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M&V for Energy Savings
"IPMVP" as a world reference

IEA-IIP Policy Pathway on Energy Management Programmes

Pierre Langlois
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EVO

Efficiency Valuation Organization (EVO)

www.evo-world.org

- The home of the International Performance Measurement and Verification Protocol (IPMVP)
- A non-profit international organization
- Led and operated by volunteers practitioners around the world

What is M&V?

(Measurement & Verification)

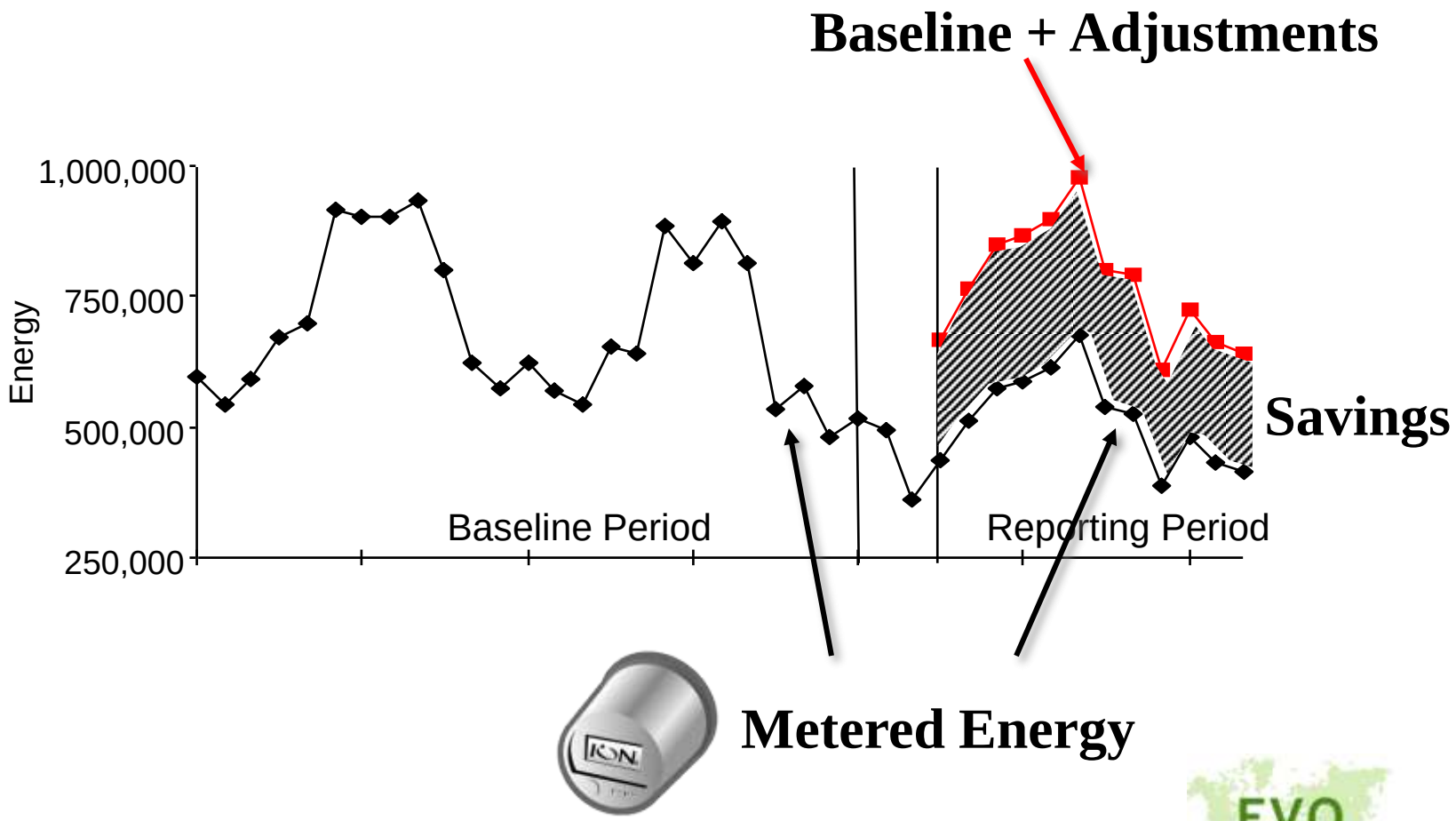
M &V is the process of using "measurements" to reliably determine actual savings created within an individual facility **by energy management programs or Energy Efficiency Projects ("EEPs").**

Measure Savings?

