Baseline Establishment and Development of M&V Plan: Challenges

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What is Baseline Energy Consumption ?

•The Energy consumption that would have happened if all the present equipments & systems were working and normal service levels were maintained at the pre-project level of energy efficiency.

•Baseline energy consumption would be higher than computed figures from meter reading if,

- •Some of the present equipments are either not working or partially working and are required to be operating under normal condition
- • Present service levels are lower than the desired service level
- •There is significant change in load, occupancy or ambient conditions

Projects savings are determined by computing reduction of project energy consumption from the baseline consumption.

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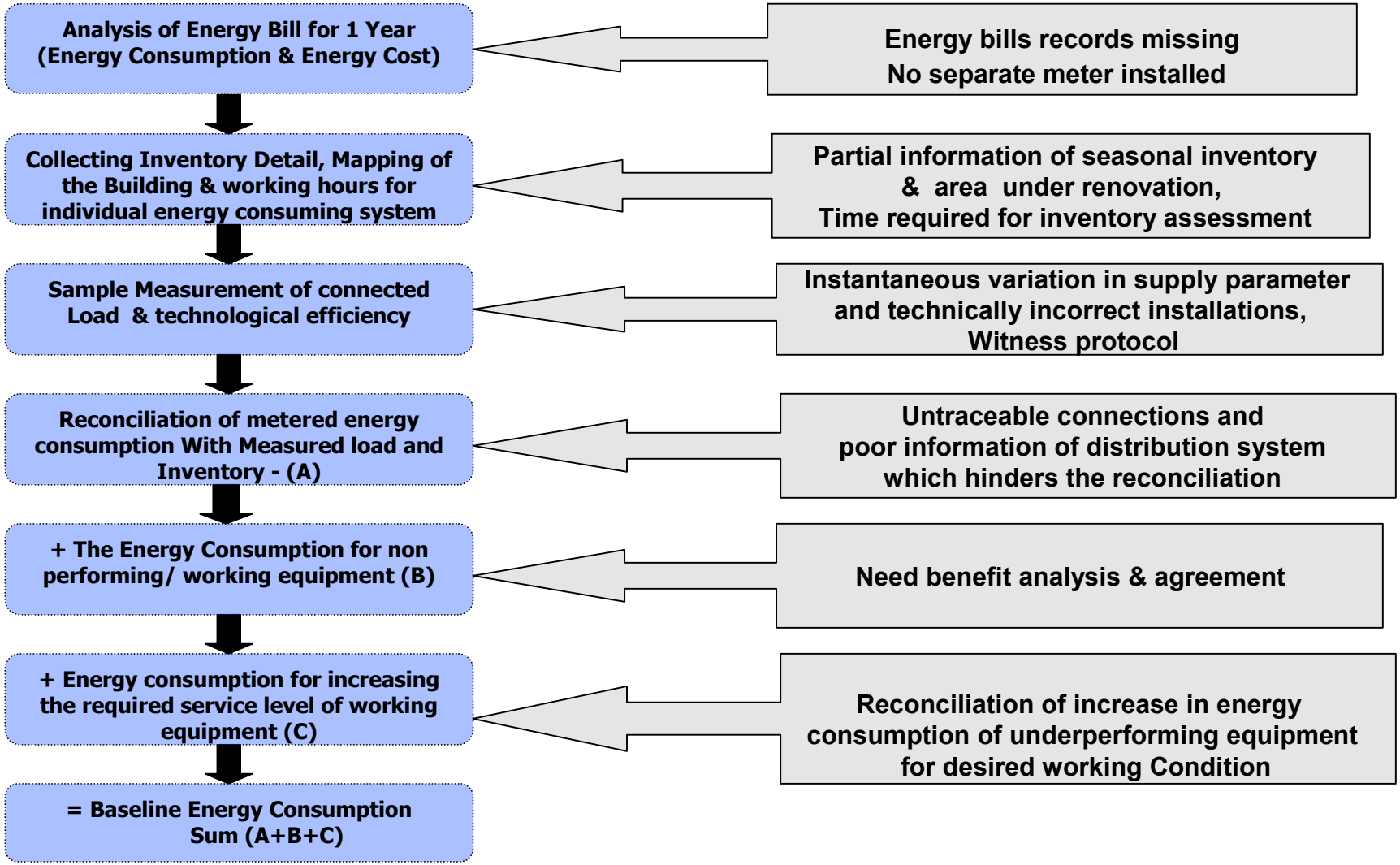
Baseline Methodology-Challenges (A Case example)



