

**ASSESSMENT OF ROOFTOP SOLAR NETMETERING
CONCEPT:
CONSUMER AND UTILITY POINT OF VIEW**

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Department of Electrical Engineering

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DECLARATION

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Date

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

Prof.H.Y.R Perera :.....

Date :.....

Dr. Asanka Rodrigo :.....

Date :.....

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ABSTRACT

Global energy needs continue to grow, whilst fossil fuels still outstrip renewable energy in terms of supportive policies and subsidies. With growing concern towards climate change, many countries across the world are rethinking their energy strategy and incorporating alternative methods of energy generation. Of all the different modes of renewable energy technologies, Solar PV technology has caught the most attention.

With environmental concerns and energy needs increasing, the world is promoting renewable energy technologies. Today, the PV systems price is decreasing, which gives it a competitive edge. The aim of this study is to research the viability of rooftop solar PV systems under certain circumstances. The study performs a cost beneficial analysis for the lifetime of the solar PV system making use of economic analysis on residential consumer perspectives and avoided cost analysis on utility point of view.

The research concluded with several findings. Basically it concluded that the investment on Roof Top Solar is worthwhile when monthly consumption exceed 200 kWhs. Therefore, according to the present tariff structure and cost of solar PV Systems, Net Metering is not economical for monthly average consumption below 150 units. In utility point of view, it has been found that the reduction of avoided cost is rapidly increasing. But the rate at which the reduction of avoid cost increasing is decreasing and it becomes constant after 20 years. rooftop solar electricity generation cannot replace any marginal plant during the period of study concerned.

There is no detailed study has been conducted in Sri Lanka in this particular area of study. The outcome of the research provides important and useful information for consumers, electricity utilities as well as the policy makers in energy sector.

TABLE OF CONTENTS

Declaration of the candidate & Supervisor	i
Dedication	ii
Acknowledgements	iii
Abstract	iv
Table of contents	v
List of Figures	vii
List of Tables	viii
List of abbreviations	ix
1. Introduction	
1.1 Global Energy Status and Challengers	1
1.2 Renewable Energy for Global Energy Demand	1
1.3 Global Solar Status	2
1.4 Sri Lanka Energy Picture	4
1.5 Potential for NCRE in Sri Lanka	6
1.6 Solar Resource of Sri Lanka	7
1.7 Contribution of Solar Power for Sri Lankan Energy Market	11
1.8 Net Metering	11
1.9 Rooftop Solar Net Metering	12
2. Problem Identification	13
2.1 Research Approach	13
2.2 Literature Review	14
2.3 The Problem Statements	17
2.4 Objectives	19
2.5 Dissertation Outline	19
3. Methodology	20
3.1 Collection of Data	20
3.2 Data Analysis	21
3.3 Case Study	21

4.	Data Analysis	25
	4.1 Data Prediction	25
	4.2 Solar Irradiance and Insolation	25
	4.3 Efficiency of Solar Panels	27
	4.4 Solar Panel output degradation	32
	4.5 Sunspot	32
	4.6 Tariff Variation	36
	4.7 Lifetime of Solar PV	39
	4.8 System Costs	40
	4.9 Discount Rate	45
5.	Economic Analysis	45
	5.1 Simple Payback Period	45
	5.2 Simple Payback Period calculation	46
	5.3 Net Present Value	55
	5.4 Calculation of NPV	56
	5.5 Calculation of IRR	58
6.	Avoided Cost	60
	6.1 Introduction	56
	6.2 Fuels used in various power plants	61
	6.3 Determination of fraction of time each Power Plant in Margin	61
	6.4 CEB Dispatch Schedule	62
	6.5 Avoided Cost Calculation methodology	63
	6.6 Dispatch Schedule	65
	6.7 Prediction of rooftop solar electricity production	76
	6.8 Future behavior of existing Thermal Plants	79
7.	Discussion	89
8.	Conclusions and Recommendations	91
	References	93
	Appendix A-Sample Data Collection	95
	Appendix B-Manufacturer Data Sheets	99

LIST OF FIGURES

Figure 1.1	Growth of Global Renewable Power Capacities (Excluding Hydro)	02
Figure 1.2	Solar PV operating capacity as percentages of leading countries	03
Figure 1.3	Growth of installed capacity of solar PV	04
Figure: 1.4	Installed capacities of NCRE Sources	07
Figure: 1.5	Growth of installed capacity of NCRE Sources	07
Figure 1.6:	Power Generation of NCRE Sources	08
Figure: 1.7	Solar resource map developed by the NREL	09
Figure 1.8	Operation of Solar Net Metering System	12
Figure 2.1	Grid Connected Solar PV System	14
Figure 3.1	Monthly Electricity Generation of a particular Customer	22
Figure 3.2	Comparison Monthly Billing Units with and without Net Metering	24
Figure 4.1	Variation of monthly Average Solar Insolation	27
Figure 4.2	Actual Generation of 1 kW Solar Panel	30
Figure 4.3	Calculated Solar Panel Efficiency	31
Figure 4.4	Actual Generation of 2.2 kW Solar Panel	31
Figure 4.5	Calculated Solar Panel Efficiency	30
Figure 4.6	Actual Generation of 6 kW Solar Panel	32
Figure 4.7	Calculated Solar Panel Efficiency	33
Figure 4.8	Calculated Average Efficiency	33
Figure 4.9	Relationship between Sunspot number and Solar Irradiance	35
Figure 4.10	Sunspot cycles from 1997 to 2012	36
Figure 4.11	Daily Totals Solar Irradiance from 1997-2012	36
Figure 4.12	Variation of sunspot number -from 1997 to 2032	37
Figure 4.13	Block wise variation of Energy Charge for Domestic Consumers	39
Figure 4.14	Forecasted Block wise Tariff from 2013 to 2032	41
Figure 4.15	Price reduction of Crystalline PV Cells	42
Figure 4.16	Price variation of Chinese Solar Cells	43
Figure 4.17	Average Cost of installed Solar Systems	44

