

#	Person/Institute	Comments in brief	Commission's Position
1	consumer consultative committee, PUCSL (Independent) Oral Presentation by Mr. Jayantha Ranatunga	<ul style="list-style-type: none"> <li>Equity Risk Premium (10%) is too high for the industry .</li> </ul>	<ul style="list-style-type: none"> <li>Note 1</li> </ul>
		<ul style="list-style-type: none"> <li>Bio-mass fuel cost is too high to justify its use.</li> </ul>	<ul style="list-style-type: none"> <li>Bio-mass fuel cost is based on market values</li> </ul>
		<ul style="list-style-type: none"> <li>Very high tariff ( 23.56 LKR/kWh for bio-mass)</li> </ul>	<ul style="list-style-type: none"> <li>Tariffs were calculated according to the approved cost based methodology, in line with Government policy</li> </ul>
		<ul style="list-style-type: none"> <li>A premium shall not be paid to exotic technologies since future prices will be lower with technology maturing.</li> </ul>	<ul style="list-style-type: none"> <li>There is no premium specific for particular technology. Technology specific tariffs are formulated based on Government policies and to achieve national policy targets for NCRE.</li> </ul>
2	Mr. Suresh Silva, SILVERMILL HOLDINGS LIMITED	<ul style="list-style-type: none"> <li>Moisture content of bio-mass fuel (wood), cause high consumption (1.6kg/kWh)</li> <li>1.75kg of wood is needed to generate 1kWh with 40% moisture content</li> </ul>	<ul style="list-style-type: none"> <li>20% moisture content was considered in 1.84kg/kWh fuel consumption</li> </ul>
		<ul style="list-style-type: none"> <li>Energy used for internal consumption (10-12.5%)</li> </ul>	<ul style="list-style-type: none"> <li>15% of internal consumption was considered and capital cost was increased by 15%</li> </ul>
		<ul style="list-style-type: none"> <li>Fuel escalation rate is low, it should be based on CCPI and diesel price.</li> </ul>	<ul style="list-style-type: none"> <li>Note 2,</li> </ul>
		<ul style="list-style-type: none"> <li>Why half of CCPI is taken for fuel escalation?</li> </ul>	
		<ul style="list-style-type: none"> <li>Gliricidia market has a large potential but still in the introductory stage, with the competition the price can reach Rs.8 to Rs.10</li> </ul>	<ul style="list-style-type: none"> <li>Bio-mass fuel cost is based on current market values</li> </ul>
		<ul style="list-style-type: none"> <li>At present borrowing rates have risen far above 12.61%</li> <li>Current interest rate is approximately 18%</li> </ul>	<ul style="list-style-type: none"> <li>Note 3</li> </ul>
		<ul style="list-style-type: none"> <li>Intangible benefits of using bio-mass over fossil fuels should be taken into consideration when setting tariffs.</li> </ul>	<ul style="list-style-type: none"> <li>NCRE purchase tariffs are cost based.</li> </ul>
3	Mr. P S P S De Saram, ESCAS POWER (PVT) LIMITED	<ul style="list-style-type: none"> <li>Low head mini hydro projects are clearly different from high or medium head projects.</li> <li>Capital cost of an already built low head mini hydro plant is Rs.772 Mn. (Owala MHP)</li> <li>Consider announcing a separate tariff for low head projects.</li> </ul>	<ul style="list-style-type: none"> <li>All mini-hydro power plant falls under one technology category</li> <li>LKR 220 Mn per MW was arrived through the adjustment of previous year cost basis, based on published indices</li> </ul>
		<ul style="list-style-type: none"> <li>10% royalty has to be paid to MASL for using regulated water</li> </ul>	<ul style="list-style-type: none"> <li>A sight specific issue</li> </ul>
4	Mr. Ahmad Yousef, TERRA NEX Financial Engineering Ltd	<ul style="list-style-type: none"> <li>What would be the tariff for solar-PV.</li> </ul>	<ul style="list-style-type: none"> <li>20 year Flat tariff of LKR 25.09 per kWh as any other technology would be applicable for Solar Technology</li> </ul>