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DSCLES Approach

Parameters	Issue	Resolution
Energy Consumption data	No separate Bills, No separate meters, Missing records	Actual Energy measurement and log in measured data in presence of client
Technological Efficiency	Determination of working efficiency	Agreement upon jointly observed performance and calculated during energy audit
Working Hours	Large variation in reported and actual hours	Information provided by the facility engineer and confirmed with reconciliation of energy bill with iteration process
Non working equipments	Like to like replacement or No replacement	Non working/ abundant equipment to be agreed and remove from baseline, Required ones to be included
Desired Service level of equipment	Present service level is poor, Desired service level increases Energy consumption	Baseline consumption for desired service level to be computed with current efficiency level of equipment
Future Load addition	Unable to predict and provide inputs of load addition	Agreement in performance contract for new addition, Installation of new sub meter for each feeder
Occupancy Level	Increase in occupancy level	More detail data recording and metering with frequent load checking
Ambient Condition	Large variation season to season	Use weather bin data for projected power consumption and baseline adj. on monthly basis
Tariff Rate	Tariff rate for future saving calculation	No change in baseline saving condition due to tariff change – additional advantage for user

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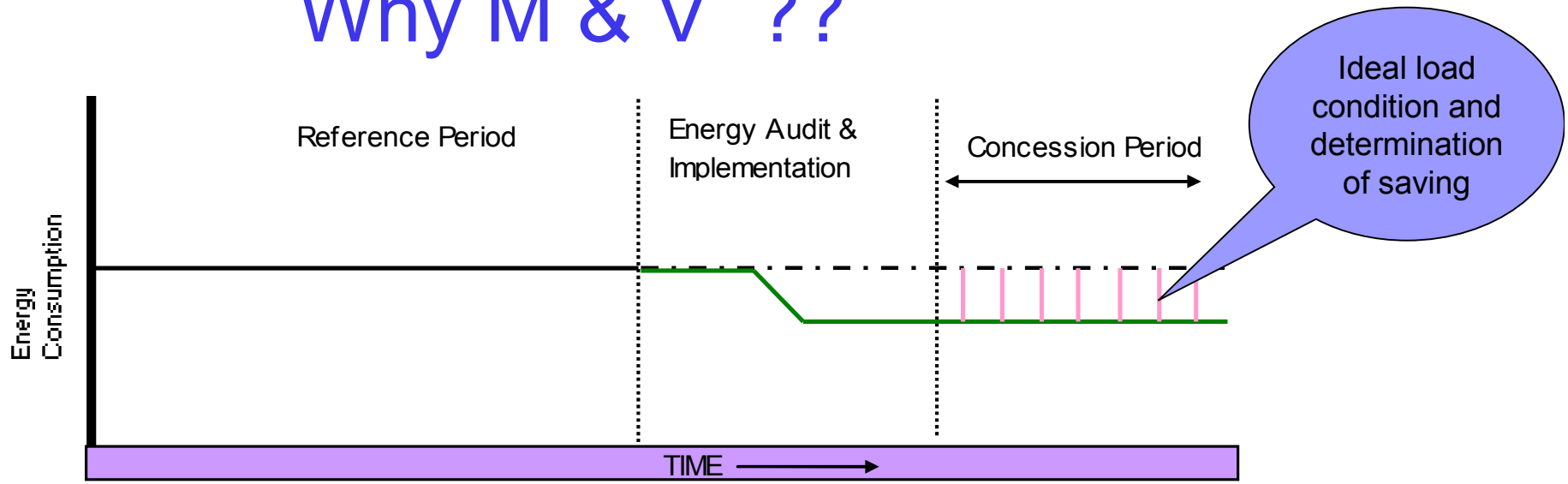
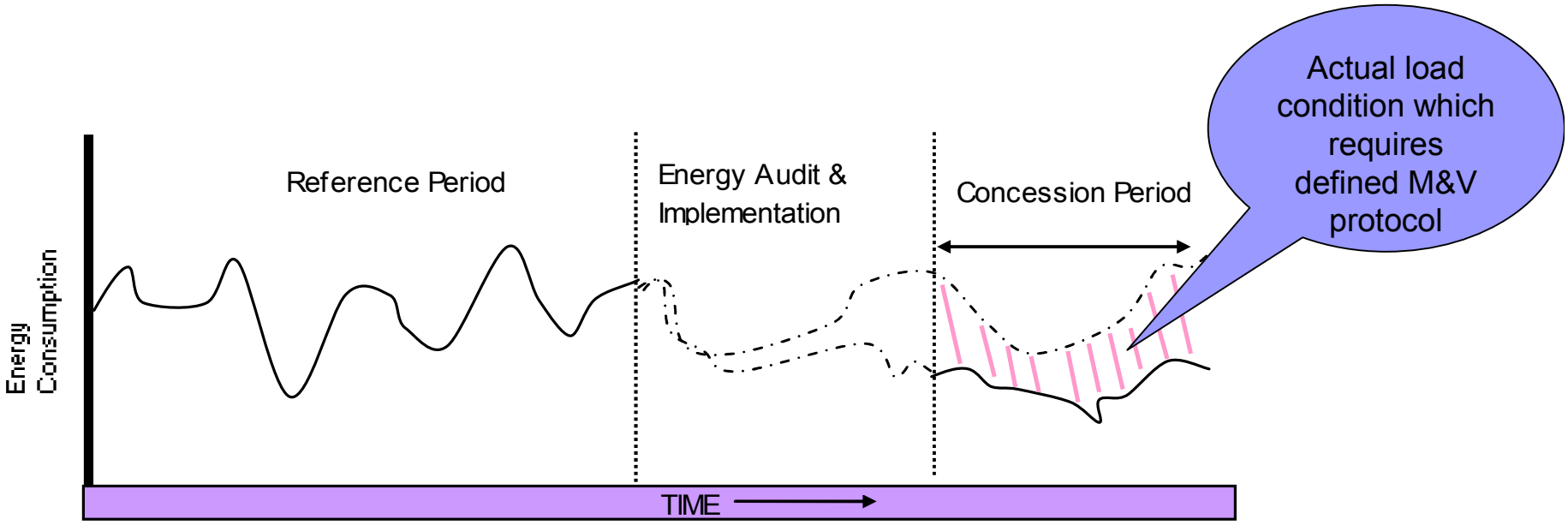
Why M & V ??





