

Understanding How Covid-19 Impacts Measurement and Verification (M&V;)

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Measurement & Verification (M&V;) is a protocol that determines the effect of an energy improvement using an agreed boundary, data and analysis. It establishes what energy use would have been without the intervention, then calculates savings as the difference between that baseline and actual post-project consumption. M&V; is critical because an electricity bill can fall for many reasons - production declined, operating hours shortened, weather changed, or prices changed - so these possibilities must be separated from the equipment improvement itself. M&V; significantly improves businesses' capacity to realize and verify energy savings, lower energy costs, and reduce operational expenses. It also supports funding applications, certificate claims and evidence-based investment decisions.

Publication context: This article reflects its publication date. Market prices, program rules, reporting duties and deadlines may have changed. Confirm current official guidance before making a decision.

Effective data provides key insight. Diligent monitoring promotes performance.

Similarly, Measurement & Verification (M&V;, also known as MRV) protocol assures performance of energy conservation measures (ECM) and significantly improves businesses' capacity to realize energy savings - savings that result in lower energy costs and fewer expenses on operations and maintenance.

Alan Wang - Principal Consultant

Considering the pivotal role that Measurement and Verification (M&V;) plays in guaranteeing energy and cost savings, it's important to maintain the diligence, rigor, and transparency that make M&V; so reliable and effective.

Given the worldwide disturbance caused by the Covid-19 pandemic, we want to share insight from one of Northmore Gordon's Principal Consultants, Alan Wang . Interviewed last week, Wang addresses the importance of recognizing Covid's impact on M&V; and what we can expect for its future.

Q: FIRST, WHAT DOES M&V; ENTAIL?

AW - An M&V; method is a well-defined, transparent means of measuring and verifying performance of an energy conservation measure (ECM) so as to identify the true energy savings the ECM brings the facility. Using a statistically valid modelling approach - such as linear regression modelling or estimate of the mean to model baseline conditions - M&V; reveals true energy savings of an ECM under normal operating conditions of the facility.

Q: WHAT ARE THE RELEVANT STANDARDS FOR M&V;?

AW - M&V; measures must adhere to rigorous and well-defined standards in order to maintain reliability and credibility. The International Performance Measurement and Verification Protocol (IPMVP) has become the international gold standard for M&V.; The IPMVP offers a versatile and flexible framework which allows for energy consumption estimates to be made using a proxy. This, however, is not permitted under any of the Australian M&V; measures.

In New South Wales, the Energy Savings Scheme (ESS) uses a couple of methods (PIAMV and MBM) which are both M&V; based but operate under stricter guidelines than the IPMVP. Under Victoria's Victorian Energy Upgrades , there is a similar M&V; based program known as Project Based Activity (PBA).

Q: HOW HAVE THE M&V; METHODS RESPONDED TO COVID?

AW - IPMVP released a Covid guide late last year which has enabled businesses to adopt adjusted guidelines for their Covid impacted facilities. The IPMVP Covid guidelines allow businesses to be flexible with their 'Covid impacted period,' allowing businesses to backcast or forecast the Covid impacted period to baseline or operating conditions so as to minimise the issues coming from Covid between those affected dates.

In Victoria, there was a six-month delay for the release of the finalized Covid guidelines. That put a delay on the release of M&V; certifications, some of which were delayed by as much as 18 months.

New South Wales was not heavily impacted by Covid. There were few cases, but we do anticipate consultation for Covid guidelines to start in the near future and for final guideline papers to be released in the first half of 2022.

Q: HOW HAS COVID IMPACTED CONDUCTING M&V; FOR INDUSTRIAL BUSINESSES?

AW - The widespread impact Covid had on consumer lifestyle caused significant changes in industrial production. Some manufacturers needed to increase production to match growing demand while others decreased production in response to lower demand or disruptions in their supply chain.