Figure 5:1	Payback Period of 1kW Solar Panel	49
Figure 5:2	Payback Period of 2kW Solar Panel	49
Figure 5.3	Payback Period of 3kW Solar Panel	50
Figure 6.1	Average Unit Costs of Thermal Power Plants in 2013	65
Figure 6.2	Load Duration Curve	72
Figure 6.3	Cumulative installed capacity of Solar PV in GW	77
Figure 6.4	Forecasted Solar PV growths up to 2033	78
Figure 6.5	Reduction of total Avoided cost over the lifetime of Solar System	86
Figure 6.6	Share of energy supply by source	87



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LIST OF TABLES

Table 1.1	Availability and Total Production of Electricity by category	5
Table 1.2	Percentage share of NCRE Sources	8
Table: 3.1	Solar Net Metering Consumers	21
Table 3.2	Comparison of Monthly Billing Units	23
Table 4.1	Monthly Average insolation, Colombo	26
Table 4.2	Effect of temperature & Dust	29
Table 4.2	Variation of Solar Irradiance	37
Table 4.3	Variation of energy charge for domestic consumer category	38
Table 4.4	Variation of fixed charge for domestic consumer category	39
Table 4.5	Block wise Tariff escalation rate and % tariff escalation	40
Table 4.6	Average Cost of installed Solar Systems	44
Table 5:1	Tariff escalation rate for sensitivity analysis	53
Table 5:2	Payback Period with different tariffs	54
Table 5:3	NPV of 1kW Solar Consumer	57
Table 5.4	IRR of 1kW Solar Panels	58
Table 6.1	Potential costs avoided due to rooftop solar net metering	60
Table 6:2	Fuel Prices effect from February 2013	61
Table 6.3	Generation cost of CEB Thermal Plants	64
Table 6.4	Dispatch Schedule 2013	67
Table 6.5	Calculated Plant Factors	69
Table 6.6	Calculated Plant Factors along with the plant capacity	70
Table 6.7	Power Plants sorted in the descending order of unit cost	70
Table 6.8	Fraction of time each plant operate in margin	71
Table 6.9	Installed rooftop solar capacity as at 31 st December 2013	73
Table 6.10	Total dispatch energy of thermal plants in 2013	74
Table 6.11	Plant factors of Thermal Plants	74
Table 6.12	Fraction of margin each plant operates	75
Table 6.13	Operating costs of marginal power plants	75

Table 6.14	Global Solar PV installed capacity	76
Table 6.15	Rooftop Solar Capacity growths	77
Table 6.16	Forecasted Rooftop Solar PV Capacity	78
Table 6.17	Additions and Retirements of Thermal Power Plants	79
Table 6.18	Projected dispatch schedule of Power plants in GW	81
Table 6.19	Projected dispatch schedule of Power plants GWh	82
Table 6.20	Projected total Plant Dispatch capacity of each thermal plant	83
Table 6.21	Calculated plant factors for projected Plant Dispatch schedule	84
Table 6.22	Fraction of margin each plant operates	84
Table 6.23	Avoid cost of marginal Plants	85
Table 6.24	Reduction of avoided cost due to rooftop solar net metering	86
Table 6.25	Expected share of energy supply	87



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LIST OF ABBREVIATIONS

IEA	International Energy Agency
HFO	Heavy Fuel Oil
NREL	National Renewable Energy Laboratory
SEA	Sustainable Energy Authority
NOAA	National Oceanic and Atomic Administration
NGDC	National Geographical Data Centre
NPV	Net Present Value
IRR	Internal Rate of Return
DCF	Discounted Cash Flow
IPP	Independent Power Producers
LNG	Liquid Natural Gas
PUCSL	Public Utility Commission Sri Lanka
EPIA	European Photovoltaic Industry Association
NCRE	Non Conventional Renewable Energy
CEB	Ceylon Electricity Board
LECO	Lanka Electricity Company
PV	Photo Voltaic
LTGEP	Long Term Generation Expansion Plan
GWh	Gigawatt Hour
kWh	Kilowatt Hour
MW	Megawatt



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