



Superior Energy Performance (SEP): AMO Technical Assistance Overview

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Better Plants and Superior Energy Performance

DOE Advanced Manufacturing Office has two complementary programs:

- Better Plants
 - **Corporations** set a goal, establish baseline, track energy use, and report data
 - Corporations report to DOE on an annual basis on a portfolio of facilities.
- Superior Energy Performance (SEP)
 - **Facility-level** certification and recognition program to demonstrate energy management excellence and sustained energy savings.
 - Energy performance improvement is verified by a third party SEP verification body retrospectively in past 3 to 10 years.

Better Plants & SEP: Complementary Programs

DOE's Better Plants

Corporate-wide Recognition

Aspirational Focus:

Pledge to improve energy performance by **25% in the next 10 years**

Superior Energy Performance

Facility-level Certification

Achievement Focus:

Energy performance improved **5% or more over the past 3 to 10 years**

Better Plants Helps SEP Participants

- Provides structure for corporate-wide energy efficiency goals
- Fosters replication of SEP at other facilities

- Helps individual plants to accelerate energy savings that contribute toward corporate goal
- Provides rigor of energy performance measurement at the facility level

SEP Helps Better Plants Partners

SEP Program Certification Requirements

SEP certification recognizes facilities that demonstrate energy management excellence and sustained energy savings.

Certification Requirements: An ANSI-ANAB Accredited Verification Body conducts a third-party audit to verify the following:

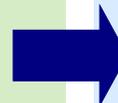
1. Energy management system conformance to ISO 50001
2. Applicant meets energy performance improvement and additional requirements in ANSI/MSE 50021

ISO 50001 is a foundational tool that any organization can use to manage energy.

ISO 50001

Components in place:

- Top Management
- Energy Team
- Policy
- Planning
- Baseline
- Performance Metrics



Superior Energy Performance

Single facility ISO 50001 conformance with verified energy performance improvement