5	Mr. Y P Dassanayake, Federation of Electricity Consumer Societies	<ul style="list-style-type: none"> <li>• Sustainability of the off-grid electricity schemes are under threat when the area is connected to the Grid. Hence, there is a request to increase tariffs for mini hydro plants.</li> </ul>	<ul style="list-style-type: none"> <li>• The commission has initiated a formal study on off-grid interconnection issues, this issue will be addressed according to the recommendations.</li> </ul>
6	Eng. Parakrama Jayasinghe Bio Energy Association of Sri Lanka	<ul style="list-style-type: none"> <li>• Devaluation of Rupee and VAT on materials has to be taken into account when calculating capital cost of projects.</li> <li>• Interest rate should be the rate that commercial banks would like to lend for this type of projects.</li> <li>• CCPI should be used to escalate fuel cost.</li> <li>• Fuel cost should be escalated from the date of signing the SPPA.</li> <li>• Fixed component of the tariff should be linked to USD to encourage foreign investment.</li> <li>• 10MW limitation should be raised to 25MW</li> <li>• Treat bio-mass and agri-waste on the same footing.</li> <li>• Allow 20% of agricultural residues to be used in bio-mass.</li> <li>• Qualify coconut shells to bio-mass.</li> <li>• Announce separate tariffs for low-head mini hydro and solar.</li> <li>• Declare a high tariff for technologies with storage (Eg. solar)</li> </ul>	<ul style="list-style-type: none"> <li>• Note 4</li> <li>• Note 3</li> <li>• Note 2</li> <li>• No comment</li> <li>• A premium for financial risk is provided in ROE</li> <li>• Government policy is to sign SPPAs only up to 10MW capacity</li> <li>• Bio-mass and agri-waste costs are different</li> <li>• No comment</li> <li>• coconut shell is an agri-waste</li> <li>• All mini-hydro power plant falls under one technology category</li> <li>• NCRE tariffs are cost based</li> </ul>
7	Mr. Riyaz M Sangani VIDULLANKA PLC Oral presentation by Mr. Chamil	<ul style="list-style-type: none"> <li>• Devaluation of Rupee has not taken into account when calculating capital cost</li> <li>• 2011 figures have been used to determine the capital cost for 2012-2013</li> <li>• Consider changes in forex, fuel price hike and inflation deriving the capital cost</li> <li>• Consider cost of approvals and land cost when deriving capital cost</li> <li>• Fuel escalation rate has brought down to half of the CCPI however fuel price depends on demand supply model and a higher rate of escalation can be expected.</li> <li>• CCPI should represent the figures up to July 2012 at least.</li> <li>• Biomass price will increase with demand in future due to limited availability of cultivated lands.</li> <li>• Consider taxation as a cost.</li> <li>• Financial parameters should be as follows <ul style="list-style-type: none"> <li>✓ Interest – AWPLR + 3 to 5%</li> <li>✓ EIRR – 20.85%</li> <li>✓ WACC – 19.1%</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Note 4</li> <li>• 4% contingency has been provided for any variation in indices.</li> <li>• Note 4</li> <li>• Land rent is included in O&amp;M</li> <li>• Note 2</li> <li>• Escalation rates were calculated as per the methodology</li> <li>• Escalation is allowed for biomass fuel cost</li> <li>• Pre-tax ROE is allowed, NCRE project receive 5 year ax holidays</li> <li>• Note 1</li> <li>• Note 3</li> <li>• Note 7</li> </ul>