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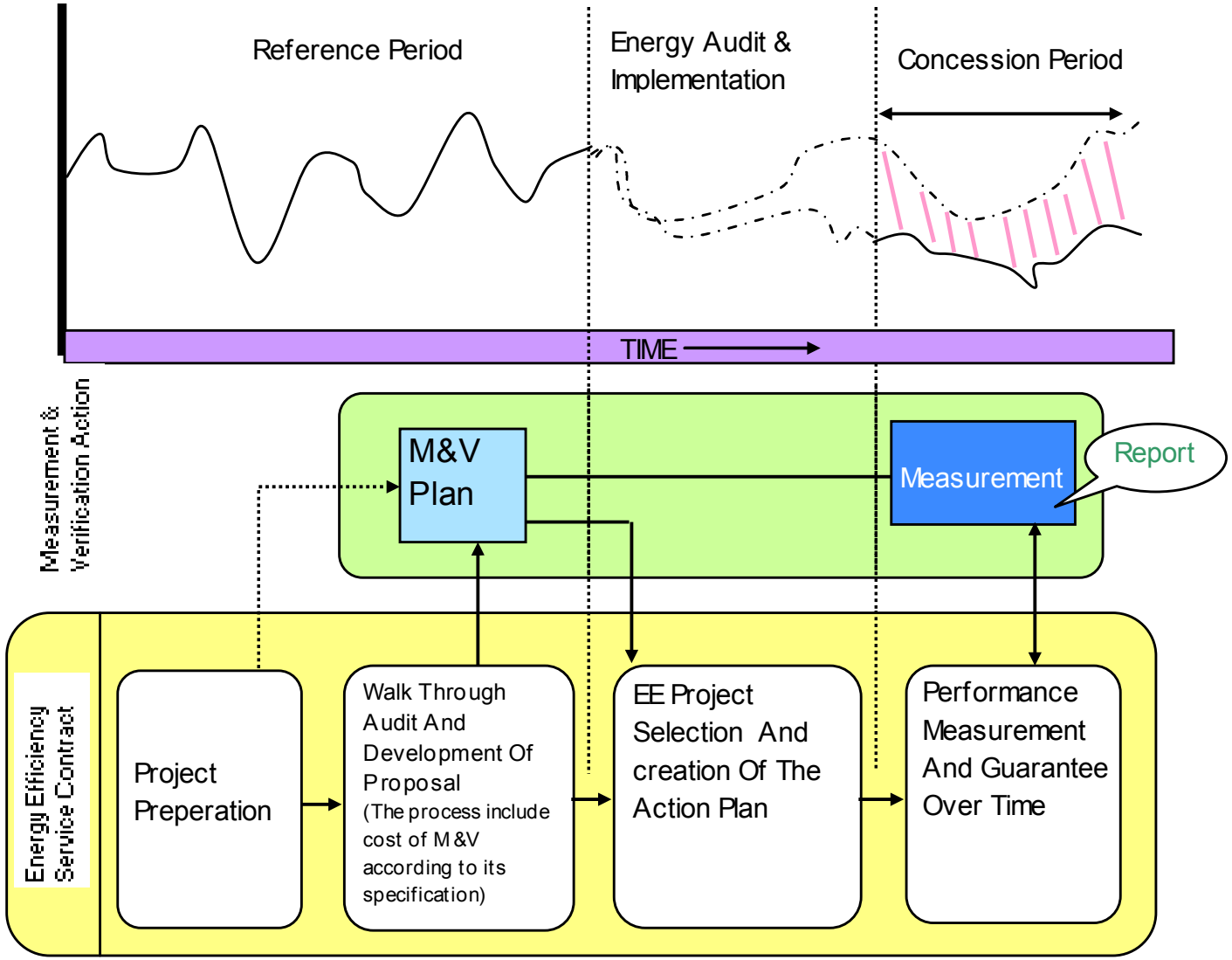
Implementation of M&V Plan for EE project



