

# White Paper

## IPMVP: FIVE LETTERS SAVING BUILDING MANAGERS MILLIONS IN ENERGY COSTS, CUTTING CARBON EMISSIONS 21%, BOOSTING COMMERCIAL RENTS 12%

*IPMVP is the gold standard for measuring and verifying efficiency investments. It makes energy efficiency projects more bankable by ensuring they do what they say on the tin. Here's why it matters for energy and sustainability leaders tasked with driving down consumption and meeting ESG reporting mandates – and why firms adhering to the protocol are saving businesses mega tonnes of carbon while boosting competitiveness via direct P&L benefits.*

An expertly-commissioned and maintained building management system can save huge amounts of energy and cost. The problem is, buildings are dynamic and even small oversights can quickly erode those savings. Those errors are not always obvious – and can compound over time.

Left unaddressed they lead to wasted investment, higher bills, spiralling emissions and company management, investors and stakeholders asking questions and pointing fingers.

Which is why standards – and adhering to them – are critical, from installation and commissioning through to ongoing operations management and optimisation.

Otherwise, the chances of buildings achieving the energy performance targets they are designed to achieve are put at risk – along with their energy ratings.

It's also why independent continuous monitoring and validation of performance is critical. Which is where IPMVP – or International Performance Measurement and Verification Protocol – comes into its own.

### **Competitive disadvantage**

In the UK, energy price inflation last year was the highest of any G7 economy, up 40.5 per cent year on year as of March 2023 according to the Office of National Statistics, mainly due to spiralling wholesale gas prices. Since 2019, energy prices in the UK are up 69 per cent cumulatively. That compares to 63 per cent in Italy, 47 per cent in Germany, 37 per cent in France, 30 per cent in the US, 25 per cent in Canada, and 10 per cent in Japan, per ONS data.

Which means the cost of doing business is higher for UK businesses than rivals in other advanced economies.

While wholesale energy costs have recently subsided, businesses face potentially significant increases in other aspects that make up the bill.

Third party costs, or non-commodity charges – like costs to use and balance the electricity network and policy costs to support renewables and low carbon power – can be hard to accurately predict in advance.

Some final policy and balancing costs are not fully known until after the fact –renewable energy generation and balancing actions taken by the system operator, for example, will always fluctuate. Plus, National Grid ESO last year changed how it sets balancing charges, with energy suppliers now responsible for more of the cost – and therefore risk – which inevitably will be passed on to business customers.

Meanwhile, distribution network charges are being constantly tweaked. While these vary by network, most are now reducing fixed per day charges – but simultaneously making “notable” hikes in consumption and capacity-based charges.

All of which increases the importance of taking control of variable energy costs – of which consumption is the key element. Savings gained have a direct P&L impact, enabling both higher profitability and increased business competitiveness.

## **Carrot vs. stick**

Lower energy consumption naturally reduces emissions, an increasingly critical aspect of many corporate supply chains and procurement models.

For larger companies, the EU's Corporate Sustainability Due Diligence Directive (CSDDD) should sharpen that incentive. It intends to make businesses doing business in the EU not only responsible for their own environmental and social impacts but those of their supply chains, with fines of up to 5 per cent of global turnover for non-compliance.

Plus, there are business growth implications: It is intended that compliance with the CSDDD could become necessary to win public contracts and concessions.

Moreover, the Directive also exposes larger businesses to civil liability – i.e. legal proceedings and damages that can be brought against them for failing to put climate change mitigation plans in place.

Which means proactive energy and carbon management is climbing the corporate risk register.

## **Known unknowns**

Energy and sustainability managers are acutely aware of the stakes – and the underlying causes. When buildings are commissioned, systems are tested and signed off or adjusted until they are operating with design parameters.

The problem is that over time the logic within building management systems can degrade relatively quickly.

Once the building is occupied, there can be competing agendas at play, energy efficiency versus thermal comfort, for example, especially within multi-tenanted and multi-use buildings. Plus, post-pandemic work patterns have significantly altered occupancy rates in many commercial buildings.

Meanwhile, equipment can fail and degrade over time – malfunctioning or mis-calibrated temperature sensors if left unchecked cause conflict. Unnecessary baseloads running overnight rack up bills. Set points too far apart mean wasted energy.

