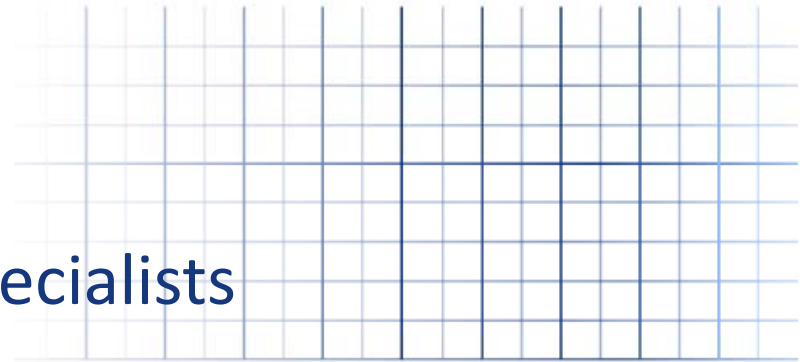




Energy Efficiency Verification Specialists



EPC Projects in the UK:

Facilitating energy savings guarantees through the application of independent Measurement & Verification

Hilary Wood

Operations Director



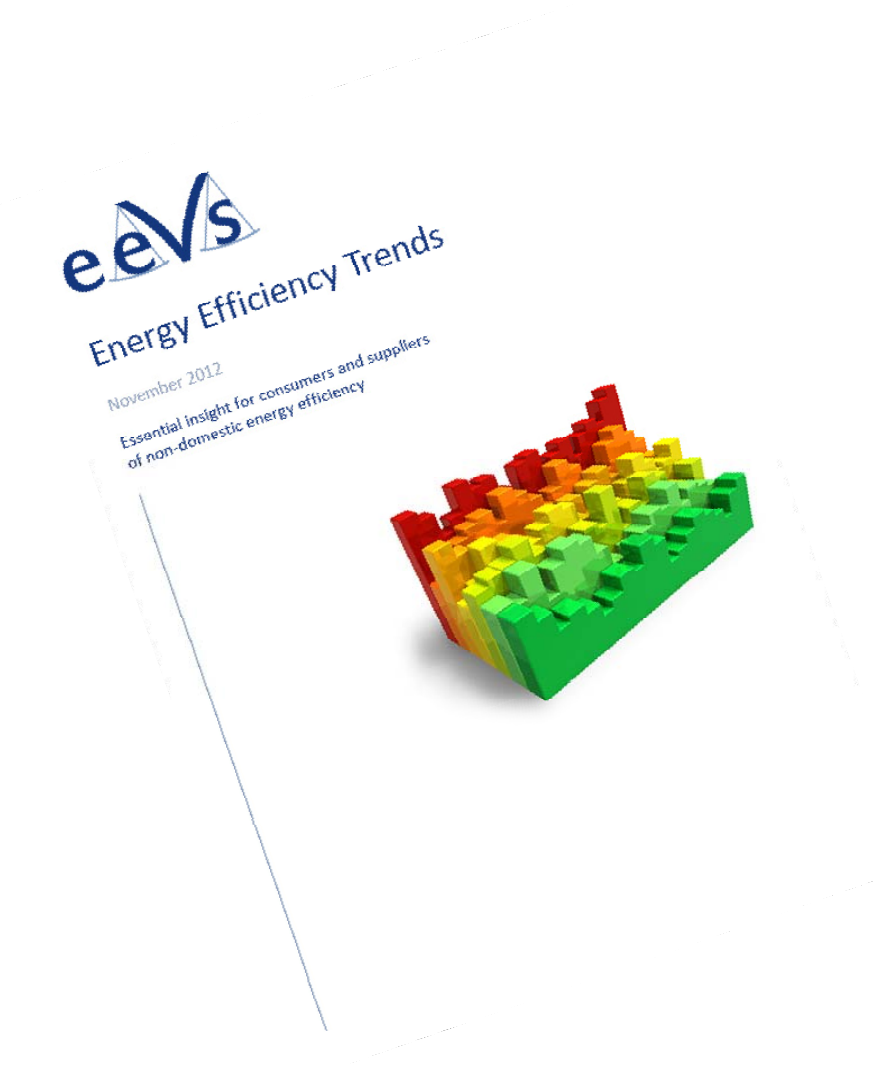
Barriers to the uptake of energy efficiency

Four barriers identified by UK Department of Energy & Climate Change's "Energy Efficiency Strategy" (Nov 2012):

- Embryonic market
- **Information**
- Misaligned financial incentives
- Undervaluing energy efficiency



Energy Efficiency Trends Survey



From our recent industry survey:

Lack of information is a problem - only 20% of projects were evaluated properly.