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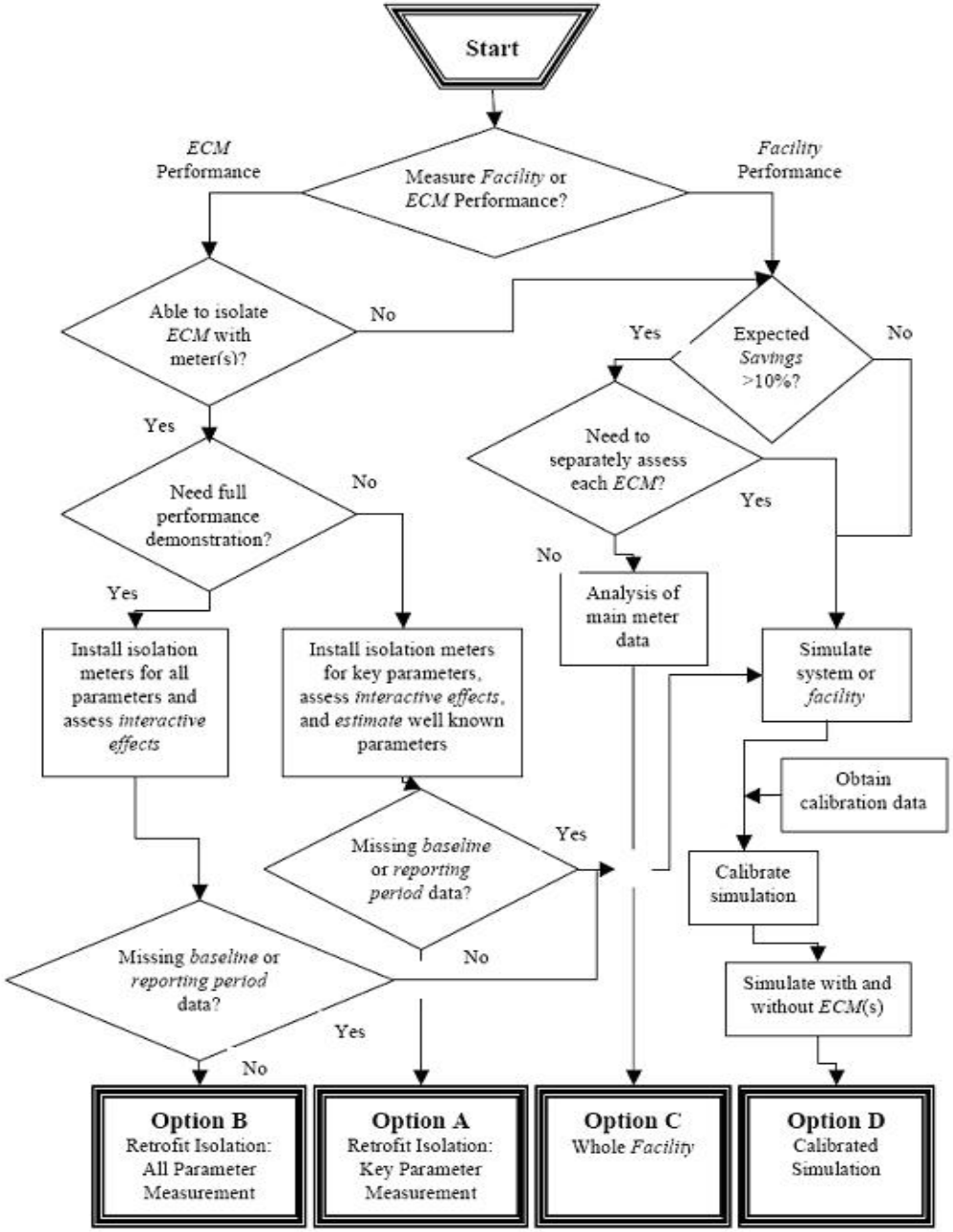
M & V Options



