorporating the fuel diversity requirements as given under section 10 of the latest General Policy Guidelines approved by the cabinet, which is 30% from coal, 30% from natural gas and 25% from storage hydro. Thus, even if considered, such additional cost components would do little to change the capacity mix for the planning horizon. Only change it would do is to adjust plant scheduling.

The list of possible costs that could be brought under the broad heading "environmental" and "social" is highly subjective and so are there values. It is not practically possible too to consider such costs for each and every candidate power plant other than in the manner transmission licensee has done as explained above. It must also be kept in mind that not only environment cost but **not having low cost**

electricity too has social and economic consequences to the country. Similarly, delaying or cancellation of power plants and even delaying the preparation and approval to long term generation plan itself too can have significant cost impact to economy.

Thus, whenever policy decisions are issued by the government or environmental regulations are brought in due to any social or environmental requirements, transmission licensee would make arrangements to include the cost of complying to such requirements in to capital costs of candidate plants and thereby consider the environmental and social costs during optimization process instead of using highly subjective cost components that are not available yet through proper studies.

Compliance to General Policy Guidelines

We are fully committed to comply to policy guidelines of the government. However, commission must note that the requirement to achieve 50% of electricity generation from renewable sources by 2030 under section 31 of the general policy guidelines is only subjected to favorable weather conditions. The 36% generation in 2030 from renewables as stated in the draft LCLTGEP is calculated not under **favorable weather** conditions but under **average hydro** condition. If such values are revised to include very wet hydro conditions, the total renewable energy share would increase to 44%. Further, all solar PV plants included were modeled to realize nominal plant factors of 16% (northern part), 16.3% (southern part) and 17.1%(average). But if solar tracking is used to enhance plant factors, the renewable share as in the plan would stand at 46%.

It must also be understood that the statement under section 31 is not a hard target but only a guidance given to "progress with the vision" to achieve 50% of electricity generated from renewable sources. Renewable integration needs to be carried out progressively following proper studies and other technological enhancements. It is not practical to adjust the LCLTGEP 2020-2039 (submitted on May 2019) to include a policy guideline issued only in April 2019 without supporting studies.

Thus, we reiterate our commitment to this policy element and wish to declare that CEB would review future plans in each cycle considering the development of power projects and transmission infrastructure to target for the vision to achieve 50% of electricity from renewables in 2030 under favorable weather conditions.

Project Implementation time targets

We too agree with the observation of the commission that there were unforeseen delays to power plant implementations since of late. Implementation timelines of candidate power plants as considered in planning are derived based on available feasibility studies. It is possible however for the actual lead times to differ due to many external factors including legal challenges. The implementation timelines of projects considered in the plan are mentioned under section 12.3 of LTGEP 2020-2039 submitted for your approval. We would appropriately revise such lead times of projects from the next planning cycle, if so required.

It must also be understood that the planning process and the approval process itself adds on to the lead time of plant implementation. Thus, if we are to go through the planning process again, that would add to unwanted delays to power plant additions and also contribute to additional costs as a result. Further, we have already answered your detailed clarifications sought on 2019-07-15 regarding draft LCLTGEP. Thus, we do not think it is prudent to again go through the planning process to accommodate a new set of observations the commission is making 03 months after the first set of comprehensive questions.

Thus, we seek your urgent approval to the LTGEP 2020-2039 to move ahead with power plant implementation and agree to accommodate the observations to which we too have given our principal agreement above from next planning cycle.

Eng. S.D.W. Gunawardana
General Manager

Authorized person under Licenses EL/T/09-002;

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