For the others, neither customer nor supplier sought to prove the performance of their energy saving measures.



Why we're here

Two key issues:

1. Unsubstantiated and unreliable supply-side performance claims
2. Poor understanding of what constitutes 'energy saving' / use of simplistic before-and-after 'snapshot' analysis.

What if:

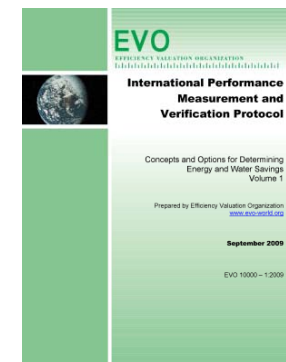
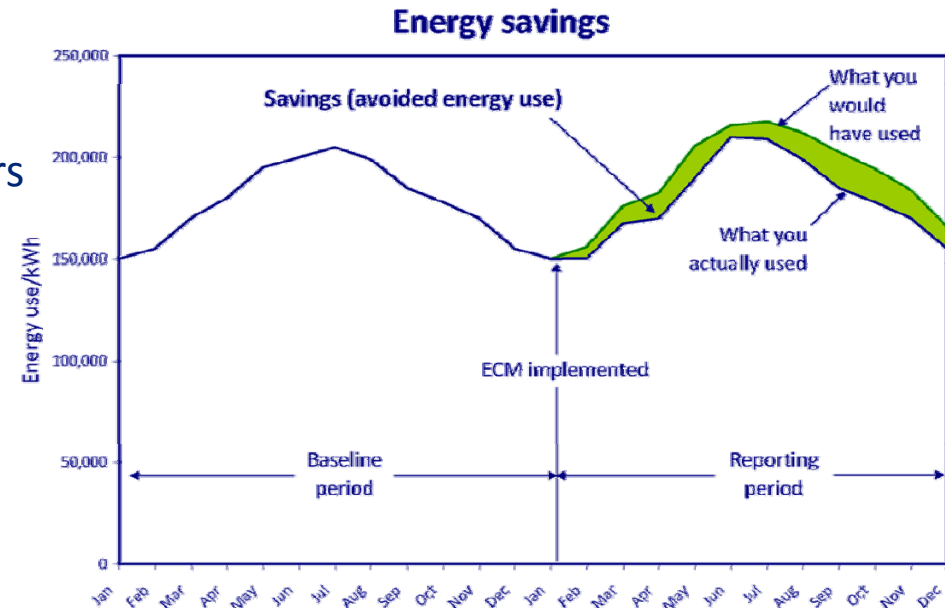
- My business has grown?
- The weather has changed?
- A range of energy-saving measures have been implemented?
- The technology supplier has measured the savings?



Independent M&V

- 'Measurement and Verification' (M&V):

- The engineering discipline around isolating a **saving** from other factors that affect energy use
- Savings: defined as '**avoided energy use**'
- Standard: **IPMVP** (International Performance Measurement & Verification Protocol)
- Pedigree: **US** ESCO industry, now widely used internationally
- IPMVP: A framework for a standardised **investment-grade** evaluation of energy savings – mitigates uncertainty in project outcome
- IPMVP Adherent evaluation carried out by a qualified **CMVP**



www.evo-world.org



Applications of M&V

Energy efficiency projects

- Certainty for procuring the right solutions
- Confidence in performance statements to stakeholders

Energy Performance Contracts (EPCs)

- Longer-term (e.g. annual) performance verification
- Assurance for all parties
- Credibility to help attract funding

