

How Effective and Transparent Measurement and Verification can Unlock the Potential of Energy Performance Contracting.

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If you cannot measure, you cannot manage. If you cannot manage, you cannot perform.

In the complex world of energy performance in buildings, simplicity is welcome. With the cost of energy and carbon only going in one direction, Finance Directors and Energy Managers simply have to act. These two important decision-making roles are now clearly aligned in the urgent need to make sizable energy performance improvements in their buildings.

The question is: How? There are clearly many technologies and suppliers that work well (and many that do not), but which are the right technologies and suppliers to use? How should they be integrated? What if the technology salesman overstates the benefits? How to justify the capital expenditure when CAPEX budgets are tighter than ever?

The answer comes down to risk, measurement and a contractual guarantee that will stand the test of time, from the type of contractor that has the ability to manage energy performance risk through transparent measurement and verification.

Energy Services Companies (ESCOs) are not new, but their role in the delivery of Energy Performance projects is often misunderstood in the UK. The modern-day ESCO is an Energy Performance Contractor with the ability to deliver and underwrite the performance and success of energy improvement projects that may or may not require external finance. Energy Performance Contracts are commonplace in North America and much of mainland Europe. However, successful case studies in the UK are few and far between.

At the heart of any Energy Performance Contract is alignment between the contractor and the building owner & occupier. This has to be centred around clear and transparent Measurement and Verification (M&V) to enable trust, transparency and mutual benefits – a recipe for any successful partnership.

The *EV*olution of Measurement & Verification

An initiative originally funded by the US Department of Energy in 1994 has matured into the not-for-profit Efficiency Valuation Organisation (EVO), that has built a set of measurement and verification guidelines that should underpin every Energy Performance Contract. This has been delivered through the International Performance Measurement and Verification Protocol (IPMVP) which enables all stakeholders of an Energy Performance Contract to work within a framework in order to agree how to best measure and verify savings.

IPMVP suggests four options for measuring energy data before, (the baseline period) and after, (the reporting period) the installation of Energy Conservation Measures. It sets forth the structure of an effective Measurement and Verification Plan and promotes the six core principles of Accuracy,

Consistency, Conservativeness, Completeness, Relevance and Transparency. In the M&V plan, key data is identified, measured in the field and a process put in action to report calculated savings based on the simple equation:

$$\text{Savings} = (\text{Baseline-Period Use or Demand} - \text{Reporting-Period Use or Demand}) \pm \text{Adjustments}^1$$

where 'Adjustments' allow for a *pre-agreed* method of compensating for key parameter variations during the reporting period, for example, the weather.

Through the above process, IPMVP allows substantiation for performance payments. An IPMVP-adherent savings report allows quick acceptance and agreement of savings. Even before the Energy Performance Contract has commenced, IPMVP encompasses benefits through the reduction of transaction cost and time in agreeing and forming the Energy Performance Contract itself. Furthermore, IPMVP has been widely adopted by national and regional government agencies - demonstrating its acceptance as a trusted methodology to follow, which is vital for long term success.

However, IPMVP should not be considered as the silver bullet. An M&V plan is only as effective as the parties and the experts that are agreeing it allow it to be. Transparency and consistency are vital for the contractor, building owner and operator and any third party debt or equity funder. Thus, consensus and the existence of a recognised protocol are important factors for an M&V plan.

The UK Government, retail, healthcare, commercial, industrial and leisure sectors are all awakening to performance contracting with a robust and transparent M&V plan as the preferred method of delivering energy and carbon saving measures into their buildings.

Widespread recognition of the value of a strong M&V plan may just be the secret ingredient needed to ensure that mass delivery of energy efficiency measures is successful in the UK's built environment.

For more information about Monitoring & Verification or Energy Performance Contracting, please contact Self Energy UK at info@selfenergy.co.uk

About the Authors:

Paul Lewis is the Founding Managing Director of Self Energy UK and the International Commercial Director of Self Energy Group. Holding a Master's in Engineering, Paul has worked in a variety of energy roles, from upstream Oil and Gas through to forming Self Energy UK, focusing on demand-side energy management and decentralised energy generation, working with building owners and financiers across the UK to implement Energy Performance Contracts

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¹ IPMVP Volume I, EVO 100000 – 1:2010 Equation 1)