

PY2022 EM&V Key Findings and Recommendations

2021-2024 CDMF Energy Manager Program

No.	KEY FINDINGS	2022 EM&V RECOMMENDATIONS	IMPACT	IESO RESPONSE
1.	<p>A significant share of Operational and Maintenance (O&M) and Retrocommissioning (RCx) non-incented measures submitted by Energy Managers do not have sufficient supporting documentation to verify savings impacts accurately and confidently. One impactful example of this was an energy management project at an office building claiming 1.8 GWh of annual energy savings where no information was provided on the measures implemented and no data was provided to support the savings estimation. Due to the lack of information, EcoMetric did not include this project in the PY2022 sample frame.</p> <p>The data and product documentation that the program requires Energy Managers to provide for each measure depends on the magnitude of estimated peak demand savings. The majority of these O&M and RCx measures fall within the lowest threshold of less than 15 kW where Energy Managers are required to provide information on the baseline condition, post-measure condition, and the assumptions and methodology behind savings estimates.</p>	<p>Regardless of the size of the submitted savings for these measures, required supporting documentation for all O&M and RCx should include:</p> <ul style="list-style-type: none"> • Description of each energy-saving action taken. • Date of each energy-saving measure or action. • Detailed description of pre- and post-implementation conditions. • Detailed description of assumptions and parameters used to estimate kWh and peak kW savings impacts. • Utility bills for the baseline and performance period (ideally 12+ consecutive months for each period). • Evidence indicating how other energy efficiency (EE) measures (incented/non-incented) implemented at the same facility and/or how non-routine adjustments were accounted for in the savings analysis. <p>Require that the technical reviewer only accept non-incented O&M and RCx measures that have the above documentation provided. Technical reviewers must either conduct an engineer review to verify EM submitted savings or accept each non-incented measure for inclusion in the energy manager's progress towards their savings target.</p> <p>EcoMetric also recommends that the energy manager retract the 1.8 GWh measure submission until sufficient supporting documentation is collected for savings verification.</p>	Medium	<p>The IESO will provide this recommendation with the Strategic Energy Manager (SEM) program delivery partner to ensure SEM participants are collecting data and accurately reporting to maximize program savings achievement.</p>

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2.	Energy Managers did not estimate or submit peak demand savings for five non-incented measures where the EcoMetric team expected to see reported peak demand savings. The supporting documentation provided by the Energy Manager was insufficient for EcoMetric to estimate a peak demand reduction for these measures.	Provide further guidance to Energy Managers or future SEM participants on the calculation and submission of peak demand savings estimates. Require that all measures submitted that achieve kWh savings include a peak demand savings estimate. If the estimate is 0 kW, require that the participant provide a brief explanation of the savings estimation.	Medium	The SEM program has its own guidelines around peak demand savings, given that these are not directly incented by the program. The SEM program provides guidance on peak demand savings calculations to cohort participants; however, the program does not require peak demand savings to be submitted by participants.
3.	For compressed air leak repair and purge air reduction measures across two energy managers, submitted savings were calculated by multiplying the leakage cubic feet per minute (CFM) and reduced purge CFM by average specific energy consumption (SEC, kW/cfm) of all compressors. The average SEC was calculated by taking the ratio of average power and average flow for all compressors from the measured trend data. The reported peak demand savings were calculated by calculating average SEC and multiplying it by leakage CFM. This approach averages the power consumption over the operating flow range.	The IESO should issue guidelines that require the use of NREL's protocol "Chapter 22: Compressed Air Evaluation Protocol from The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures". This protocol provides two ways of calculating savings with respect to compressed air systems. IESO should provide guidelines for participants to leverage the BIN-analysis method (Section 3.1.3) for calculating energy savings for all compressed air leak repair and purge air reduction measures. In this method, savings are calculated based on actual trend data and gives a more accurate savings value.	Medium	The IESO will consider the recommendation for the SEM program.
	For verified savings calculations, EcoMetric used the National Renewable Energy Laboratory's (NREL) recommended BIN-analysis method which is based on actual trend data and not average power consumption over the operating flow range. This resulted in a reduction in verified savings of 47% for peak demand and 53% for energy for one project and a reduction of 30% for peak demand and 65% for energy for another project.			

