

28 March 2013

The Director General  
PUCSL  
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St Michael's Road, Colombo 3.

### Public Consultation on Electricity Tariffs – 2013

1. LIRNEasia is a regional think tank based in Sri Lanka and engaged in infrastructure regulation and policy research across the Asia Pacific. Most recently, LIRNEasia was invited by the Secretariat of the South Asian Forum for Infrastructure Reforms (SAFIR) to deliver the 12<sup>th</sup> SAFIR Core Course on Regulation, in March 2013. It was attended mostly by electricity regulators from the region. We are also engaged in research in Bangladesh, India and Sri Lanka on how customer relationships can be better managed in the mobile telecom and electricity sectors. LIRNEasia wishes to make this submission in response to your letter of 13<sup>th</sup> March 2013 (your reference TE/TARIFF/CONS/2013), calling for comments on the proposed electricity tariffs. Your letter asked us to comment on 3 specific topics, and we shall do so below.
2. We also wish to attend the Public Consultation scheduled for the 4<sup>th</sup> of April 2013. Should we be requested to make an oral presentation at the same event, **we shall appreciate an early time slot, since I have to leave for India to teach a course on an evening flight.**

#### Topic 1: Whether there ways and means to further reduce the cost of supplying electricity

3. **Immediate actions to reduce demand:** Generation to meet peak demand is costly due to the use of expensive fuels (diesel, for example). Our calculations, based on the assumption that the most expensive generation is used last in the merit order, indicate that in 2011, the most expensive 5 per cent of energy purchased by CEB is responsible for close to 17 percent of costs, which is the same as the cost of the least expensive 50 per cent of the energy purchased. Thus, if energy purchases could be reduced by 5 per cent, it is possible that the losses of the CEB could be eliminated. This is the importance of managing demand. Not all the demand needs to be reduced in absolute amounts – shifting it to off-peak, e.g., night time (when the sole base load coal plant, producing inexpensive energy is asked to back down) could also provide substantial relief. If peak demand is lowered, the overall costs of supplying electricity will be reduced.
4. Therefore, the immediate aim should be to adopt a tariff structure that will create incentives to limit peak demand.
  - a. The “spikey” increases in unit costs at the various transition points (e.g. 30, 60, 90, etc. units) in the currently proposed tariff structure will create “bill shock” among consumers, and nudge a certain percentage of consumers to voluntarily reduce demand. But this will be insufficient.
  - b. To reduce demand further, and specifically to reduce peak demand, PUCSL should require CEB to carry out a campaign with specific messages reminding consumers

- that peak time has started (via TV/radio/and less frequently via SMS), and provide information about which energy-consuming appliances should be turned off for maximum reduction in demand at that particular moment in time.
- c. Taking a step further, positive behavioral change can be brought about by informing consumers about how their monthly bills (i.e. their energy consumption) compares to other/similar households. In particular, targeted messages printed on the electricity bill of high-consumption households stating that they are paying X rupees more than similar households have proven to be effective in several countries.<sup>1</sup> A redesigned and more informative electricity bill appears a necessity.
  - d. The cost models that underlie the tariff proposal are based on assumptions of levels of use that may change because of the radical redesign of the tariff structure. If demand is lower than projected, especially at the peak, it is possible that the proposed tariff will yield excessive earnings. Therefore, the approved tariff should include provisions for monitoring revenue levels and for periodic adjustments and/or the return of excess earnings to consumers.
5. **Short term (within 1 year) activities to change supply:** High generation costs are partly due to the high cost of input fuel (specifically diesel) and inefficient generation units. As such, bringing the proposed Norochcholai –II generators online by the promised 2014 date is crucial. The estimated cost savings from this plant are significant. After allowing for reasonable contributions to settle the considerable liabilities of the CEB, the remainder should be passed on to consumers in the form of rebates while maintaining the principle of bringing tariffs closer to costs.
6. **Longer term (2 years onwards) activities to change demand:** Meaningful demand side management activity cannot be carried out without some form of smart metering (which enable remote reading, time of day billing and other functions) and pre-paid metering. Capital costs and procurement processes are involved. Therefore a phased approach can be adopted.
- a. For example, it should be mandated that CEB/LECO install smart meters in all new condominium towers with immediate effect. Next, it should be mandated that the distributors should install smart meters in at least 50% of currently-high-consumption households (possibly defined as those using above 180 units per month) within the next 24-36 months. Such metering would enable subtle, yet sophisticated programs that change consumer consumption patterns. More importantly, such meters would also enabled more sophisticated policy solutions, such as time-of-day pricing and other alternative tariff structures that enable cost-reflective pricing in the future (see next section for details).
  - b. For those on tight budgets, lessons from the telecom sector which enabled pre-paid top-ups and small re-loads can be used. Pre-paid meters and re-charge networks involve costs, but they also reduce credit risk to CEB/LECO and reduce bill-