8	Mr. Manjula Perera WIND POWER ASSOCIATION OF SRI LANKA	<ul style="list-style-type: none"> <li>Once the devaluation of Rupee is considered capital cost for a wind plant should be LKR254Mn/MW.</li> </ul>	<ul style="list-style-type: none"> <li>Note 4</li> </ul>
		<ul style="list-style-type: none"> <li>Capital cost of a small wind plant is higher than LKR254Mn per MW</li> </ul>	<ul style="list-style-type: none"> <li>LKR 243 Mn per MW was arrived through the adjustment of previous year cost basis, based on published indices.</li> </ul>
		<ul style="list-style-type: none"> <li>Since RERED credit lines are not operative in Sri Lanka, a rate base on AWDR and AWFDR cannot be used. Instead a rate (i.e. 16.75%) base on AWPR has to be used.</li> </ul>	<ul style="list-style-type: none"> <li>Note 3</li> </ul>
		<ul style="list-style-type: none"> <li>1.5% of O&amp;M cost is not realistic, last year rate (4%) is more realistic.</li> </ul>	<ul style="list-style-type: none"> <li>Note 5</li> </ul>
		<ul style="list-style-type: none"> <li>Small wind plant in Ambewella will achieve a plant factor of 22-24%</li> </ul>	<ul style="list-style-type: none"> <li>Note 6</li> </ul>
		<ul style="list-style-type: none"> <li>Consider LKR/USD up to July 2012 when deriving escalation rates</li> </ul>	<ul style="list-style-type: none"> <li>Escalation rates were calculated as per the methodology</li> </ul>
9	Mr. J P Wimalaratne SAPTHAKANYA HYDRO ELECTRIC CO.(PVT) LTD	<ul style="list-style-type: none"> <li>Mini hydro sites available are less financially attractive compared to already developed sites.</li> </ul>	<ul style="list-style-type: none"> <li>Capital cost has been escalated incorporating all changes as per the methodology</li> </ul>
		<ul style="list-style-type: none"> <li>Capital cost of a typical mini hydro plant shall be increased to LKR 250Mn per MW</li> </ul>	<ul style="list-style-type: none"> <li>LKR 220 Mn per MW was arrived through the adjustment of previous year cost basis, based on published indices</li> </ul>
		<ul style="list-style-type: none"> <li>O&amp;M cost is coupled with the quality of the plant, therefore with the given capital cost O&amp;M cost exceeds 3%</li> </ul>	<ul style="list-style-type: none"> <li>Note 5</li> </ul>
		<ul style="list-style-type: none"> <li>Current lending rate is 17.5% at development banks.</li> </ul>	<ul style="list-style-type: none"> <li>Note 3</li> </ul>
10	Mr. Torsten Adler SOLAR ONE CEYLON	<ul style="list-style-type: none"> <li>Tariff for solar should be between 29 and 31 LKR per kWh because 24LKR is not sufficient to acquire financing.</li> </ul>	<ul style="list-style-type: none"> <li>Flat tariff of LKR 25.09 per kWh is offered</li> </ul>
		<ul style="list-style-type: none"> <li>Currency risk is too high for foreign investment.</li> </ul>	<ul style="list-style-type: none"> <li>A premium for financial risk is provided in ROE</li> </ul>
11	Mr. Asoka Abeygunawardana Energy Forum	<ul style="list-style-type: none"> <li>Have a 2-tier tariff for 20 years period.</li> </ul>	<ul style="list-style-type: none"> <li>3-tier option is accepted in the methodology</li> </ul>
		<ul style="list-style-type: none"> <li>Remove the flat tariff option for technologies having a fuel cost.</li> </ul>	<ul style="list-style-type: none"> <li>Flat tariff is only one option</li> </ul>
		<ul style="list-style-type: none"> <li>O&amp;M escalation rate should vary with the technology</li> </ul>	<ul style="list-style-type: none"> <li>CCPI and Rupee Depreciation rates are common for any technology</li> </ul>
		<ul style="list-style-type: none"> <li>Fuel escalation rate should be directly linked to the inflation.</li> </ul>	<ul style="list-style-type: none"> <li>Fuel escalation rate is directly linked to the inflation</li> </ul>
		<ul style="list-style-type: none"> <li>Escalation rates should be calculated as 3 year average.</li> </ul>	<ul style="list-style-type: none"> <li>Escalation rates were calculated as per the methodology</li> </ul>
		<ul style="list-style-type: none"> <li>Announce different tariffs for plants with different capacities.</li> </ul>	<ul style="list-style-type: none"> <li>Only different tariffs for different technologies are provided.</li> </ul>
		<ul style="list-style-type: none"> <li>Capital investment should be reviewed annually and it should be based on market prices.</li> </ul>	<ul style="list-style-type: none"> <li>Capital cost is not incurred annually</li> </ul>
		<ul style="list-style-type: none"> <li>Announce a separate tariff for low-head mini-hydro.</li> </ul>	<ul style="list-style-type: none"> <li>All mini-hydro power plant falls under one technology category</li> </ul>
12	Ms. Sharmila Barathan General Electric (GE) India	<ul style="list-style-type: none"> <li>Biomass tariff should be LKR 26.8 per kWh</li> </ul>	<ul style="list-style-type: none"> <li>LKR 25.09 per kWh was approved for biomass</li> </ul>
		<ul style="list-style-type: none"> <li>Agricultural &amp; industrial waste tariff should be LKR 18 per kWh.</li> </ul>	<ul style="list-style-type: none"> <li>LKR 17.71 per kWh was approved for Agricultural &amp; industrial waste</li> </ul>