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M&V Plan – An Example

Purpose: Improve the energy efficiency of indoor lighting in the building		
Description	**Expected Result**	**Commissioning Procedure**
Replacement of the present 100 No. of T12 FTL with EM ballast by T5 FTL with Electronic ballast	30% savings on the annual lighting consumption	Continuous/Occasional measurement of the power used by the lighting fixture Recording of the lighting lux levels

IPMVP Option

Retrofit Isolation: All Parameter Measurement Option B	**How To Calculate Saving**
■ Savings are determined by measuring in the field, the energy consumption of the systems affected by the energy performance actions ■ The measurement may be occasional or continuous, according to the expected variations in the parameter measured and the duration of monitoring period	■ Occasional or continuous measurement of the energy consumption during the concession period ■ Routine and non routine adjustments if required

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Baseline & M&V Plan - Challenges

A real challenge in Indian context on M&V issue :

Designing a 'perfect' M&V system is not possible; instead, a ' Practical and Sufficient ' M&V system" is needed :

- Simple and acceptable to client for technical calculation
- Simple in design (to balance value against complexity and cost)
- Consistent (internally consistent and stable over time)
- Stand to audit and scrutiny(Transparency)
- Be fair to all stakeholders (Win – Win situation)
- Repeatability of M&V plan
- Involve both measurement of energy consumption and review of activities undertaken.

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Other Challenges

- What Indian customer want ?
- Macro Management e.g. Hospital building
  - Administrative need :
    - Implementation without disturbance
    - Safe working operation
  - Financial need :
    - Better returns for investment
    - Guaranteed minimum saving
    - Energy Cost reduction
  - Technical need :
    - Reliable & Efficient operation as well as Maintenance
    - Transparent Methodology with Visible Energy savings
  - Actual User's need:
    - Desired working condition with user friendly controls
  - And still a common goal - Best Healthcare Services