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4.	<p>For several lighting measures, reported savings calculations did not use HVAC interactive effects or summer peak coincidence factors. HVAC interactive effects consider the indirect effect of lighting measures on building's HVAC energy usage due to the reduction in heat emitted from LEDs compared to baseline technologies. Coincidence factors represent the portion of load reduction that occurs during specified peak periods. HVAC interactive factors can increase or decrease peak demand and energy savings, while coincidence factors will generally reduce peak demand savings. Without additional details regarding the lighting schedules and heating and cooling system types in the spaces that house the lights, EcoMetric is unable to estimate the electric and/or gas impacts from the omission of these factors.</p>	<p>For lighting measures that fit into the prescriptive measures in IESO's Measures and Assumptions List (MAL), reported savings calculations should use the peak demand savings factors from the MAL to calculate summer peak demand. The IESO should develop HVAC interactive effects and coincidence factors for common commercial building types to be used to calculate energy and peak demand savings for custom lighting projects. These factors should be provided to energy managers and technical reviewers for use in reported savings calculations.</p>	Medium	<p>The IESO will consider utilizing the Measures and Assumptions Lists (MAL) for the Strategic Energy Management Program.</p>
5.	<p>12 of 15 surveyed EM program participants were aware of the SEM program. Many did not apply to participate. Those that did not apply reported receiving inadequate information about the SEM program. Four of five interviewed energy managers thought that participation in the SEM program would take either the same or less time than participating in the EM program. Interviewed program staff and implementers believe there is a disconnect in what SEM applicants and potential participants anticipate about the time commitment, involvement, and value of the program compared to what the SEM program can realistically offer.</p>	<p>Program staff and the SEM implementer(s) should further refine the communications around SEM value, involvement, and time commitment to ensure customers receive adequate information about the IESO SEM program. Lack of adequate information was reported to be a barrier to SEM participation. It is valuable to re-evaluate the list of ideal participant characteristics after at least one cycle of the program. This can help with clarifying conditions and requirements under which past participants may enroll in a second term of engagement.</p>	Medium	<p>The IESO will review our communication, marketing and outreach materials to ensure the value proposition for the program is clear.</p>
6.	<p>Six of the 12 energy managers that the EcoMetric team reviewed rounded the reported MWh energy savings in their Quarterly Submissions to three or less decimal places. Many of these measures were smaller in scale (< 100 kWh), so the rounding created discrepancies with verified savings that were not rounded.</p>	<p>Require that energy managers round to six decimal places for energy savings reported in MWh units.</p>	Low	<p>The IESO will ensure SEM participants are collecting data and accurately reporting to maximize program savings achievement.</p>

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7.	Non-routine events (NREs) will distort apparent program savings if not properly tracked. Two of five energy managers who were interviewed report that their companies are already tracking NREs.	Program implementers should carefully track participant NRE timing and their effect on facility energy use.	Low	The IESO will ensure non-routine events are tracked.
8.	SEM programs with higher caps on incentives showed promising levels of participation and savings. Four out of five interviewed energy managers said that a top motivation for applying to the program included energy savings and receiving an incentive.	Re-assess enrollment and retention rates after one program cycle to assess whether current incentive level caps are a barrier to generating expected savings.	Low	The IESO intends to assess program participation rates at the end of year one and will enhance the program as required to maximize program participation and results.
9.	IESO-funded energy managers' GHG reduction impacts are likely being underestimated. Tracking systems are in place for non-electric impacts, but they are not being used by the energy managers.	The IESO should require participating energy managers to track natural gas impacts in their quarterly submissions. While the IESO may not be able to claim any natural gas savings, these impacts can be used to better understand the important GHG reductions the EM program is enabling. This requirement would result in a detailed tracking system of holistic impacts driven by the energy managers to share with the organizations they work with.	Low	The IESO will consider this recommendation for the future SEM program.