



February
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Industrial Strategic Energy Management (SEM) Impact Evaluation Report



BACKGROUND

BPA began offering its Energy Management (EM) Program to industrial facilities in 2010. It was one of the nation's first large-scale deployments of a strategic energy management (SEM) program in the industrial sector, which had engaged 59 facilities by the end of 2015. BPA provides long-term energy management consulting services to educate and train industrial energy users.

BPA, with Cadmus and SBW, conducted an impact evaluation of the EM program, including High Performance Energy Management and Track & Tune facilities between 2010 and 2014. The evaluation team used regression analysis to estimate energy savings and characterize year-to-year savings trends. The evaluation surveyed participants for SEM adoption and developed recommendations for program and evaluation improvement.

TYPES OF SAVINGS

Facility Savings –
Capital project Savings =
SEM Savings
(MT&R or Evaluated)

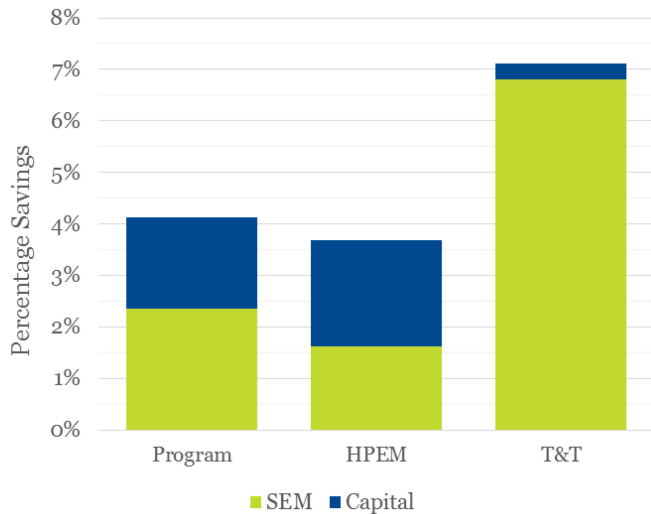
↓
Reported
SEM Savings

$\frac{\text{Evaluated Savings}}{\text{Reported Savings}} = \text{Realization Rate}$



KEY FINDINGS

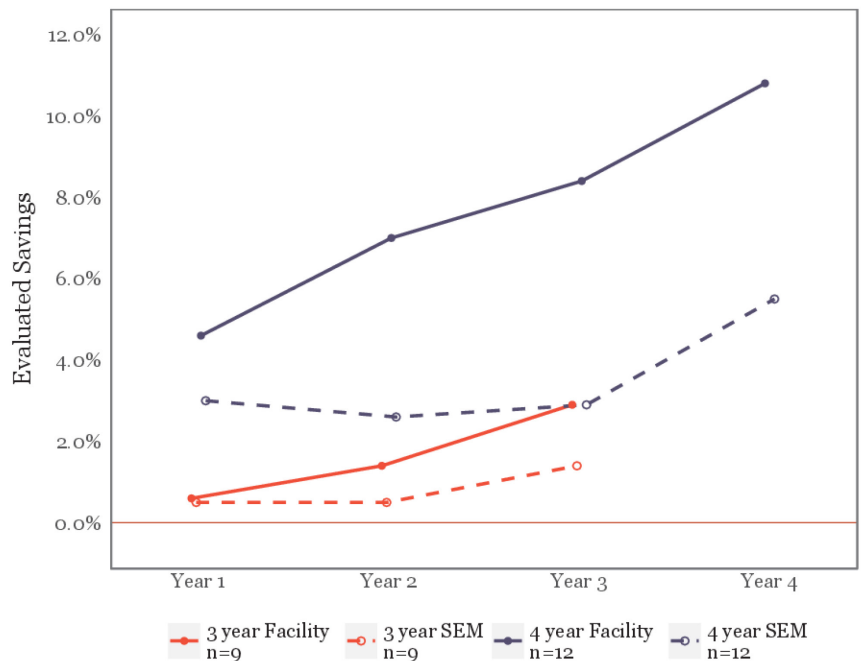
EPT team carefully collected data and documented the program. This can serve as an industry standard for SEM programs and it enabled evaluation to estimate savings without collecting additional information.



SEM saved 2.3% of consumption. Overall, EM facilities saved an average of 4.1% of consumption, for 3.8aMW per year. Over half of that was SEM savings (2.3%) and the remainder was due to capital projects. T&T facilities saved the most on a percentage basis: 7.1% of consumption, with SEM savings of 6.8%. HPEM facilities provided the most savings to the program achievements, averaging 2.9aMW per year with 1.3aMW from SEM savings.

SEM savings persisted. Total facility savings increased each year. SEM persistence suggests facilities continued to practice EM throughout engagement.

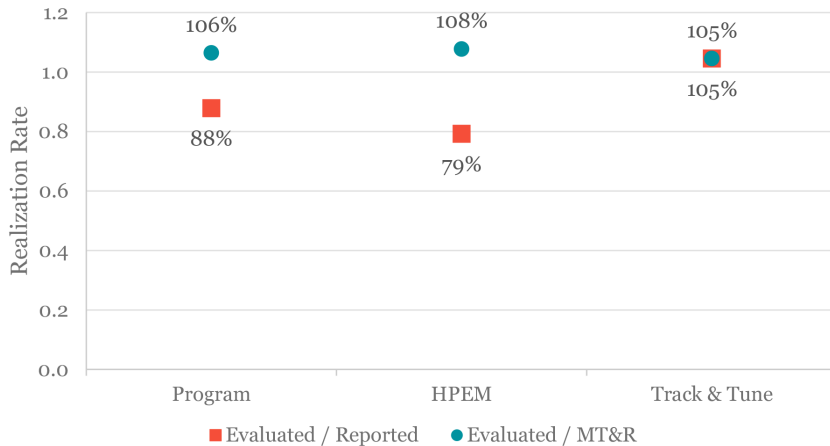
Individual facility savings were variable and SEM savings were sometimes negative. The evaluation found significant saving variation between facilities and from year-to-year. Most of the time, SEM savings were positive, but in 22% of cases, the evaluation estimated increases in consumption, or negative savings.



Adoption of SEM elements not correlated with SEM savings. We didn't find a clear relationship between survey responses of actions and energy savings levels.

For plans and reports, visit www.bpa.gov/goto/evaluation

FINAL KEY FINDING



The evaluation verified the MT&R SEM savings. Evaluation savings for individual facilities and for the program overall were very similar to the program's MT&R results, with realization rates above 1.0. Evaluation found lower SEM savings than BPA reported due to BPA's practice of reporting zero savings for facilities with estimated consumption increases.

KEY RECOMMENDATIONS

EPT team should continue to: estimate savings using site-specific statistical analysis, document non-routine adjustments, collect high-frequency consumption data and report negative savings estimates in the MT&R model workbooks. EPT team should test for significance of weather variables in models.

BPA should attempt to improve the accuracy of the reported SEM savings by recording negative SEM savings estimates or making program-level adjustments to savings

There remains much to learn in the area of SEM evaluation and BPA and other organizations could conduct future research into areas such as: post-participation persistence, capital project savings persistence, cost-effectiveness, new BPA participants and re-baselining policies and the relationship between SEM activities and savings.