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<sup>1</sup> Research in the emerging field of behavioral economics shows that positive behavioral change (such as the changes in behavior consumers make to use energy more efficiently) can be achieved by good design choices and by information cleverly presented to customers by service providers.

generation costs. A study should be carried out to establish the costs and benefits of installing such a pre-paid system, taking into account system-wide costs and benefits.

7. It appears that the night-time minimum consumption of electricity is too low. The current rule re taking only 20 percent of power per source appears to have contributed to the lower load factors in Norochcholai compared to what is normal for base load coal plants. This problem will become exacerbated as more large thermal plants come on line. It would be advisable for the Commission to mandate CEB to provide it with time-bound plans to either (a) build a cable to interconnect with the Indian grid so that the 20 percent rule can be applied to a larger base; (b) re-assess the relevance of the 20 per cent rule; or (c) increase night-time off-peak electricity use, either by means of incentives for use during that time, or actions such as using excess power to pump water back into reservoirs so more peak power from hydro can be generated. Pumped storage can also be a valuable addition to the mix of generation resources when non-conventional renewable energy sources (which are unpredictably intermittent in nature) supply a measurable share of energy (it was about 6 per cent in 2011).

## **Topic 2: Exploring alternative tariff structures to recover these costs and facilitate the economic development of the country**

8. The optimal tariff structure is one in which one electron is priced at the same price as another. Given there are different costs of delivering electrons to different classes of users and at peak and off-peak, this could translate into different prices for clearly distinguishable classes of users. But efforts must be made to preclude opportunities for arbitrage among different classes because in many cases these actions lead to petty corruption. Examples are the incentives created to obtain multiple meters for the same house in order to take advantage of the different prices charged for small differences in use (e.g., 90 units v 60 units) and to meddle with meters. The above principle is part of the National Energy Policy and Strategies (para 3.5) and the PUCSL is bound to implement it.<sup>2</sup>
  - a. It may well be that certain segments of residential users cannot afford to pay cost-reflective prices. How that problem can be handled is discussed below under Question 3.
9. It is not possible to go to cost-reflective pricing immediately. But every year progress must be made. It would be good if this year's tariff determination includes specific language on further reducing the bands and the differentials in unit prices among them. Even this year, the Commission may see it fit to further reduce the numbers of bands and categories.
10. The new structure requires unambiguous definition of the period within which the usage is calculated (i.e., 90 units per month). The current wording is ambiguous (is a month 30 days or 31? And what about February?). What happens when the meter reader comes early or late?

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<sup>2</sup> [http://www.ceb.lk/download/db/national\\_energy\\_policy.pdf](http://www.ceb.lk/download/db/national_energy_policy.pdf)

One solution is to state that the unit rate is determined by the average daily consumption over the 30 day period prior to the date of the meter reading.

11. Implementation of the direction from the National Energy Policy and Strategies that prices should reflect costs require that peak prices be different from off-peak pricing because the costs of supplying at the peak and at off-peak differ. This requires meters capable of applying different prices at different time periods and mechanisms for giving actionable feedback to customers.
  - a. PUCSL should conduct (or direct the CEB to conduct in a time-bound manner) feasibility studies on installing smart meters in all customer premises. Not much study is needed for heavy users. Specific time-bound installation targets should be mandated for them, to be completed prior to the next tariff revision. It is only if smart meters are in place that time-sensitive tariffs can be implemented at least next year.