ISO 50001



SEP Program Overview

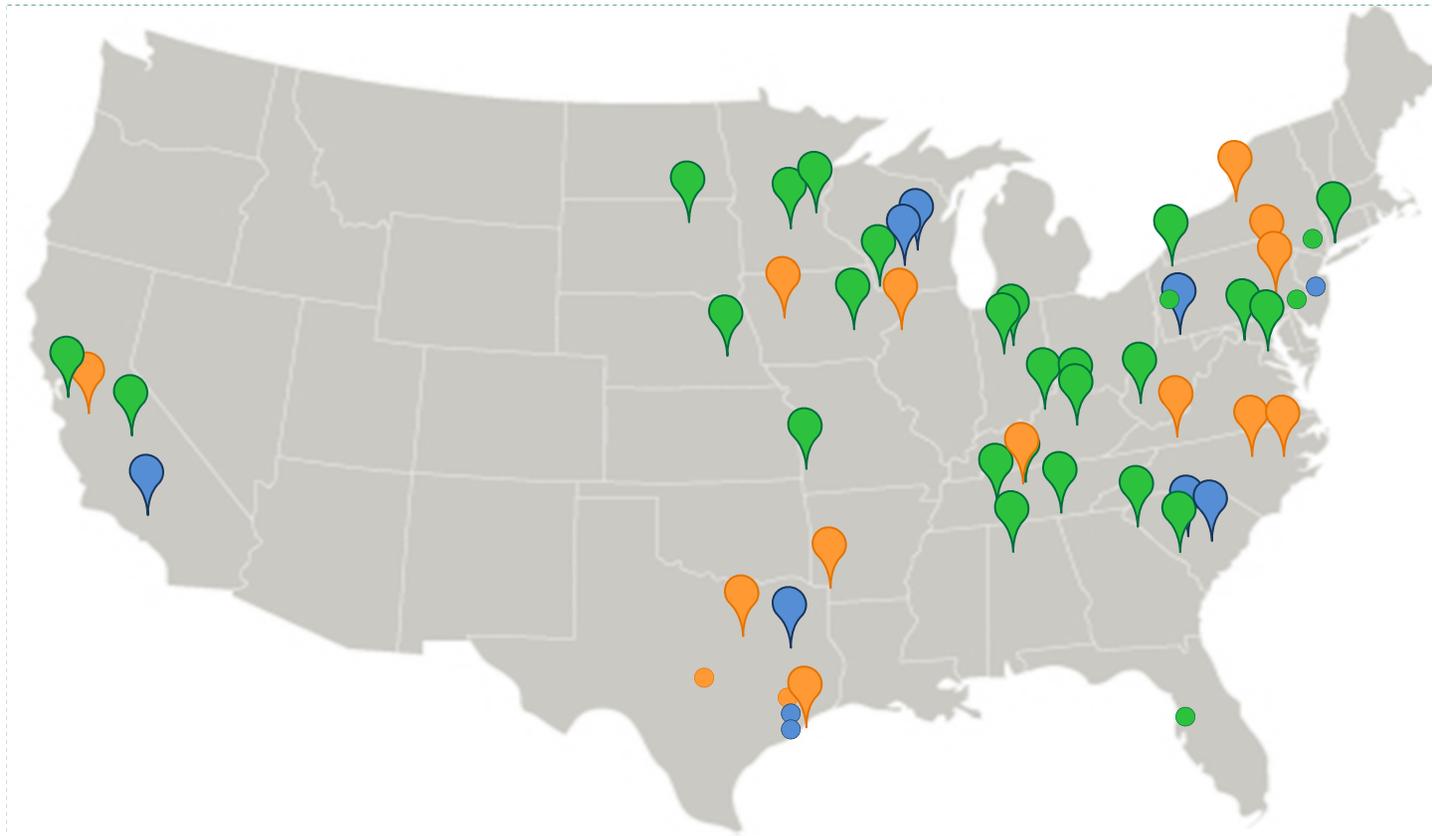
- SEP goal: Foster market-based services to capture 120 and 450 TBtu per year energy savings by 2018 and 2023, respectively, for a total benefit-cost ratio to tax payer of \$46 and \$217 industry's energy cost savings per \$1 Federal investment by 2018 and 2023, respectively.

Industrial Participants:

- **3M**
- **Allsteel**
- Ascend Performance Materials
- Bentley Prince Street
- **Bridgestone Tire**
- Coca-Cola
- **CCP Composites**
- **Cooper Tire**
- **Cummins**
- Curtiss-Wright Flow Control Company
- Didion Milling, Inc
- Dixie Chemical
- **Dow Chemical**
- Eaton
- **Freescal Semiconductor**
- **General Dynamics**
- Gerdau
- **Harbec Inc.**
- Haynes International
- Ingersoll Rand
- Land O' Lakes
- Lockheed Martin
- **Mack Trucks**
- MedImmune
- Neenah Foundry Company
- **Nissan**
- North American Höganäs
- **OLAM Spices**
- **Owens Corning**
- Republic Conduit
- Schneider Electric
- Spirax Sarco
- UTC/Sikorsky
- United States Mint
- **Volvo Trucks**
- World Kitchen