For example, one of our clients is a coffee pod manufacturer that saw a 400% increase in production because of heightened demand for coffee at home. Although this was great for the manufacturer's revenue, the production increase posed a huge problem for M&V; measures. The increased production heavily skewed the amount of energy consumption per product produced, lowering our confidence in the energy KPI. This abnormal production volume necessitated some timeline adjustments to the baseline and operating period in order to claim the savings of the certificates, and not all anticipated credits could be claimed.

In another example, an abattoir experienced reduced production and delayed fuel delivery. Without normally delivered fuel, the abattoir went through month-long stretches without showing much fuel consumption. This change in activity significantly impacted the energy KPI, making M&V; measures a real challenge.

Q: HOW HAS COVID IMPACTED CONDUCTING M&V; AT BUILT ENVIRONMENT SETTINGS?

AW - With lockdowns instituted during Covid, many people were not going into work at retail settings. In several cases, a lower occupancy led to decreases in energy consumption, which resulted in M&V; delays in order to gather sufficient data to assess true energy savings from the ECM.

It's easier to anticipate the impact of Covid on built environment settings than on industrial operations because occupancy is the primary factor impacting built environment whereas the industrial sector is affected by a wide range of interconnected variables that are difficult to predict.

Covid does impose a number of challenges for M&V.; Fortunately, there are different modelling techniques and other flexible guidelines which allow M&V; experts to adjust timelines and carry out their Measurement and Verification measures.

There will be issues going forward as Covid persists, but energy efficiency improvements are arguably the most impactful start for businesses striving to reduce energy demand, save money, and lower their carbon emissions.

At Northmore Gordon, we are well aware of the challenges, and we are ready to help businesses carry out energy conservation measures and the appropriate M&V; method to make sure they effectively decarbonize and capture their true energy savings.

Using this guidance

Check the site's operating conditions, data quality, project stage and current program settings before turning the dated discussion into a scope or investment decision.

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What is Measurement & Verification (M&V;) and why is it important?

Measurement & Verification (M&V;) is a protocol that determines the effect of an energy improvement using an agreed boundary, data and analysis. It establishes what energy use would have been without the intervention, then calculates savings as the difference between that baseline and actual post-project consumption. M&V; is critical because an electricity bill can fall for many reasons—production declined, operating hours shortened, weather changed, or prices changed—so these possibilities must be separated from the equipment improvement itself. M&V; significantly improves businesses' capacity to realize and verify energy savings, lower energy costs, and reduce operational expenses. It also supports funding applications, certificate claims and evidence-based investment decisions.

How did Covid-19 disrupt M&V; processes and baseline establishment?

Covid-19 created significant challenges for M&V; because industrial production, commercial occupancy and energy consumption patterns changed dramatically and unpredictably. In industrial settings, some manufacturers increased production to meet heightened demand (such as a coffee pod manufacturer experiencing 400% production increases) while others faced supply chain disruptions or reduced orders. In built environments, lockdowns reduced occupancy and energy consumption. These changes meant that baseline conditions established before Covid no longer represented normal operating patterns, complicating the comparison between pre- and post-improvement energy use. M&V; practitioners needed additional time to gather representative data covering full operating cycles and to assess whether observed changes resulted from the energy improvement or from Covid-related operational disruptions.

What adjustments did M&V; frameworks allow for Covid-impacted periods?

The International Performance Measurement and Verification Protocol (IPMVP), the international gold standard for M&V;, released a Covid guide in late 2020. This guide enabled businesses to adopt adjusted guidelines for Covid-impacted facilities, allowing them to either backcast or forecast the Covid-impacted period to baseline or operating conditions. This approach aimed to minimize issues arising from Covid between the affected dates. However, Australian M&V; measures—including the NSW Energy Savings Scheme's PIAM&V; method and Victoria's Project-Based Activity method—operate under stricter guidelines than the IPMVP and do not permit use of proxy estimates.

The availability and timing of Covid guidance varied significantly between jurisdictions, with Victoria experiencing a six-month delay in finalizing guidelines, which delayed M&V; certifications by as much as 18 months in some cases.

