Building on Success to Introduce Scalable SEM to New Markets

Part 1: Insights from California’s ongoing process to develop SEM programs
Part 2: How to leverage DOE’s latest SEM tool: 50001 Ready program

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Part 1: Insights from California’s ongoing process to develop SEM programs
CA IOUs provide bulk of industrial and commercial energy
Technology and operations offer untapped energy savings potential
The commission shall authorize electrical corporations or gas corporations to **provide financial incentives**, rebates, technical assistance, and support to their customers to increase the energy efficiency of existing buildings **based on all estimated energy savings** and energy usage reductions, taking into consideration the overall reduction in **normalized metered energy consumption** as a measure of energy savings.

Those programs shall include energy usage reductions resulting from the adoption of a measure or installation of equipment required for modifications to existing buildings to **bring them into conformity with, or exceed, the requirements of Title 24** of the California Code of Regulations, as well as **operational, behavioral, and retrocommissioning activities reasonably expected to produce multiyear savings**.
CEE defines SEM as...

- Holistic approach to managing energy use in order to continuously improve energy performance
  - Persistent energy and cost savings
  - Business practice change
  - Senior management through shop floor staff
  - Organizational culture
- Equipping and enabling plant management and staff to impact energy consumption
  - Behavioral and operational change
- SEM does not emphasize a technical or project centric approach
  - May support capital project implementation
Allow the facility to integrate energy management with existing business practices to maximize and sustain savings.

i.e. we are asking facilities to manage energy like other resources and assets.
Goal of SEM programs – move facilities towards SEM practices

• If SEM is a philosophy of life what is an SEM program?
• Limited engagement vs. life long engagement?
• How is a SEM program deemed successful?
  — Energy savings
  — Measure life/persistence
  — Measuring if culture has been changed
• Want to develop a program that will result in SEM, not SEM type actions just during the program engagement
• Long view
  — Scale
  — Enterprise wide
  — A norm of business
  — Standardization
Major focuses of a SEM program

- Establish energy management practices
- Improve energy performance
- Track and report energy performance
California thinking: build on success, don’t reinvent the wheel

- Create a third party developed, publicly available program design that is consistent state wide
- Each IOU has a third party operate independent SEM programs based upon common foundation
Multiple 2 year engagement periods

2 year commitment

2 year commitment

2 year commitment

2 year commitment
2-year SEM design elements

Group Meetings
• 8 Workshops

Site-Specific Support
• 12 Site Activities
• 9 M&V Activities

Incentives
• 5 Milestones
• Yearly Performance
Workshops

- Establishing an SEM Program
- Saving Energy “101” - O&M Focus
- Tracking Energy Performance - Regression Model
- Employee Engagement
- Persistence - Project and EnMS
- Saving Energy “201” - RCx Focus
- Energy Management Information Systems
- Celebrating Accomplishments
Site specific support - year 1

- Kick-Off Meeting
- Energy Map
- Treasure Hunt
- Employee Engagement
- Energy Management Assessment
- Year 1 Completion Report
Site specific activities - year 2

- Energy Map Update
- Treasure Hunt #2
- EMIS Support
- Energy Management Assessment #2
- Year 2 Completion Report
SEM M&V evaluates energy performance by making two periods comparable

Relevant variables affect energy consumption
- Production
- Weather

Baseline Period

Reporting Period
M&V activities - year 1

1. Energy Accounting Plan / Baseline Data Collection
2. Hypothesis Model / Technical Review
3. Participant Review of Model
4. Model Application and Finalization
5. Year 1 Data and Opportunity Register Finalization
6. Final Year 1 Savings Analysis / Technical Review
M&V activities - year 2

- Model Review and Update
- Year 2 Final Data and Opportunity Register
- Final Year 2 Savings Analysis / Technical Review
M&V protocols for SEM programs and related activities
Incentives

Milestone
• Incentive for Performing Critical Task
• or Providing Critical Information
• By a Pre-Determined Deadline

Performance
• Incentive for Saving Energy
• During the Performance Period
• Calculated at the End of the Performance Period
Milestone incentives

#1 - Energy and Relevant Variable Baseline Data

#2 - Updated Energy and Relevant Variable Data + Opportunity Register

#3 Final Year1 Data and Opportunity Register

#4 Updated Energy and Relevant Variable Data + Opportunity Register

#5 Final year 2 Data and Opportunity Register
Performance incentives

- Savings Calculated Annually
  - O&M Savings Calculated Using Regression Modeling
    - Based On Baseline (12 Months Prior to Engagement)
    - Paid at an amount lower than capital project incentives
  - Capital Savings Calculated Using Existing M&V Processes
    - “Backed Out” Of Regression Model
    - Paid around current capital project incentive levels
Where are we today?

• Common SEM program design and M&V guide for industrial SEM in California
• RFP from third party implementers were released and contracts are being finalized
• Programs should launch early next year

https://pda.energydataweb.com/#/
Lessons learned

1. What is the goal? Energy savings, do something the commission wants, culture change?
   — View this as a customer engagement practice, not just EE program

2. Public common platform that can be innovated on
   — Build on success, but don’t be afraid to improve
   — Allows for competition and innovation

3. Engage all relevant parties early
   — Document, document, document
   — Everyone in agreement up front on what will result in success

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