Blue highlight participants have been SEP certified

SEP Program Overview, continued



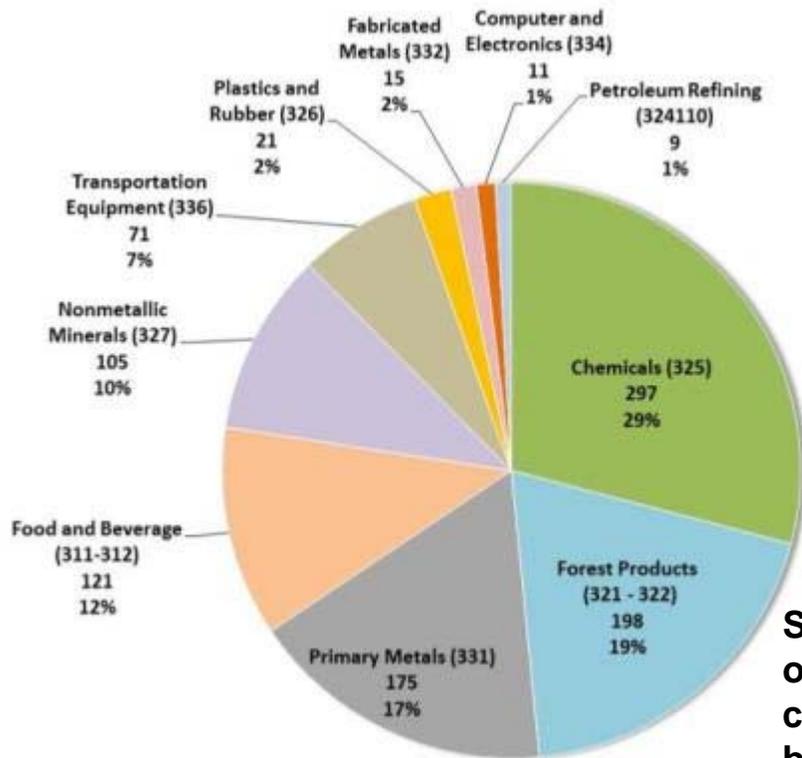
Better Plants Partners  SEP Certified Plant  Implementing SEP Certification  SEP Trained

Non-Better Plants Partners  SEP Certified Plant  Implementing SEP Certification  SEP Trained

* Map data points are intended for illustrative purposes only.

SEP Manufacturing Sector Market Potential

- DOE market analysis has identified initial 3,000+ specific manufacturing facilities to target for SEP certification
- DOE projects the number of SEP certified facilities to grow to 1,000+ (23% of U.S. manufacturing energy footprint) by 2023, representing a wide array of industrial sectors



Sector breakdown of projected SEP certified facilities by 2023

Prime facilities for SEP certification

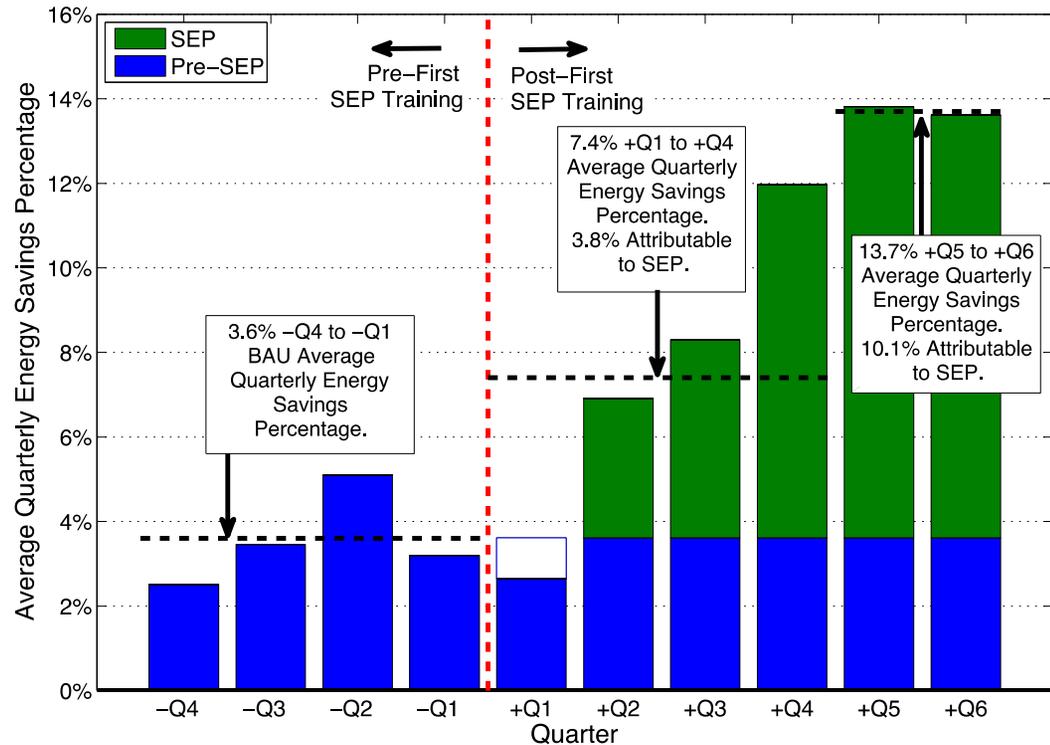
- >\$1 million annual energy bill
- Prior ISO management system certification
- Strong sustainability program

