

**DESIGN A DSM ORIENTED, TIME OF USE (TOU)
TARIFF MODEL FOR DOMESTIC CONSUMERS WITH
A LOAD RESEARCH**

Erandi Heshani Udageachchi

(159379K)

Dissertation submitted in partial fulfillment of the requirements for the
Degree Master of Science

Department of Electrical Engineering

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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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(E H Udageachchi)

The above candidate has carried out research for the Masters Dissertation under our supervision.

.....

Signature of the supervisor

Date:

(Dr. Asanka Rodrigo)

ABSTRACT

The night-time peak demand drives the sector investments and hence has become a major target area for Demand Side Management programs aimed at energy conservation and efficiency improvement. Time Of Use (TOU) Tariffs are perceived as a major tool to curb the peak demand.

Further, with the growth of the usage of electrical vehicles, there is a tendency of increasing the peak demand because of the charging load. The introduction of the TOU tariff will shift the charging load to off peak hours and the domestic consumers will get the opportunity to charge their vehicles at a cheaper rate. If the charging of electric vehicle at the off-peak hours can be encouraged, the valley in the load profile at the off-peak hours can also be filled while clipping the peak demand.

With those intensions, an optional TOU Tariff has been introduced to domestic customers of Sri Lanka in 2015. But the prevailing TOU tariff has not been derived after a load research and it is not attractive to the domestic consumers.

The effectiveness of the existing TOU tariff for domestic consumers was analysed in this study. Further an effective TOU tariff for domestic consumers was proposed and the appropriateness of the proposed TOU tariff for the domestic consumers in each block was identified. The benefits of implementing the proposed TOU tariff were also quantified.

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LIST OF ABBREVIATIONS

Abbreviation	Description
CEB	Ceylon Electricity Board
CPP	Critical Peak-Pricing
DSM	Demand Side Management
EDP	extreme day pricing
GWh	Giga watt hour
kWh	kilo watt hour
LECO	Lanka Electricity Company (Pvt) Ltd.
LKR	Sri Lankan Rupee
Mn	Million
MW	Mega watt
PUCSL	Public Utilities Commission of Sri Lanka
TOU	Time Of Use
USA	United States of America
WPN	Western Province North