INTRODUCING OPEN ACCESS AND TRANSMISSION PRICING FOR SRI LANKA

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DECLARATION

I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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Signature of the Author: Date:
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The above candidate has carried out research for the Masters Dissertation under my supervision.

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ABSTRACT

In Sri Lanka the ownership of the essential infrastructure is retained with the state owned organizations such as Ceylon Electricity Board, Ceylon Petroleum Corporation etc. Most of such industries are vertically integrated monopolies because of the state owned infrastructure. Electricity transmission and distribution network businesses are natural monopolies because of its very large investment on asset base and the inability to duplicate the asset base. Even though the transmission and distribution network business are natural monopolies the electricity trading businesses can be carefully separated from the owner of the network. Thus the competition can be achieved.

This dissertation discusses how the competition can be achieved through fully opening up the transmission network towards the wholesale competition. Further it discusses about a suitable methodology for the transmission pricing for Sri Lankan transmission network, an important aspect of opening up the transmission network. In identification of a suitable transmission pricing methodology it discusses the different transmission pricing methodologies practiced internationally. Characteristics of different transmission pricing methodologies are discussed and their applicability to Sri Lankan transmission network is discussed. Marginal Participation methodology in Rolled-in pricing model is further discussed since it satisfies the requirements of a better transmission pricing methodology. Transmission prices are calculated as per the above methodology using a power system analysis tool (PSS/E). Every node of the transmission system is given an hourly per MW transmission price and every generator/load connected to the transmission network is invoiced as per their agreed MW values with the network operator.

Results of the transmission price calculations are analyzed and compared with the current pricing methodology. How the implementation of proposed transmission prices result in a better transmission system is discussed.

The other factors required for a smooth operation of a Wholesale market model is briefly discussed and further studies can be done in those aspects.

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ARR	Annual Revenue Requirement
BST	Bulk Supply Tariff
CAPEX	Capital Expenditure
CEB	Ceylon Electricity Board
CEBTL	CEB Transmission Licensee
Disco	Distribution Company
DL	Distribution Licensee
FSA	Fuel Supply Agreement
Genco	Generation Company
GSS	Grid Sub-Station
IMO	Independent Market operator
IPP	Independent Power Producer
ISO	Independent System operator
LECO	Lanka Electricity Company (Private) Ltd
LID	Large Infrastructure Development
LMC	Long-Run Marginal Cost
LTTDP	Long-term Transmission Development Plan
O&M	Operation and Maintenance
OPEX	Operational Expenditure
PPA	Power Purchase Agreement
PUCSL	Public Utilities Commission Sri Lanka
RAB	Regulatory Asset Base
ROE	Return on Equity
SLCPI	Sri Lanka Consumer Price Index
SPP	Small Power Producer
SRIC	Short run Incremental Cost
SMC	Short-Run Marginal Cost
TransCo	Transmission Company
UNT	Uniform National Tariff