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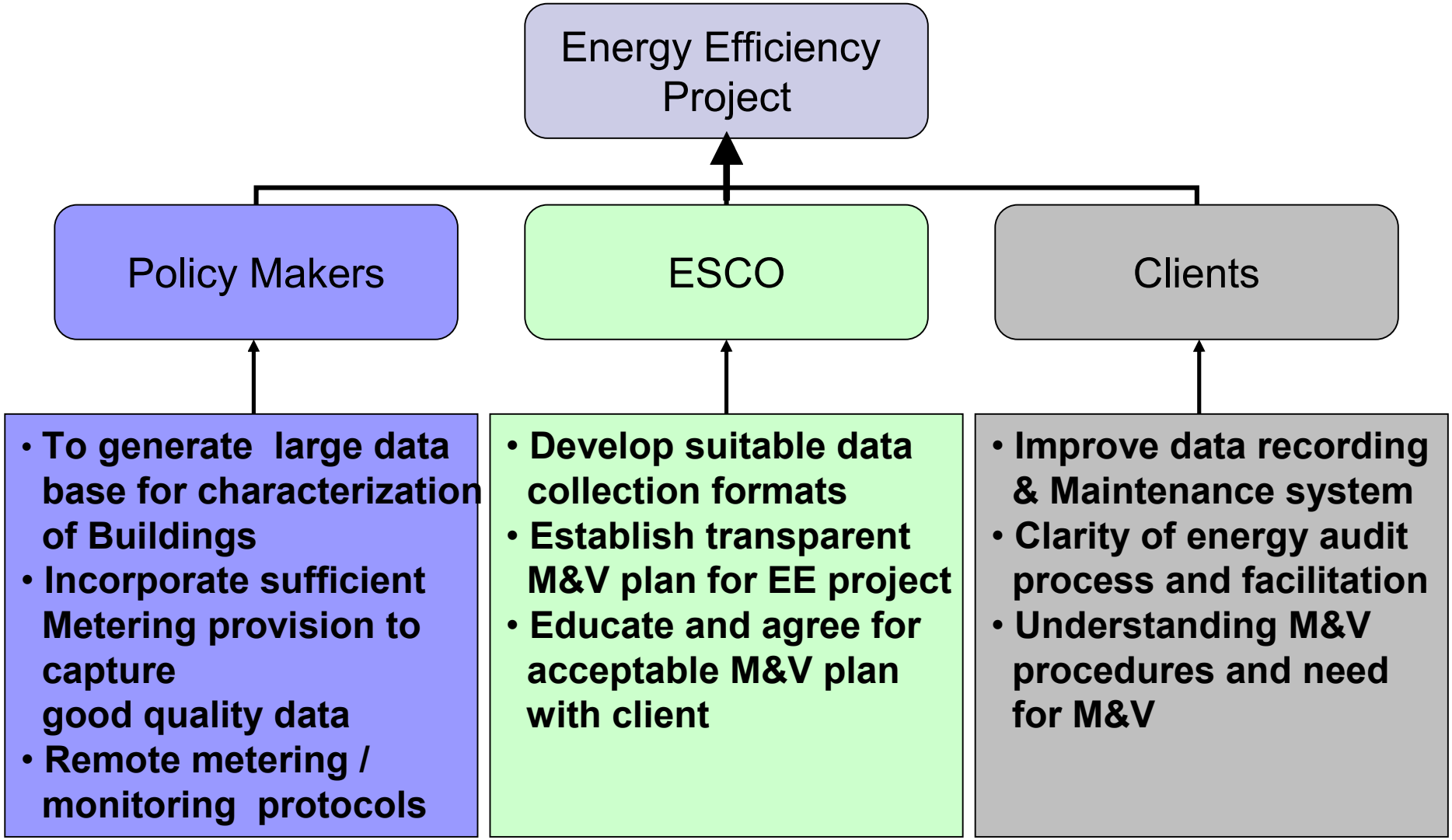
Recommendation- Baseline & M&V Protocol



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DSCLES Track record

- Over 226 projects executed covering both study & implementation
- Estimated overall savings of over 100 MW equivalent in the industrial and building EE sector
- Development of biomass based power projects of over 300 MW aggregate capacity
- A GRADE-1 ESCO – Rated by CRISIL for BEE
- 4 time Winner of the best ESCO award from PCRA in 5 years
- Making rapid stride in the international market
- Executed projects in countries like Algeria, Bangladesh, China, France, Kenya, Mexico, Vietnam, SA, Singapore, Spain, Sudan, Tajikistan, USA etc.