The upshot is that key parts of the HVAC systems, i.e. heating and cooling, can end up fighting each other, driving up consumption, bills and emissions – and blowing out the original operational parameters of the building energy management system. Left unchecked, the additional cost can run into millions of pounds over time for larger buildings and estates, and megatonnes of additional carbon emissions.

Hence the requirement for constant monitoring and validation – and why adhering to internationally recognised best practice is critical in guaranteeing results.

## **IPMVP explained**

In short IPMVP is the gold standard for measuring and verifying efficiency investments. It means businesses can rely on the proposed projects to perform and to deliver the stated savings. In other words, making energy efficiency projects more bankable by ensuring they do what they say on the tin.

IPMVP is owned and maintained by Efficiency Valuation Organization (EVO) a non-profit set up squarely to create business confidence in energy efficiency as a resource. EVO's stated mission is to 'ensure that the savings and impact of energy efficiency and sustainability projects are accurately measured and verified'.

IPMVP provides a framework that is used to:

- 1) verify a project has the potential to perform and save energy, and
  - 2) quantify site-level energy and cost impacts from a targeted project.
- Both components are essential to the measurement and verification (M&V) of savings.

IPMVP development began in 1994, initially led by the US Department of Energy to address the issue of disparate measurement and verification techniques and methodologies. Many of these were flawed – some for example didn't take into account seasonality – which meant businesses became sceptical of the projected savings touted by energy services companies (ESCOs), damaging credibility and crimping investment from the private sector.

So the organisation that ultimately became EVO focused on building a more robust but flexible framework that could be incorporated into a building at any time. The protocol is continuously updated to wrap in the latest technology – such as IoT and going forward, AI.

Since its establishment, the use of IPMVP has become widespread amongst ESCOs, utilities, governments and financial institutions around the world.

## **Metering matters**

Metering and sub-metering in commercial buildings means energy consumption across various systems can be precisely measured, providing building owners and operators with critical data to identify and address inefficiencies.

EP&T deploys metering and sensors within commercial buildings to get a more accurate read on energy consumption and how both key systems and the BMS are performing. Drilling down into that data is where the efficiency gold lies.

All of the building data is fed into EP&T's proprietary EDGE platform, providing 360 degree visibility – and the ability to pinpoint the not so obvious causes of wastage.

These insights are then transformed into actionable tasks that, once implemented, enable energy managers to cut costs, optimise usage, boost sustainability ratings and improve asset performance overall. Crucially, without compromising the comfort of occupiers.

Optimal energy consumption not only reduces operating costs and carbon emissions, but also increases the building's asset value – and its attractiveness to environmentally conscious tenants and buyers. Research by CBRE suggests that the most sustainable and energy efficient buildings are commanding a 12-14 per cent more rent than average-rated buildings based on Australia's NABERS rating scheme, which is now also live in England and Wales.

Which is why progressive commercial real estate firms are taking action.

## **Case study: 21% energy savings, £1.5m bill reduction**

FTSE-listed commercial real estate business Derwent London owns a property portfolio of circa £5.4bn. After deploying EP&T's EDGE data analytics service to identify wastage it has unlocked 21 per cent energy savings as well as massive cost and carbon reductions.

EP&T Engineers work in partnership with the site team to resolve areas of wastage and optimise building operation, while building managers can track the ongoing performance of their asset.

- Energy Saving initiatives include:
- BMS set point optimisation
- Corrected malfunctioning temperature sensors and pressure sensors
- Optimisation of water flow and return temperatures
- Chiller staging
- Optimisation of night purge strategies
- Eliminating heating and cooling conflicts
- Implementing BMS ambient chiller lockout
- Variable Speed Drive frequency optimisation
- Behaviour change e.g. rationalising security and cleaning regimes
- Measurement, verification and commissioning of new equipment

The initiatives are calculated – using the industry recognised IPMVP methodology – to cumulatively reduce CO2 emissions by 4,518 tonnes, the equivalent of 2,119 flights to New York. Projected cumulative energy cost savings are £1.5m, unlocking “significant financial and environmental benefits for both Derwent and our tenants”, according to Justyna Tobolska, Sustainability Manager at Derwent London.

Find out how more blue chip businesses are taking control of cost and carbon. Visit [www.eptglobal.com](http://www.eptglobal.com).