

Measurement and Verification for Commissioning Projects: Challenges and Opportunities

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Measurement and Verification (M&V) is a key element in any project that provides energy conservation measures, and for which there is a need for financial accountability (which probably includes all projects!). While considerable progress has been made in standardizing methods for M&V—with publication of documents such as the International Performance Measurement and Verification Protocol (IPMVP) and ASHRAE's "Guideline for Measurement of Energy and Demand Savings"—the continuing evolution of innovative energy saving technologies, processes, and programs creates a continuing need to develop M&V methods.

Commissioning of new and existing buildings are prime examples of innovative energy-saving processes. By adding definition to the processes of ensuring, documenting and verifying that building performance meets the owners' requirements, there are significant opportunities to reduce energy and demand, as well as other non-energy costs such as maintenance, worker productivity, and construction costs. There is ample anecdotal evidence that these savings are real, although there is relatively little in the technical literature to definitively document the savings. Owners choose to engage in commissioning because they understand the value it will have in their construction or operation processes, although they often do not receive an accounting of the savings they actually realized.

Part of the reason for this lack of hard evidence is that commissioning is a different type of measure than other capital-based measures. It is more probabilistic and can be more of an informational process than a definable engineering intervention. It can be difficult to clearly identify exactly what changed as a result of the project, in order to measure or calculate its impact.

This presentation discusses the challenges of planning and implementing quality M&V activities in commissioning programs and projects. It also discusses the unique opportunities that these processes provide for M&V, including the availability of rich and detailed operational data, which are typically not cost-effective to collect in a standard M&V activity. Examples are cited from the San Diego Retrocommissioning program, with which the author has been involved. It also discusses recommendations for the program design and M&V communities for continuing evolution of methods for both program delivery and M&V.