Energy efficiency technologies

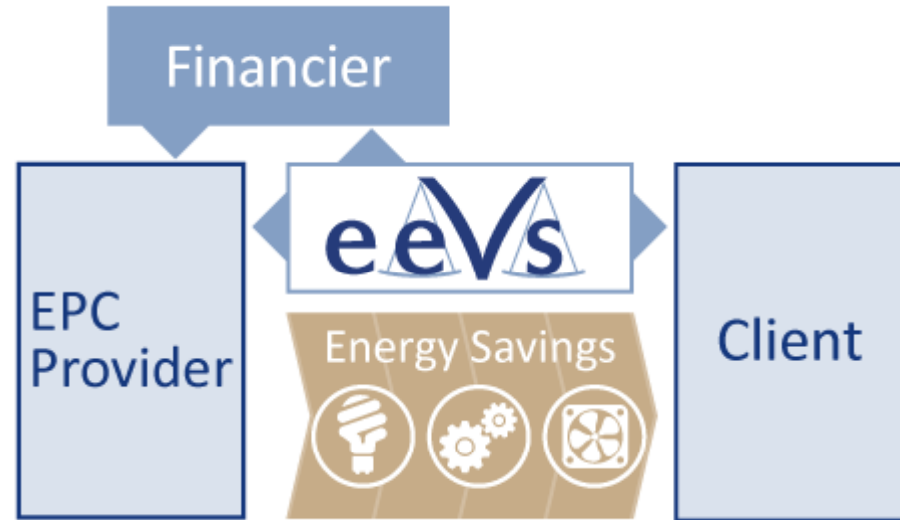
- Builds confidence in a supplied product or service
- Case studies / performance guarantee



Independent M&V for an EPC

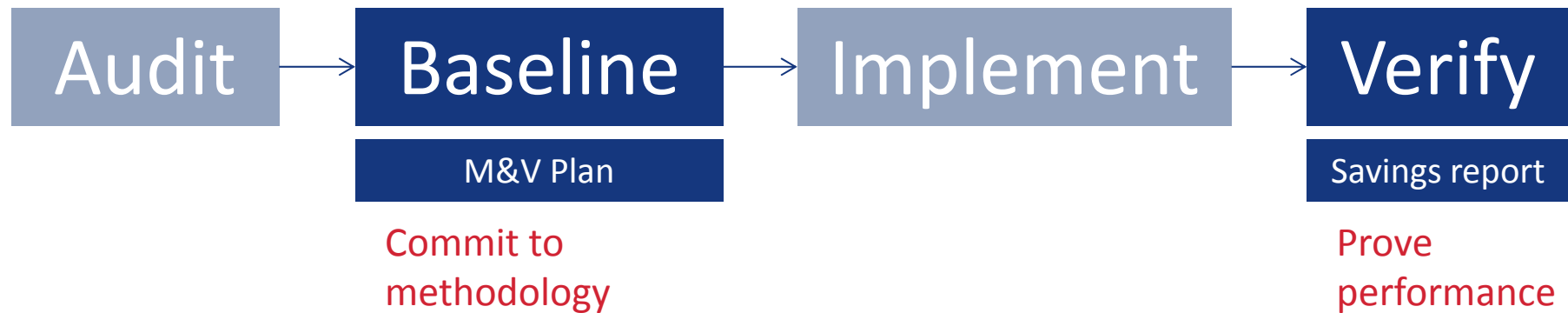
- **Independent M&V** for Energy Performance Contracting:

- Periodic **expert evaluation** of savings performance without **commercial interest**
 - Report to **all parties** – gives confidence in outcomes, demonstrates success
 - EPC provider able to offer robust savings guarantee or other **kWh payment mechanism**
 - **Attribution** analysis (by individual measure) if needed – hold tech supplier to account and back-to-back performance guarantee
 - ‘Safety net’ to **avoid disputes**
- A key **risk mitigation** measure for both client and ESCO
 - May be a condition of **financing or audit**
 - **EEVS** is Europe’s largest independent M&V provider





The Evaluation Process

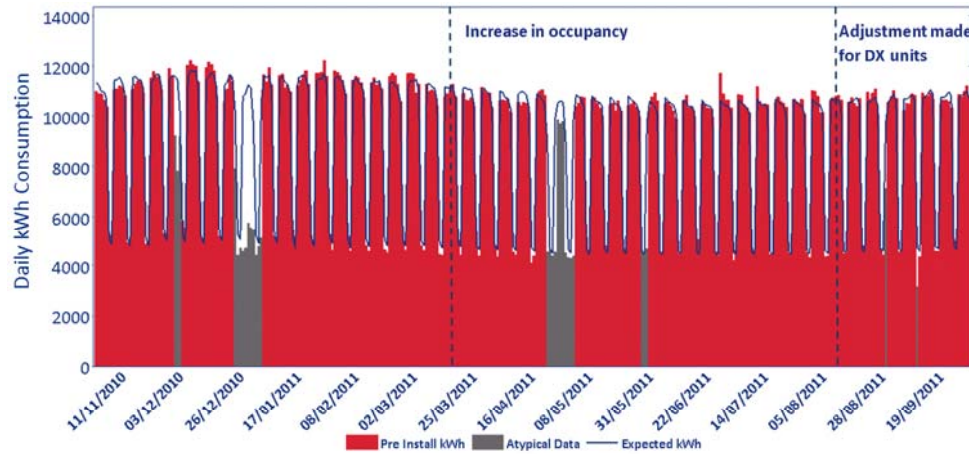


- Objective evaluation needs a **wrap around process**
- Savings reporting **repeated** periodically (e.g. annually) to check persistence of savings
- Savings report incorporates client-specific **performance metrics**
- Multiple savings reports are used for **benchmarking**



