

SIGNIFICANCE OF MEASUREMENT AND VERIFICATION PROTOCOL

**SHAIKH SHAMSER ALI
BEE CERTIFIED ENERGY AUDITOR
AND ENERGY MANAGER**

Mobile: 09380389123

E-mail: sams586@yahoo.co.in

WHAT IS ESCO

- **ENERGY SERVICE COMPANY**
- **MODUS OPERANDI –
PERFORMANCE CONTRACTING**
- **PAYMENT MECHANISM – PAY AS
YOU SAVE**

PERFORMANCE CONTRACTING - MEANING

**MEASURE, VERIFY, QUANTIFY &
ANALYSE**

- **PERFORMANCE OF ENERGY
SAVING MEASURES**
- **PERFORMANCE OF ESCO**
- **PERFORMANCE OF OTHERS**

PARTIES INVOLVED IN PC

- **ENERGY AUDITORS/CONSULTANTS**
- **ESCOS**
- **FUNDING AGENCIES**
- **CUSTOMER**
- **GOVT. BODIES/REGULATORS**
- **NGOS**

NEED FOR REGULATION - REASONS

- **ASSURE SAVINGS AGAINST
GUARANTEED PERFORMANCE**
- **ENSURE SAVING WILL PERSIST
OVER TIME**

PURPOSE OF M & V

- **IMPROVE ENGG. DESIGN & PROJECT COSTING**
- **INCREASE ENERGY SAVING THROUGH PROACTIVE ADJUSTMENT IN FACILITY O & M**
- **DOCUMENT FINANCIAL TRANSTIONS**
- **ENHANCE FINANCING FOR PROJECTS DUE TO TRANSPERENCY**
- **MANAGE ENERGY BUDGET EVEN WHEN SAVING IS NOT PLANNED**
- **ENHANCE THE VALUE OF EMISSION REDUCTION CREDIT**
- **SUPPORT EVAULATION & DEVELOPMENT OF BROADER EFFICIENCY PROGRAM**
- **INCREASE PUBLIC AWARENESS OF ENERGY MANAGEMENT AS PUBLIC POLICY TOOL**

INTERNATIONAL (IPMVP) PRACTICES

- **FORMULA – (BASE LINE – REPORTING PERIOD ENERGY)
+/- ROUTINE ADJUSTMENT +/- NON-ROUTINE
ADJUSTMENT = SAVINGS**
- **OPTION –A – PARTLY MEASURED RETROFIT ISOLATION**
 - **FIELD MEASUREMENT +/- ADJUSTMENT**
- **OPTION – B – RETROFIT ISOLATION**
 - **ALL PARAMETER MEASUREMENT +/- ADJUSTMENT**
- **OPTION – C – WHOLE FACILITY**
 - **ENERGY USED BY WHOLE/PART FACILITY +/- ADJUSTMENT**
- **OPTION – D – CALIBERATED SIMULATION**
 - **THROUGH SIMULATION OF ENERGY USED BY WHOLE
FACILITY**

COST OF MEASUREMENT & VERIFICATIONS

- **OPTION – A – 1 – 5 % OF PROJECT COST**
- **OPTION – B – 3 – 15 % OF PROJECT COST**
- **OPTION – C – 1 – 10 % OF PROJECT COST**
- **OPTION – D – 3 – 15 % OF PROJECT COST**

SOURCE: SCHILLER & ASSOCIATES, JUNE 12, 2001 PRESENTATION – “MEASUREMENT & VERIFICATION OF ENERGY SAVINGS”.

FACTORS EFFECTS M & V COST

- **VALUE OF PROJECTED SAVINGS**
- **COMPLEXITY OF ENERGY EFFICIENCY EQUIPMENT**
- **TOTAL NO OF ENERGY EFFICIENT EQUIPMENT**
- **NO OF INTERACTIVE EFFORTS AMONGST RESOURCE CONSUMING SYSTEMS**
- **LEVEL OF UNCERTAINTY IN SAVINGS**
- **RISK ALLOCATION OF ACHIEVED SAVINGS**
- **OTHER VALUABLE USE OF M & V DATA**
- **AVAILABILITY & CAPABILITY OF ECMS**

DRAW BACK OF M & V

- **GREATER EXPENSE**
- **DIFFICULTY IN CONVINCING CUSTOMER IN VERIFICATION METHOD & SAVINGS**
- **INABILITY TO HANDLE INTERACTIVE OR MANY DIFFERENT ECMS**

BEST OPTIONS – M & V

- **UTILITY BILL ANALYSIS**
 - **SIMPLE**
 - **INEXPENSIVE**
 - **CUSTOMER UNDERSTAND**
 - **BEST FOR NO OF ECMS & COMPLECATED ECMS**
 - **CAN BE SELLING POINT FOR ESCO**
- **DRAWBACK**
 - **ADDITION/DELITION OF LOAD – MODIFY BASE LINE**
 - **INDIVIDUAL ECM SAVINGS NOT DETERMINED**

PUBLICATION & MANUALS

- **MEASUREMENT & VERIFICATION DOCUMENTS – ateam.lbl.gov/mv**
- **IMPV PROTOCOL - impvm.org**

CONCLUSION

- **MEASUREMENT & VERIFICATION IS THE RULE OF THE GAME**
- **IF NOT DONE APPROPRIATELY, GOOD PROJECTS CAN GET SHELVED & CUSTOMER MIGHT NOT SEE THE REAL PICTURE INSPITE OF ACHIEVING THE DESIRED RESULT**

THANK YOU