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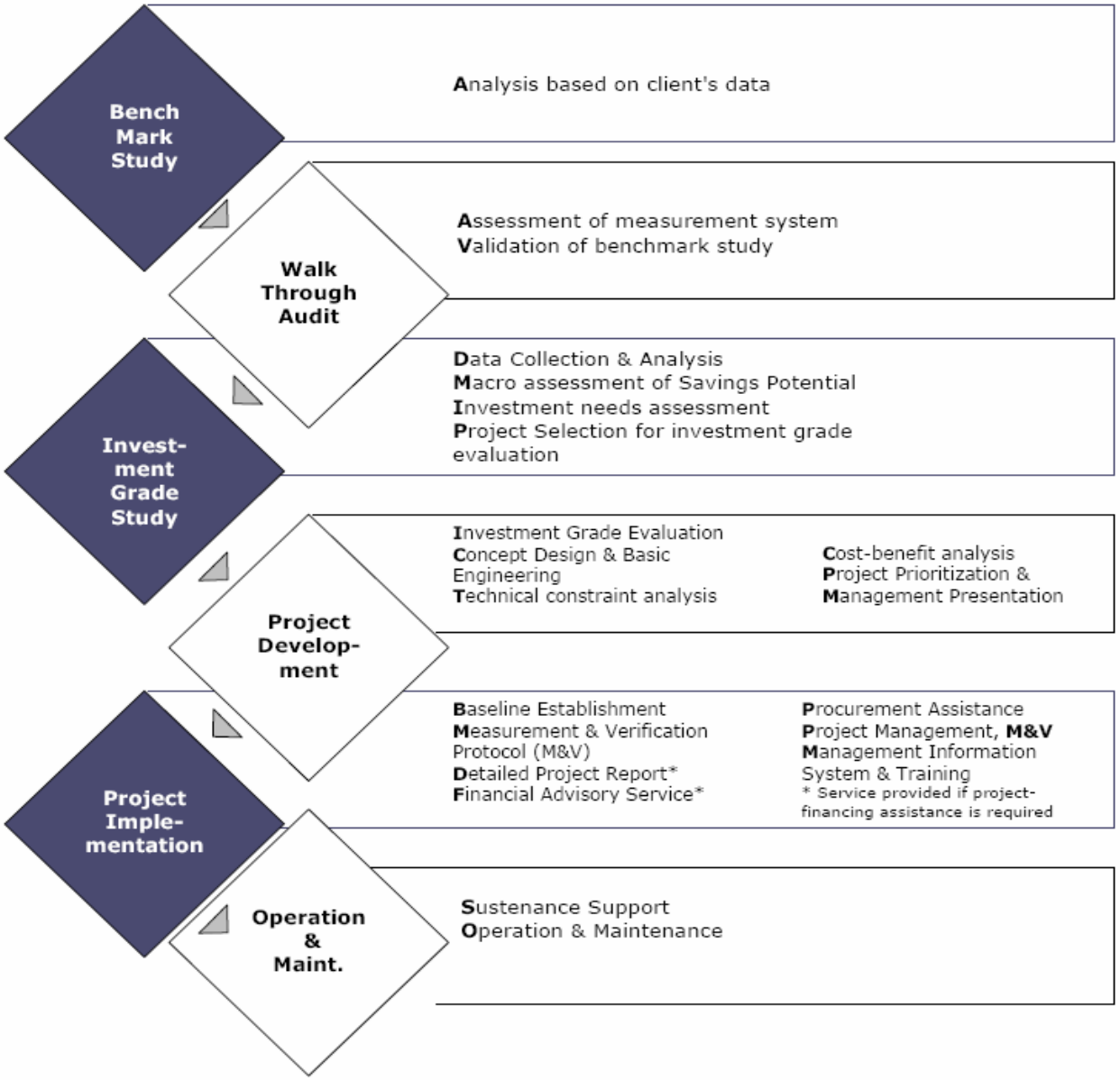
DSCL ESCO – Business Process



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Thanks

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