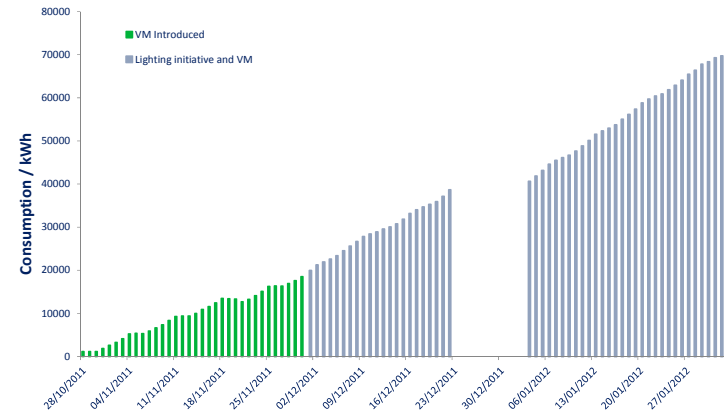
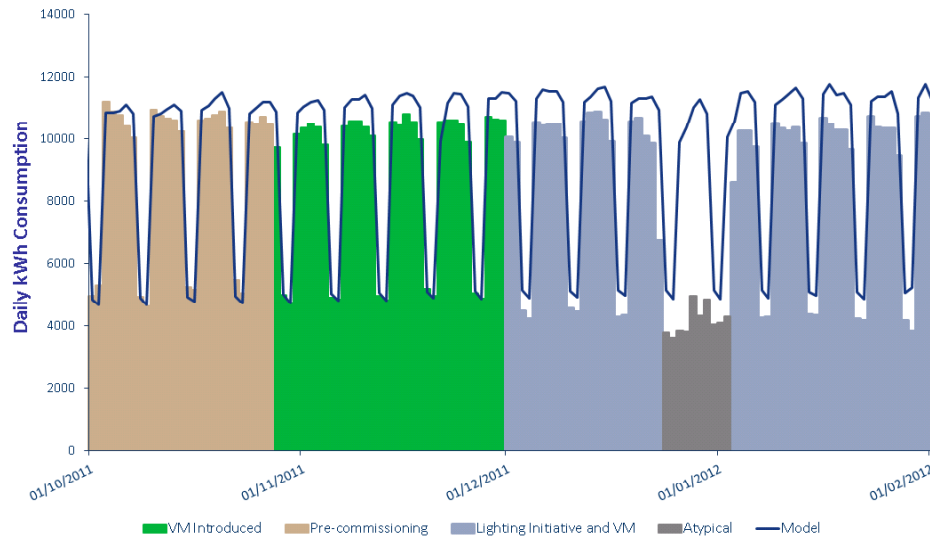
IPMVP Option B Example - Electricity

M&V Plan



- Year 1 adjustments
- Occupancy change
- DX heating adjustment
- Year 1 ECMs
- Voltage Management
- Weekend lighting control