- Savings are the absence of energy use.
- We can *not* measure what we do not have.
- We do ***not*** ‘measure’ savings!

- We ***do*** measure energy use.
- We *analyze* measured energy use to **determine** savings.

A Notional Baseline



← The M&V Spectrum →

No M&V

- No extra cost (or more left to spend on retrofits)
- Most energy retrofits since 1975
- **Keep it simple.** (Low cost M&V without the M, just the V)

Full M&V

- Maximize savings
- Savings persistence
- Energy users needing performance demonstration or guarantee (mostly utilities & public buildings) - since 1990

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WHAT IS IPMVP

- **Recognized Framework** on the concept and the application of M&V
- Guide on **M&V Planning**
- **Practitioner handbook** on M&V

It is today the world reference on M&V

It represents the agreed upon meter for EE projects

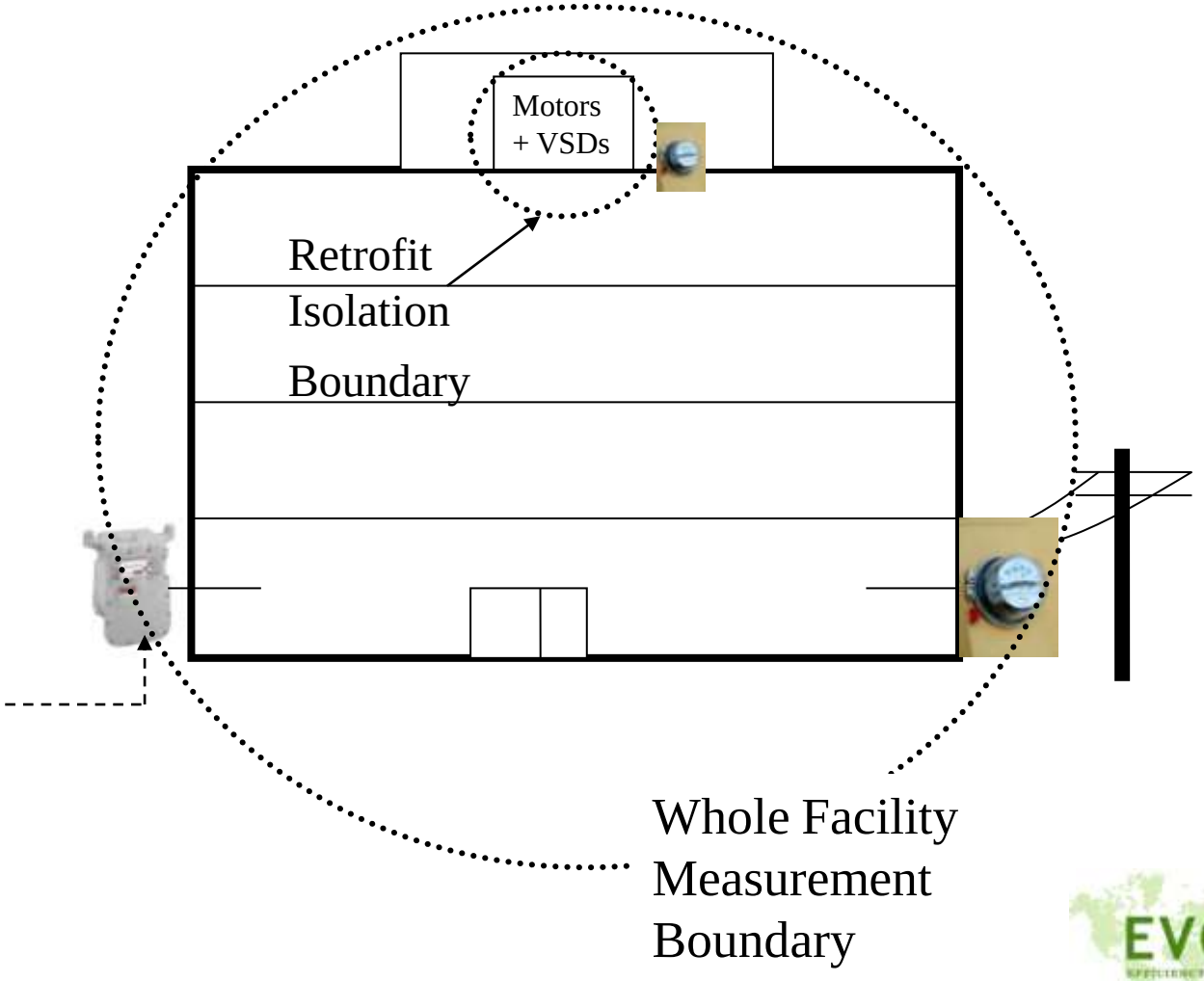
IPMVP Benefits

- Provides internationally-accepted guidelines for EE savings Measurement & Verification (**M&V**) plans
- Standardizes terminology and approaches for EE engineers to develop 'transparent' M&V Plans that reduce risks for Hosts, Investors and LFIs.
- Creates local community of Certified Measurement & Verification Professionals ("**CMVPs**") to develop M&V plans that comply with IPMVP
- Legitimizes savings for Hosts, Investors and LFIs

ENERGY BASELINE

- Baseline is the critical component of M&V
- Affected by many factors
- Used to account for any changes that have occurred during the performance period, which may require baseline adjustment
- One cannot go back and re-evaluate the baseline. It no longer exists! **CRITICAL to define and document Baseline before EEPs are installed!!**

How Much to Measure?



Two Basic 'IPMVP' Methods

Whole Facility Method:

Measures **all** effects in the facility:

- Retrofits AND other changes (intended and **un**intended)
- Often uses the utility meter
- Adjustments can be complex

Retrofit Isolation Method:

Measures the effect of the retrofit, **only**

- Savings are unaffected by changes beyond the measurement boundary