### **Topic 3: Identifying various socio-economic groups which need to be given due consideration for electricity/energy subsidies**

12. Currently, around 3.6 million households consume less than 90 units, and therefore receive a significant subsidy on their electricity bills. This subsidy, though lower in amount, will continue even with the proposed tariff. Instead of subsidizing energy for low-consuming households, the government should be subsidizing low-income households. While imperfect in its targeting of the extreme poor,<sup>3</sup> Samurdhi program, for better or worse, is the only means-tested social safety net program available in Sri Lanka, with roughly 1.5 million households receiving some Samurdhi payment each month.
  - a. These households should be given a subsidy, in the form of an energy voucher or transfer of funds to their bank accounts. The money can be used to pay the increased electricity bills. Alternately, if a Samurdhi household decides reduce energy consumption, they may choose to spend the funds on other goods/services. This type of targeting should be immediately implementable, given the Samurdhi program is already geared to transferring cash to recipient accounts. These kinds of mechanisms for delivering energy subsidies to low-income families are common in the developed world.<sup>4</sup>
  - b. PUCSL and Practical Action<sup>5</sup> consider families consuming less than 50 units per month to be “energy poor” (i.e. consuming less than required). If we assume that

<sup>3</sup> For example, World Bank and Institute of Policy Studies (IPS), Sri Lanka document the problems with the way Samurdhi program targets the poor (e.g. membership being skewed away from the poorest of the poor, towards the more “better off poor”). See <http://www.ips.lk/talkingeconomics/2010/07/better-targeting-of-transfers-samurdhi-programme/> and <http://siteresources.worldbank.org/INTDECINEQ/Resources/SamurdhiJune042003.pdf>

<sup>4</sup> For example, see information on the operations of the Low Income Home Energy Assistance Program (LIHEAP): <http://www.acf.hhs.gov/programs/ocs/programs/liheap/about>

<sup>5</sup> See, Level of energy poverty in Sri Lanka, Report submitted to Practical Action, Sri Lanka <http://www.sa-energy.net/m/ENERGY.pdf>; and Ranasinghe, A. (2011), Study on Requirements of Prospective Electricity

poor (i.e. Samurdhi) households are at this energy-poverty margin, their current bill of Rs. 308 would increase to Rs.465 under the proposed tariff, assuming consumption remains constant around 50 units. The roughly Rs. 150 increase in price could be paid as a cash subsidy, resulting in a total cost of Rs. 2.7 billion, still under 5% of the total costs of LKR 59 billion estimated to have been incurred by government in propping up the electricity sector in 2012.<sup>6</sup>

13. Under the directives of the National Energy Policy and Strategies, there is little justification for a special “Religious” tariff category. However, a case can be made for providing a subsidy from the votes of the Ministry of Buddha Sasana and Religious Affairs to the religious establishments currently enjoying subsidies. There is no urgency in establishing this subsidy scheme because the present tariff decreases the electricity bills of religious places (and revenue realization) while increasing those of all other categories. However, the PUCSL should include in its 2013 determination directions for the discontinuance of this particular tariff category and its replacement by date certain of a targeted subsidy scheme that transfers funds from the Ministry of Buddha Sasana and Religious Affairs directly to the religious places (ideally) or to the CEB/LECO to offset the losses resulting from below-cost provision of electricity.

Thank you.

Sincerely,



Rohan Samarajiva, PhD  
Chair, LIRNEasia

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Consumers and Fuel (electricity) Poverty & Affordability, report submitted to PUCSL, Sri Lanka  
[http://www.pucsl.gov.lk/english/wp-content/themes/pucsl/pdfs/fuel\\_poverty\\_affordability\\_april\\_2011.pdf](http://www.pucsl.gov.lk/english/wp-content/themes/pucsl/pdfs/fuel_poverty_affordability_april_2011.pdf)

<sup>6</sup> Government of Sri Lanka (2012). *Annual Report of the Ministry of Finance and Planning*, 2011, p. 158.