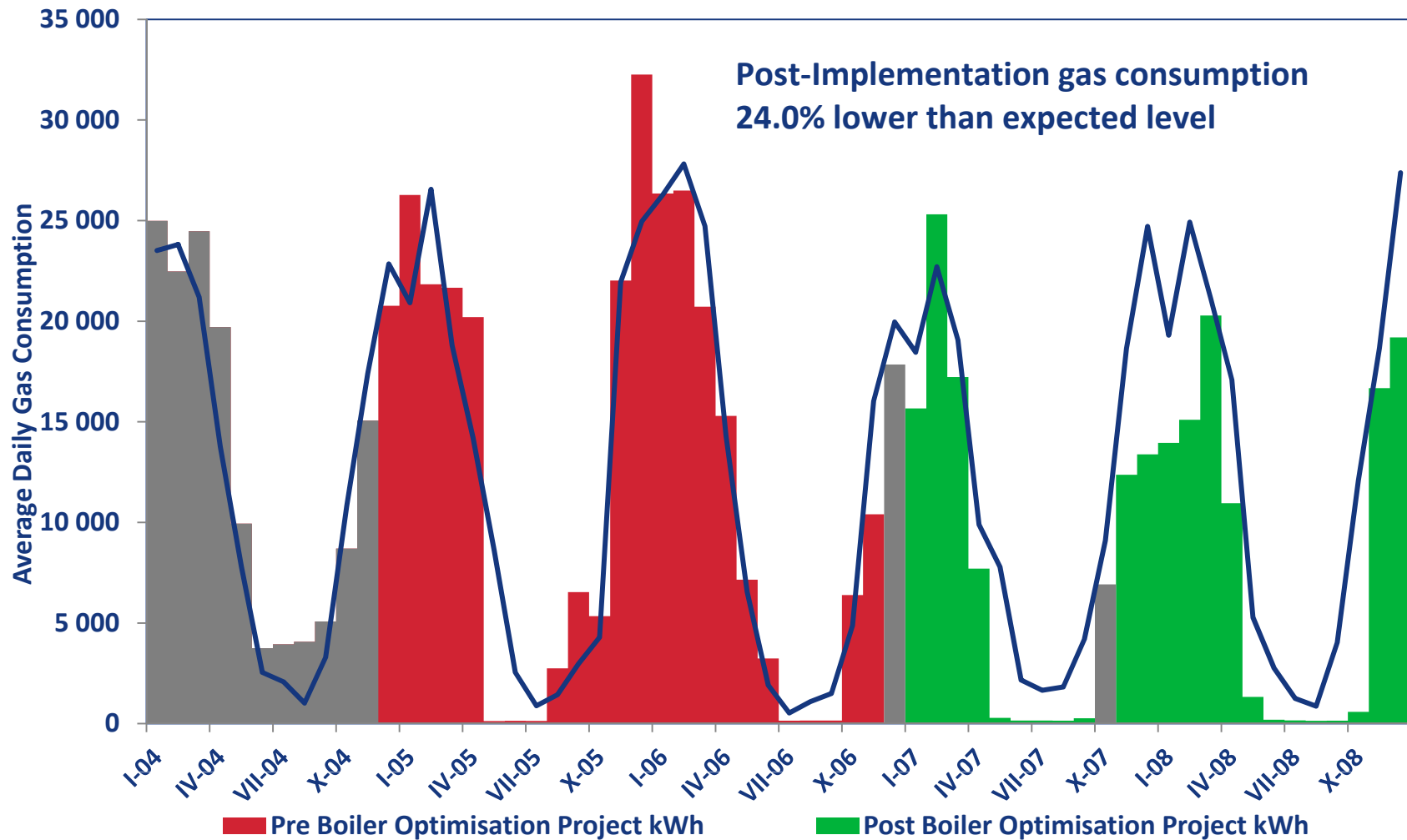
Savings report





IPMVP Option B Example – Gas

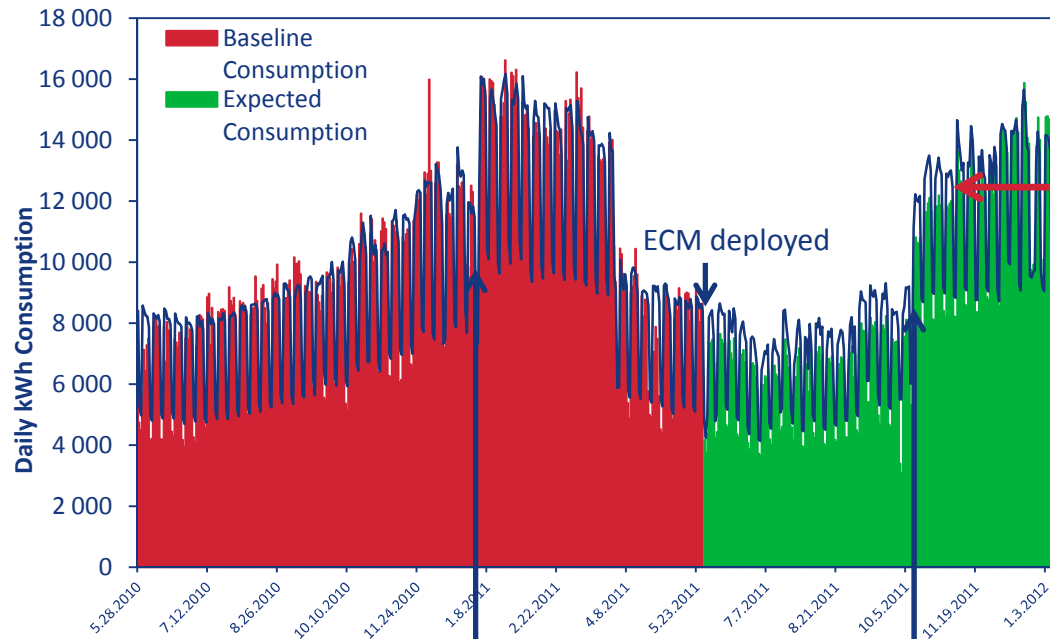
Boiler Optimisation ECM - Regression Analysis