Why is early M&V; planning critical when operational changes are anticipated?

Early M&V; planning ensures that a complete operating cycle is captured before and after equipment upgrades, and that baseline conditions are representative of normal operations. The NSW Government's M&V; guide emphasizes that early planning enables practitioners to identify the measurement boundary, operating variables and data quality needed to explain the effect being claimed. When operational changes—whether from Covid disruptions, production shifts, facility expansions or weather impacts—occur without prior M&V; planning, the original baseline becomes unrepresentative. This can make it impossible to distinguish energy savings from the equipment improvement itself. Establishing measurement responsibilities, data collection intervals and baseline procedures before work begins prevents situations where insufficient data exists to complete a valid M&V; assessment after implementation.

How do built environment and industrial sectors differ in M&V; Covid impact?

Built environment settings, such as retail and offices, experienced more predictable Covid impacts because occupancy is the primary factor affecting energy consumption. Lockdowns directly reduced occupancy and energy use, making the cause of consumption changes relatively clear. Industrial settings faced far more complex and interconnected variables: production volumes, supply chain availability, equipment utilization rates, raw material characteristics and seasonal patterns all changed unpredictably. For example, an abattoir client experienced reduced production and delayed fuel delivery, resulting in month-long stretches with minimal fuel consumption that severely impacted energy key performance indicators (KPIs). This complexity made it much harder to anticipate Covid's specific impact on industrial M&V; outcomes. According to our experience, industrial sectors typically require more granular analysis of operating variables to achieve confident M&V; results.

What practical steps should a business take before installing energy improvements if Covid-like disruptions are possible?

A project brief should document the site's actual operating conditions, production constraints, seasonal variations and any foreseeable operational changes. Establish baseline data collection well before equipment installation begins, ensuring a full operating cycle is captured under representative conditions. Define measurement responsibilities clearly: who owns the data, who can access it, and how equipment or operational changes will be recorded. Keep a detailed chronology of any changes affecting energy use—facility expansions, production shifts, supply chain disruptions or staffing changes. If disruptions occur during the baseline or post-implementation period, document them explicitly and assign an owner to identify data gaps promptly. Our metering and data quality guidance recommends specifying the decision each report must answer and the person responsible for investigating anomalies. This preparation allows M&V; practitioners to adjust baselines and operating periods with clear evidence, rather than discovering problems after equipment is installed.

How should energy savings forecasts and actual M&V; results be kept distinct in project planning?

An engineering estimate is a modelled expectation before or during project design, typically based on equipment specifications and assumed operating conditions. A verified energy result is an outcome established under an agreed M&V; approach and reporting period, using actual baseline and operating data. A certificate result is a quantity accepted or issued under a particular scheme's process. These three outputs must remain separate in project files and business cases. When Covid or other disruptions change operating conditions between the baseline period and project implementation, the verified result will differ from the engineering estimate. This is not a failure—it reflects real operating conditions. For investment decision-making, present the project business case with and without conditional support, and keep capital cost, operating savings, certificate proceeds and emissions

outcomes as separate line items. This approach prevents inflated payback estimates and helps management understand the decision if actual results differ from forecasts.

What role does Northmore Gordon play in navigating Covid-impacted M&V; challenges?

We offer measurement and verification services that include project-boundary selection, baseline modelling, savings calculation and reporting. Our expertise in industrial energy management, combined with its engagement with multiple sectors and jurisdictions, positions it to help clients adjust baselines when operating conditions have changed unexpectedly. We can conduct energy-use investigations and audits to establish the causes of consumption changes, develop metering and monitoring plans that capture representative operating cycles, and assist with project timing decisions to preserve funding and certificate options. When Covid-like disruptions occur, we can help coordinate evidence collection across facility teams, installers and advisers, and prepare transparent calculations that distinguish operational changes from equipment improvements. Our knowledge of Australian M&V requirements under NSW ESS, Victorian Energy Upgrades and other schemes enables clients to navigate stricter guidelines and secure credible savings evidence.