

Comments by LIRNEasia to draft Demand Side Management (DSM) Regulations, submitted to the Public Utilities Commission of Sri Lanka

1.0 LIRNEasia, a regional think tank working on infrastructure policy issues in emerging Asia, welcomes PUCSL's decision to focus on demand-side management (DSM) issues. We point out that the best method to manage demand is to move towards time-of-day pricing and therefore PUCSL should strive for this in the long term. However in the short and medium term, we believe PUCSL's decision to introduce "Utility-driven Demand Side Management Regulations, 2013" or "The U-DSM Regulations, 2013" (hereafter Draft DSM Regulation) is a good first step, especially in light of the stress on the system due to increasing energy needs of a developing nation such as Sri Lanka.

2.0 **Shortcomings of proposed methods of understanding consumer behavior:** In order to successfully implement DSM, it is essential to understand the needs of consumers and how they might respond to various DSM initiatives. The Draft DSM Regulation section 7.1 states "*every Distribution Licensee shall complete first study to assess Technical potential and Economic potential for DSM*". Section 7.2 of the draft regulation further goes on to describe that these studies will be in the form of "Load Research" and "Market Research". We point out several potential issues with the lack of clarity in the above specifications:

2.1 Market research is conducted to understand the "*market potential for specific energy efficiency technologies and applications.*" One of the most common methods of understanding the market is through the user-centric, demand side surveys. Demand side surveys often provide valuable quantitative information. However, they are often riddled with problems, especially if the respondents are being surveyed on technologies, applications and situations that they have not had the opportunity of using. Even qualitative research (ethnographic studies, focus groups and such) about the users' behavior in the future suffer from the same problem as quantitative surveys – that is, the users' expressed preferences (i.e. what they tell the interviewer what they will do) can be significantly different from their revealed preference (i.e. what they actually do). For example, respondents to a survey may express interest in one DSM technology over another, but when actually faced with choosing between the two, may chose the one they claimed to prefer less, or chose neither¹. There is therefore a body of research attempting to understand behavior and to frame consumer choices differently².

2.2 The proposal also states that each license holder will conduct its own research into potential DSM technologies and market research related to the same. Without giving more guidance on which types of market research is acceptable, it is possible that PUCSL will end up having to compare 'apples and oranges' when the five license holders report back with their

¹ The reasons for such contradictory behaviour are many. The emerging field of Behavioural Economics is an attempt to merge psychology with economics to study the actual behaviour of humans. Traditional economics assumes rational human behaviour, which is not always the case. For more discussion on this, we recommend the very readable book "Nudge: Improving decisions about health, wealth, and happiness" by Richard H. Thaler & Cass R. Sunstein.

² The studies "Behavioral Science and Energy Policy" by Hunt Allcott and Sendhil Mullainathan and "Behavioral Economics in Policy Design" by Eugene Toh and Vivienne Low details this further.



findings, making it difficult to pick the best DSM methods/technologies to roll out across the license holders.

3.0 Alternative ways to study consumer behavior - RCTs: Randomised Control Trials (RCTs) originated in the field of medicine for conducting clinical trials and have now been adopted in numerous fields. RCTs are a specific type of scientific experiment and are considered the gold standard of determining the impact of a selected intervention. The basic concept in RCTs is to randomly assign users/consumers to two groups and to give one group a particular treatment (e.g. introduce a specific DSM technology to them) while leaving the other group as is (i.e. as a control group). The impacts (i.e., the adoption rate for the DSM technology, or the reduction in energy consumed, etc.) are studied pre- and post-treatment to understand the treatments with the highest impact and to observe how consumer preferences (i.e. behavior) have changed as a result of the treatment. A small sample is sufficient for each group as long as rules of random selection and representativeness are followed. Different DSM measures can be ‘pilot tested’ on the treatment groups and the best ones selected based on objective results instead of attempting to roll out costly DSM measures on all consumers without knowing their likely hood of adopting such measures.

3.1 RCTs by Singapore's Regulator: The Energy Market Authority (EMA), Singapore’s energy regulator, has used RCTs to trial different energy pricing packages, which are aimed at reducing consumption and price. In order to overcome the status quo bias (i.e. the fact that most consumers don’t switch energy plans, even if switching is possible and switching would save them money), the best (least cost energy plan) was calculated for each customer based on the household’s consumption patterns and presented as a ‘Recommended Offer’. When presented as such, majority of consumers switched their plans to the cheaper option. EMA also Opted for trials with 400 consumers to determine the demand for smart meters in 2009³.

4.0 Possible ‘treatments’ for RCTs for testing technology and publicity: Numerous energy efficient technologies and applications are now available. The utilities can select some of the new technologies and applications that have seen high take up in markets similar to Sri Lanka and make them available to a select groups of consumers to determine take up. In each case, a specific technology is made available to the treatment group, and not to the control group. But it is not just the technology options that should be trialed. The way DSM initiatives or DSM technologies are presented (i.e. marketed) will also make a difference in how successfully they are adopted. Based on international experience, there are numerous DSM initiatives that can be trialed in Sri Lanka to exploit patterns of consumer behavior. To cite just a few examples among many, PUCSL could design RCTs to:

4.1 Overcome the fact that people may focus more on loss (losing something they have) rather than gains by running ad campaigns that communicate how many rupees they are losing each month by not switching to low-energy light bulbs (instead of pointing out how much they can gain by switching)

³ For further information about RCTs in Singapore, read Chapter 5 of “Behavioral Economics in Policy Design” by Eugene Toh and Vivienne Low

- 4.2 Address the likelihood that people judge their wellbeing relative to a reference point: by telling them other similar households are paying Rs. X less for their electricity than they are because they are consuming Y units less each month. Those who reduce their consumption can be recognized or further rewarded.
 - 4.3 Overcome status quo bias: by making the low-cost plans (or CFL bulbs, or low energy fridges) the default options, requiring consumers to make a choice
 - 4.4 Address the fact that people are bad at evaluating a large number of options and tend to do nothing when faced with too many choices: by promoting only 2 or 3 types of DSM measures (e.g. provide 3 high impact energy saving tips, not 10).
 - 4.5 Address the fact that people change their behavior when they get timely and specific feedback: by sending daily energy expenditure via SMS to consumers
- 5.0 Electricity is an experience (or experiential) good. The use of trials to allow consumers to experience the new technologies and applications (thereby enabling the utilities to make informed choices of which DSM initiatives to scale up across the country or across a user group) is a way to achieve the maximum impact with the least amount of wastage. The results will give a more accurate picture of the demand for various DSM initiatives by consumers. A time period of six months will be a sufficient time period for conducting Randomised Control Trials (RCTs). The utilities can conduct multiple RCTs depending on the number of technologies and the applications they are likely to introduce.

LIRNEasia is happy to discuss the above or provide further information should it be desired. Please contact the following persons:

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