		<ul style="list-style-type: none"> <li>Announce a separate tariff for bioenergy based power generation.</li> </ul>	<ul style="list-style-type: none"> <li>The technology is not well established</li> </ul>
13	Dr. T. Sugathapala Sri Lanka Sustainable Energy Authority	<ul style="list-style-type: none"> <li>Approved tariff shall be applicable till end of 2013</li> </ul>	<ul style="list-style-type: none"> <li>Tariff is applicable till end of 2013</li> </ul>
		<ul style="list-style-type: none"> <li>In future tariff should be announced no later than 1<sup>st</sup> December of previous year.</li> </ul>	<ul style="list-style-type: none"> <li>No comments</li> </ul>
		<ul style="list-style-type: none"> <li>Devaluation of Rupee has not taken into account when calculating capital cost.</li> </ul>	<ul style="list-style-type: none"> <li>Note 4</li> </ul>
		<ul style="list-style-type: none"> <li>CCPI should be used to escalate fuel cost.</li> </ul>	<ul style="list-style-type: none"> <li>Note 2</li> </ul>
		<ul style="list-style-type: none"> <li>Fuel cost should be escalated from the date of signing the SPPA.</li> </ul>	<ul style="list-style-type: none"> <li>No comments</li> </ul>
		<ul style="list-style-type: none"> <li>Optional USD tariff should be announced to attract foreign investment.</li> </ul>	<ul style="list-style-type: none"> <li>Government Policy issue</li> </ul>
		<ul style="list-style-type: none"> <li>Announce separate tariffs for low-head mini hydro.</li> </ul>	<ul style="list-style-type: none"> <li>All mini-hydro power plant falls under one technology category</li> </ul>
		<ul style="list-style-type: none"> <li>Declare a high tariff for technologies with storage (Eg. solar)</li> </ul>	<ul style="list-style-type: none"> <li>NCRE tariffs are cost based</li> </ul>
		<ul style="list-style-type: none"> <li>A tariff has to be announced for the hydropower plants in which the period of SPPA is lapsed but with valid Energy Permit.</li> </ul>	<ul style="list-style-type: none"> <li>Commission has decided to offer tier three tariff for five years</li> </ul>
		<ul style="list-style-type: none"> <li>Tariff should be developed beyond energy permit period.</li> </ul>	<ul style="list-style-type: none"> <li>No comments</li> </ul>
14	Mr. Vishnu Vasanth RenewGEN Enviro Ventures India Pvt Ltd.	<ul style="list-style-type: none"> <li>Compared to biomass the investment in MSW is significantly higher due to various technical and other requirements. Therefore a premium (at a minimum) of LKR 1.8 per kWh should be added to biomass tariff to arrive MSW tariff.</li> </ul>	<ul style="list-style-type: none"> <li>LKR 1.01 per kWh over the biomass tariff is offered</li> </ul>
		<ul style="list-style-type: none"> <li>Consider Rupee depreciation when setting tariff.</li> </ul>	<ul style="list-style-type: none"> <li>Note 04</li> </ul>
		<ul style="list-style-type: none"> <li>Consider setting a flat tariff of LKR 26.42 per kWh for MSW</li> </ul>	<ul style="list-style-type: none"> <li>LKR 26.10 per kWh was approved for MSW</li> </ul>
15	Mr. Anil Makalanda Small Hydro Power Developer Association. Oral presentation by Mr. Riyaz Zangani	<ul style="list-style-type: none"> <li>Actual capital cost for 1MW mini hydro plant is LKR281 Mn, because of inflation, Rupee depreciation and most of the remaining projects are low head-high flow.</li> </ul>	<ul style="list-style-type: none"> <li>LKR 220 Mn per MW was arrived through the adjustment of previous year cost basis based on published indices and incorporated Rupee depreciation</li> </ul>
		<ul style="list-style-type: none"> <li>Plant factor which optimizes generation averages to 35.8%</li> </ul>	<ul style="list-style-type: none"> <li>Note 6</li> </ul>
		<ul style="list-style-type: none"> <li>Average weighted prime lending rate should be used when determining interest rate, which will amount to 17.94%</li> </ul>	<ul style="list-style-type: none"> <li>Note 3</li> </ul>
		<ul style="list-style-type: none"> <li>Deduction of 1.5% from the interest rate is erroneous</li> </ul>	<ul style="list-style-type: none"> <li>Note 3</li> </ul>
		<ul style="list-style-type: none"> <li>Current post-tax COE is 20.85%, so ROE must be arrived through an iterative method as per methodology.</li> </ul>	<ul style="list-style-type: none"> <li>Note 1</li> </ul>
		<ul style="list-style-type: none"> <li>Post tax ROE should be 20.85%</li> </ul>	<ul style="list-style-type: none"> <li>Note 1</li> </ul>
		<ul style="list-style-type: none"> <li>Consider 10% withholding tax on dividends.</li> </ul>	<ul style="list-style-type: none"> <li>Pre-tax ROE is allowed</li> </ul>
		<ul style="list-style-type: none"> <li>WACC should be revised incorporating above changes to 19.1%</li> </ul>	<ul style="list-style-type: none"> <li>Note 7</li> </ul>
		<ul style="list-style-type: none"> <li>3% O&amp;M cost for a mini hydro is not accurate because it doesn't depend on capital cost.</li> </ul>	<ul style="list-style-type: none"> <li>Note 5</li> </ul>
		<ul style="list-style-type: none"> <li>Escalation rate on O&amp;M cost should be revised to 6.93%</li> </ul>	<ul style="list-style-type: none"> <li>Escalation rates were calculated as per the methodology</li> </ul>

