

# Measurement and Verification Template

Developed by AEEE with Support from Shakti Sustainable Energy Foundation  
as a Part of Model ESCO Performance Contract

## DISCLAIMER

*AEEE has taken due care and caution in development of this M&V Template which is a part of model EPC based on study of existing contracts, interactions with various stakeholders involved in the promotion and implementation of ESCO projects. However, the user of this Template is advised to modify, add or delete M&V procedures as applicable to the project, circumstances and viewpoints of the Parties involved in their particular case. The users should avail of services of qualified M&V practitioner and legal counsel to address issues that pertain to their individual circumstances. The template serves as a broad guide to address common issues encountered that result in disputes.*

*AEEE or Shakti Foundation do not take any responsibility for any loss suffered due to the adoption of this M&V Template in any manner. The suggestions in this template do not necessarily reflect that of Shakti Foundation. The organization accepts no liability for the content of this document, or for the consequences of any actions taken on the basis of the information provided*

**INTRODUCTION- M&V PLANNING TOOL**

This M&V planning tool has been developed to assist M&V planners capture and incorporate the various M&V design elements for a particular project. The template is presented in a spreadsheet for ease of calculations, with the following contents:



Worksheet Tab	Purpose
<a href="#">Project Summary</a>	A summary of the overall project
<a href="#">ECM Project Background</a>	To capture details for the site and ECM, including the estimated project benefits, implementation plan and key stakeholders
<a href="#">M&amp;V Design</a>	To capture the essential elements of the M&V Plan. This includes preferred M&V Option, measurement boundary definition, details of key parameters, and process information relating to conducting measurements, calculating saving and uncertainty.
<a href="#">M&amp;V Schedule</a>	Schedule and Time of Reporting
<a href="#">M&amp;V Results</a>	To capture the step-by-step list of tasks, and allocation of resources

# Measurement and Verification Template

PROJECT SUMMARY	
Project Name	
Project Number	
Project Manager	

Details about Projects			
Number of ECMs			
Electricity Savings			
Present Tarrif			
Cost Savings			
Project Team	Name / Company	Project and Role	Contact No
Preliminary Budget			
Scope	In Scope	Out of Scope	
Deliverables	Deliverable	Due Date	
	M&V plan	01-01-2014	
	M&V results and report	01-01-2017	

ENERGY CONSERVATION MEASURE - PROJECT BACKGROUND			
<b>SITE DETAILS</b>			
Site Name			
Address			
Site Overview	Present System	Suggested Changes	
Baseline Energy Consumption			
<b>DESCRIPTION OF THE ECM PROJECT(S) BEING IMPLEMENTED</b>			
Details of ECM being implemented			
Estimated Project Savings	Project	Annual Savings kWh	Cost Savings (Rs)
Estimated Implementation Cost (Total)			
Implementation Plan Description			
Key Dates			
Key Stakeholders/Contacts	Name / Company	Role	Contact
Key considerations	Assumptions & Constraints	Risks	
		Category	Risk Description
	KEY SUCCESS CRITERIA		

# Measurement and Verification Template

MEASUREMENT AND VERIFICATION - M&V DESIGN					
<b>PROJECT INFORMATION</b>					
<b>Project Name</b>		0		<b>Project #</b> 0	
<b>Project manager</b>		0		<b>Last Updated</b>	
<b>M&amp;V APPROACH</b>					
<b>Project</b>	<b>M&amp;V Option Selected</b>	<b>Desired Accuracy</b>	<b>Overall Approach</b>	<b>Baseline Period</b>	<b>Post-Retrofit Period</b>
Savings Due to Light Switches					
Savings due to reduction in heat load					
Tarrif Related					
<b>MEASUREMENT BOUNDARY</b>					
<b>Project</b>	<b>Description of Measurement Boundary</b>			<b>Linked documents or drawings</b>	
<b>KEY PARAMETERS AND VARIABLES</b>					
<b>Key Parameters to be measured</b>	<b>ECMS</b>	<b>Parameter</b>	<b>Measurement period and duration</b>	<b>Method for Collecting Data</b>	
<b>Other Parameters to consider</b>	<b>ECMS</b>	<b>Parameter</b>	<b>Reason for consideration</b>	<b>Method for Considering/Estimating Data</b>	

# Measurement and Verification Template

Baseline Adjustments and Independent Variables that affect Energy Use within Boundary	ECMS	Type of Adjustment/Variable	Routine/Non Routine	Method for Adjusting baseline
Potential interactive effects identified	Project	Interactive Effect	Materiality	Agreed Approach
	None			
EQUIPMENT REQUIREMENTS				
Measurement Equipment	Project	Equipment	To be sourced from	Period required
CALCULATING RESULTS				
Approach/method for calculating energy and demand savings				
Approach/method for calculating savings uncertainty				
Approach for calculating cost savings				
Approach for extrapolating results				

# Measurement and Verification Template

SCHEDULING AND REPORTING of M&V				
PROJECT INFORMATION				
Project Name	0	Project #	0	
Project Manager	0	Last Updated on Date		
MEASUREMENT PERIOD				
	Start Date	End Date	Duration (In months)	Comments
Baseline Period				
Performance Period				
Item	Description	Time of Submission	Owner Review and Acceptance Pe	Frequency
M&V monthly report				
M&V quarterly Report				
Final M&V Report				

# Measurement and Verification Template

MEASUREMENT AND VERIFICATION - REPORTED OUTCOMES							
PROJECT INFORMATION							
Project Name	0			Project #	0		
Project manager	0			Last Updated Date			
PROJECT BENEFITS - SUMMARY							
Component	Unit of Measure	Adjusted Baseline	Post-Retrofit	Savings (This Period)	Total Savings (Till Date)	Precision %	Confidence %
Total							
Demand	kW						
Energy and Demand Cost (Rs)	Rs						
PROJECT BENEFITS - DETAILS							
Component	Unit of Measure	Adjusted Baseline	Post-Retrofit	Savings (This Period)	Total Savings (Till Date)	Precision %	Confidence %
Total							
Project 1 - Tarrif Related Measures							
Electricity	kWh						
other	tbc						
Project 2							
Electricity							
other							
Demand							
Demand (kW)	kW						
Demand (kVA)	kVA						
Energy and Demand Cost (Rs)	Rs						
Electricity							
Demand (kW)							
Demand (kVA)							



**Resource Sheet**