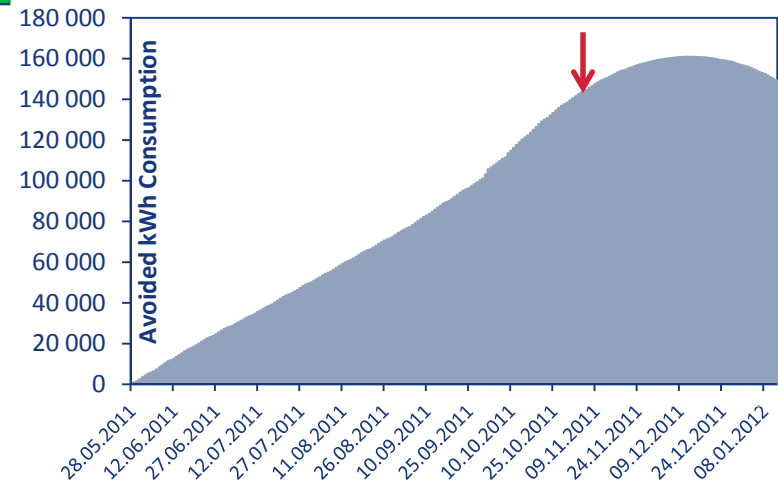
M&V – capturing potential issues

ECM: BMS control measures



- Heating equipment step change
- Identified and flagged at M&V Plan
- ‘Non routine’ adjustment applied
- Adjustment also applied in Reporting Period

- Persistence of savings tracked by M&V process
- BMS control savings decay in winter
- Performance deterioration tracked by savings reports
- Drives corrective action by ESCO or client





Independent M&V

Applicable to performance contracts, or any energy efficiency investment

Proven performance gains (confidence)

- Hold your supplier to account for their savings
- Communicate savings achievements based on auditable figures

Highlight best technologies (credibility)

- Understand where savings come from
- Investment or procurement decisions based on verified performance analysis
– not supplier claims

Unlock finance and manage performance risk (transparency)

- Build confidence through standardised, transparent savings verification



Energy Efficiency Trends Survey

Our next energy efficiency trends survey will be Europe wide, in association with ESCO Europe.

Please visit our website to participate:

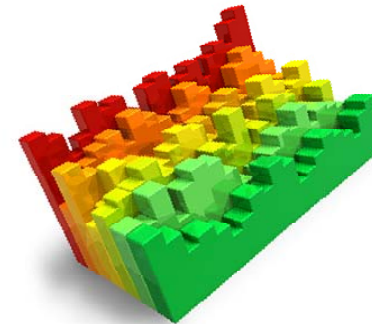
www.eeVs.co.uk/survey.html



Energy Efficiency Trends

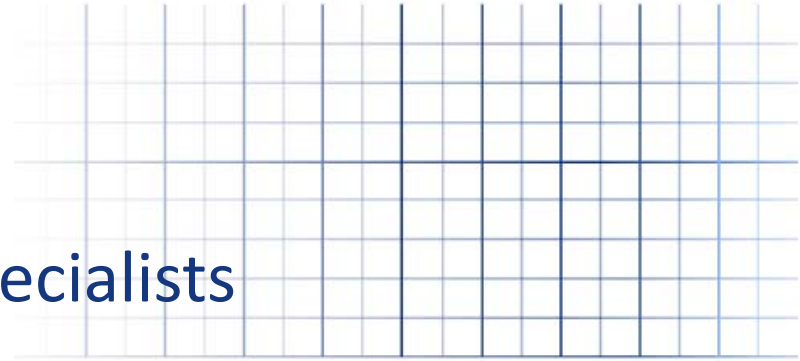
November 2012

Essential insight for consumers and suppliers of non-domestic energy efficiency





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