Data and Metrics: Making the Business Case

Recently published study:

Nine industrial facilities certified to Superior Energy Performance:

- Improved their energy performance by an average of 10% and over \$500,000 per year over business-as-usual in the first 18 months of SEP implementation.
- Saved on average \$503,000 per year from operational improvements (low/no cost investment) attributable to SEP.

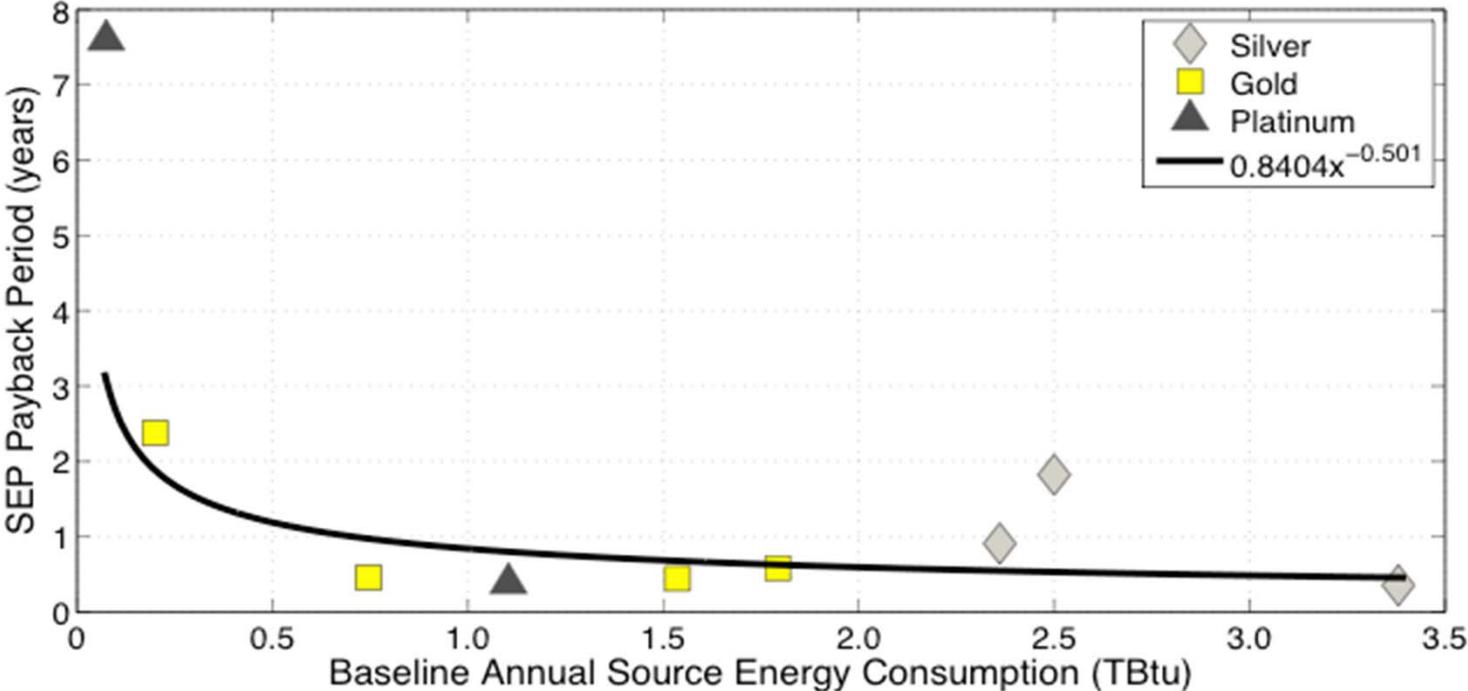


Average quarterly percentage energy savings as a function of average quarterly baseline energy consumption for all nine facilities. Results are aligned across facilities so that the first quarter starts when the facilities received their first SEP training. Subtracting the BAU quarterly energy savings percentage from quarterly post-first training energy savings percentages reveals savings attributable to SEP.

View full study at: http://eetd.lbl.gov/sites/all/files/aceee_sep_paper.pdf

SEP Payback

Marginal Payback =
$$\frac{\text{Plant's SEP costs (not including capital project costs)}}{\text{Associated SEP operational energy savings beyond business-as-usual operational energy savings prior to SEP}}$$



SEP costs include internal staff time, including staff already employed.

SEP Accomplishments

- ISO 50001 energy management standard published June 2011
- 29 SEP demonstration plants -- represent 12 sectors
 - 17 plants complete – saved 3 Trillion Btu cumulatively as of FY2013 and **improved their energy performance between 6 and 25% over a three year period.**
 - 12 still implementing
- Key SEP demonstration plants results (average): **Nine plants have achieved 10% improvement above business-as-usual in the first 18 months of SEP implementation and saved \$500,000 per year with 77% of the savings from operational improvements with no/low capital investment.**
- Workforce Development:
 - 74 Certified Practitioners in EnMS,
 - 16 SEP Performance Verifiers, and
 - 10 SEP Lead Auditors.

SEP Accomplishments, continued

Recent News: Six manufacturing companies and three utilities have joined with DOE in the **Industrial SEP Accelerator**:

End users - 3M, Cummins, General Dynamics, Nissan, Schneider Electric, Volvo Trucks

Utilities - Bonneville Power Administration, Northeast Utilities, Vermont Energy Investment Corporation

The Industrial SEP Accelerator is designed to:

1. demonstrate cost savings from **end users implementing SEP enterprise-wide**, and
2. demonstrate strategic energy management through **SEP as an effective utility ratepayer-funded energy efficiency program offering** for industrial facilities.

SEP Accomplishments, continued 2

SEP Verification Bodies: SEP VBs perform the SEP audit and issue the SEP certificate to manufacturing plants seeking SEP certification.

SEP verification bodies:

- DEKRA (Accredited)
- UL DQS (Accredited)
- Advanced Waste Management (Applied)
- LRQA (Applied)

SEP FY2014 Plan

- Certify 25 SEP facilities
- 6 case studies
- SEP branding with DOE recognition for SEP certified plants
- 100 Certified Practitioners
- Outreach to top 140 targeted companies:
 - Better Plants partners,
 - companies with large plants, and
 - prior ISO management system experience
- Strategic Energy Management checklist available
- SEP Accelerator enterprise-wide data sampling & audit plans
- SEP Accelerator utility ratepayer program toolkit ready

SEP Outlook – FY2015

- SEP program redesign available in FY2015
 - allow flexible alignment with Better Plants program baseline year
 - SEP achievement period – 3 to 10 years
- Six Better Plants partners achieve enterprise-wide ISO 50001 certification with multi-plant SEP certification – estimate of 28 plants to be SEP certified
- Three utilities start working with industrial customers to implement SEP as a program offering

SEP - Get Involved

As a manufacture you can engage SEP in many ways:

1. Figure out where you are in the SEM Continuum
2. Join the SEP Accelerator
3. Get assistance in piloting SEP, especially if already pursuing ISO50001
4. Speak to your peers that are already engaged in SEP

See the website for many resources:

<http://www.superiorenergyperformance.energy.gov>

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