		<ul style="list-style-type: none"> <li>Royalty and taxes should not be ignored.</li> </ul>	<ul style="list-style-type: none"> <li>No comments</li> </ul>
16	Mr. A K T Fernando ORIZON RENEWABLE ENERGY (PRIVATE) LTD	<ul style="list-style-type: none"> <li>Qualify MSW as a separate technology.</li> <li>Devaluation of Rupee will shrink the income of foreign investors.</li> <li>Large MSW projects are financially viable than small 10MW.</li> </ul>	<ul style="list-style-type: none"> <li>MSW was approved as a separate technology</li> <li>A premium for financial risk is provided in ROE</li> <li>Government policy is to sign SPPAs only up to 10MW</li> </ul>
17	Mr. Asanka B. Thennakoon, BAM GREEN Pvt. Ltd.	<ul style="list-style-type: none"> <li>Capital cost for solar is LKR267Mn per MW</li> <li>Request PUCSL to consider a tariff of LKR30 per unit for roof top solar</li> </ul>	<ul style="list-style-type: none"> <li>Specific solar tariff is not offered</li> <li>LKR25.09 per kWh was approved for solar as any other technology</li> </ul>
18	Mr. Thusitha Nakalanda Sampath Bank	<ul style="list-style-type: none"> <li>Interest rate should be AWPLR+3% atleast</li> <li>Plant factor for mini-hydro has drastically decreased.</li> <li>Plant factors of wind plants in the mid-country ranging 20% to 21%</li> </ul>	<ul style="list-style-type: none"> <li>Note 3</li> <li>Note 6</li> <li>Note 6</li> </ul>
19	Mr. Lalith Wasantha Iris Echo Lanka Private Limited	<ul style="list-style-type: none"> <li>Qualify Solar for a separate tariff</li> </ul>	<ul style="list-style-type: none"> <li>LKR25.09 per kWh was approved for solar as any other technology</li> </ul>

## Notes

### 1. Return on Equity (ROE)

Commission obtained expert opinion on this parameter and estimated Cost of Equity is 20% (see section 3. of the decision document), and considering the plant construction time that result in delayed returns, the Annual Return on Equity of 22% for years 1-15 and an incentive equivalent to non-escalable Annual Return on Equity of 20% for years 16-20 were approved.

### 2. Fuel escalation rate

As per the request of Biomass developers to use an escalation rate based on CCPI instead of using 2/3 of the O&M escalation rate, it had been decided to use half of the CCPI to escalate Fuel cost. There is no rationale to use diesel price as escalation factor under the Cost Based tariffs, it may be possible only under avoided Cost tariffs.

### 3. Interest rate

Considering the comments from the stakeholders, the expert opinion obtained on this parameter and observing the current lending rates, the following interest rate estimate is approved. The latest available Average Weighted Lending Rate (AWLR) is 14.88% (published on 29 June 2012) and by adding a Bank Risk Premium (3%) charged by the local banks, the approved interest rate is 17.88%.

### 4. Devaluation of Rupee

Considering the stakeholder comments on effect of Rupee depreciation on capital cost, the machinery and equipment component of the capital costs were adjusted to reflect the exchange rate variations up to July 2012 (average exchange rate Rs. 132.86/USD<sup>1</sup>)

5. O&M rates were arrived through an analysis of audited accounts of existing plants.

6. Plant factors were calculated based on actual data submitted by developers.

7. Weighted Average Cost of Capital (WACC)

Commission obtained expert opinion on this parameter. Considering the current risk free returns, the Cost of Equity of 20% is derived based on 20 year Treasury bond rate<sup>1</sup> of 11% and Equity risk premium of 5% and additional project risk premium of 4%. The Cost of Debt was adjusted for corporate tax (28%); which is estimated to be 17.88% (shown above in Note 3). The resulting approved Cost of Debt is 12.87% for discount rate estimation. Assuming the typical debt equity ratio of 60:40, the resulting approved discount rate (WACC) is 15.72%.

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<sup>1</sup> Source: Central Bank of Sri Lanka website: [www.cbsl.gov.lk/](http://www.cbsl.gov.lk/)