- Usually needs a new meter
- Adjustments can be simple

M&V plan and cost issues

- A carefully crafted M&V Plan is a key tool in demonstrating performance.
- The M&V method selected should balance the desire for accuracy with the cost to install and maintain M&V activities.
  - More complex ECMs may require more complex and expensive M&V methods
  - M&V costs should not normally exceed 3-5% of project cost (or 3-5% of savings during payback period). Normal upper limit 10%.

EE Financing Barrier

One of the most significant barriers for implementing EEPs is lack of commercially-attractive funding offered by Local Financial Institutions ("**LFIs**").

Caused by lack of capacity within LFIs to evaluate benefits/risks and understand 'complexities' of EEPs:

- Do not acknowledge (or believe) savings will be realized
- Unwillingness to invest in building capacity due to small transactions and perceived small market opportunity

EEP Financing Solution by EVO:

Develop an International Energy Efficiency Protocol ("IEEFP") that:

- becomes "blue print" for LFIs to evaluate the benefits and risks of financing EEPs;
- follows the "grassroots", consensus/market-based development approach of "**IPMVP**":

"Bottom Up" versus "Top Down"

"IEEFP" Overview

(NOT BORROWER FOCUSED)

- Focuses on the "Savings Value" of EEPs for loan repayment and credit capacity analysis
- Standardizes procedures, guidelines and criteria for evaluating benefits/risks of financing EEPs
- Mandates savings M&V based on "**IPMVP**"
- Trains LFIs how to evaluate risks and structure financing of EEPs thru repository of Case Studies

Conclusion

- M&V is key component for success of EEPs
- M&V ensures sustainability of savings required to achieve the targeted “ROI”.
- Savings need to be evaluated the same way by all organizations all over the world
- Each project is different and must be analyzed
- Consider costs versus desired savings accuracy

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THANK YOU

Pierre Langlois
President Econoler
planglois@econoler.com