Superior Energy Performance®
U.S. DEPARTMENT OF ENERGY

Superior Energy Performance™

Guide for the Development of Energy Efficiency Program Plans

Prepared for the U.S. Department of Energy

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Using This Guide

The U.S. Department of Energy (DOE) commissioned the development of this document to serve as a resource to energy efficiency program administrators (PAs) who are developing offerings for Superior Energy Performance™ (SEP) and are looking for guidance on the information to include in their program plans. While the primary purpose of this document is for the development of energy efficiency program plans, it may also be useful for reporting and other purposes. This document can be used in conjunction with and provides guidance for the input fields in the SEP Program Planning Template, available at [TBD].

This guide is intended to be comprehensive to cover the range of efficiency plan requirements throughout the country. As some efficiency program plans do not include all of the elements in this document, PAs should feel free to use only the sections that are useful to them.

Some of the language in this document can be copied and pasted directly into efficiency program plans. Language that does not require further modification is indicated by block indentation. Most sections require some degree of modification according to the specific circumstances of the PA. For topics that are very location-specific, this document only provides guidance for PAs to use in developing their efficiency plans.

Program Description and Objectives

The SEP program seeks to assist industrial customers through continuous improvement of their energy performance over time from all energy sources, and provide additional customer value through third-party verification of these achievements. SEP certification includes certification to the ISO 50001 Energy management system standard, an internationally recognized best practice in energy management that provides an ongoing framework for continual improvement. International relevance and recognition provides significant value for industries that have a global footprint or an interest in international trade.

SEP provides a set of tools to assist facilities with identifying significant energy uses, developing action plans to improve operational efficiency and increase the efficiency of equipment and controls, fostering cultural changes, reducing waste, and increasing market acceptance of business sustainability. SEP engages key personnel from various departments—including top management—to put the facility on a continuous energy improvement pathway.

SEP builds on a solid foundation provided by Strategic Energy Management (SEM). As compared to SEM, SEP enhances the structure and rigor and provides third-party verification and international relevance. These program features further the integration of energy management into the customer's business practices, which deepens customer commitment to the continual energy improvement approach. The SEP Program Transition Tables, available at [TBD], provide information concerning level of effort required to move from traditional industrial incentive programs to SEM, ISO 50001, and SEP.

The following description of SEP can be used directly in PA program plans:

> Superior Energy Performance™ (SEP), a strategic energy management program managed by the U.S. Department of Energy (DOE), offers a comprehensive approach to energy efficiency and promotes continuous, sustained improvement in energy performance from the operation of industrial facilities. SEP extends beyond the global energy management standard, ISO 50001, by adding third-party verified attainment of one of three levels of energy performance improvement (Silver, Gold, and Platinum). SEP builds on the ISO 50001 standard used by industry to analyze and prioritize energy use and consumption by tracking progress with energy performance metrics. Through SEP, facilities discover new opportunities to achieve and validate energy performance improvements.
>
> SEP is a voluntary certification that industrial facilities earn by demonstrating continual improvement in energy efficiency. Organizations can use SEP as a roadmap to achieve ongoing energy improvements and to boost their competitiveness, even if they are not yet ready to pursue SEP or ISO 50001 certification.
>
> By attaining SEP certification, industrial facilities receive recognition for implementing a consistent, rigorous, internationally recognized business process for continually improving energy performance and achievement of established energy performance improvement targets.
>
> In 2007, DOE began developing SEP in collaboration with U.S. industry. SEP was developed in response to industries' request for a voluntary program to recognize and verify their ongoing energy management improvements. Between 2008 and 2012, SEP was thoroughly tested and refined through demonstrations in 37 industrial facilities in 27 states. Starting in 2013, DOE established the Industrial SEP Accelerator to accomplish two important goals: (1) to extend SEP certification from facilities to encompass industrial divisions and companies and (2) to engage new partners, including utilities and energy efficiency program administrators (PAs) in supporting SEP participation. The partners are helping DOE to expand SEP, by

identifying and targeting specific industrial customers in their service territories and by assisting customers in its implementation.

Additionally, PAs may want to include specifics on their engagement with DOE to adopt/implement the program in their jurisdictions and comment on how the SEP program would add to or expand upon their offerings through existing industrial programs. For example,

- SEP can build on existing SEM programs by promoting deeper customer commitment to continuous efficiency improvement, encouraging lasting changes in the corporate culture, and supporting adoption of practices to capture the full value of efficiency.
- SEP can also accompany existing industrial programs, offering customers who may have participated in energy efficiency programs in the past a more rigorous and sustained approach moving forward.

SEP addresses a number of market barriers for industrial customers that PAs may want to reference in their program plans. Table 1 provides more detail on how SEP addresses these market barriers.

Table 1. Market barriers addressed by SEP

Market Barrier	SEP Offering
Lack of information and uncertainty concerning the costs, benefits, and risks of energy efficiency investments	Data on expected energy performance improvements Framework for energy performance tracking, including establishment of baselines, and measurement and verification to support certification
Lack of dedicated energy management staff	Network of ANSI-accredited Certified Practitioners in Energy Management Systems (CP EnMS)™ who can train and assist facility staff in the implementation of an energy management system and certification to SEP, including: identify significant energy uses, provide guidance on setting targets and developing corporate energy policy, and prepare for performance verification and certification

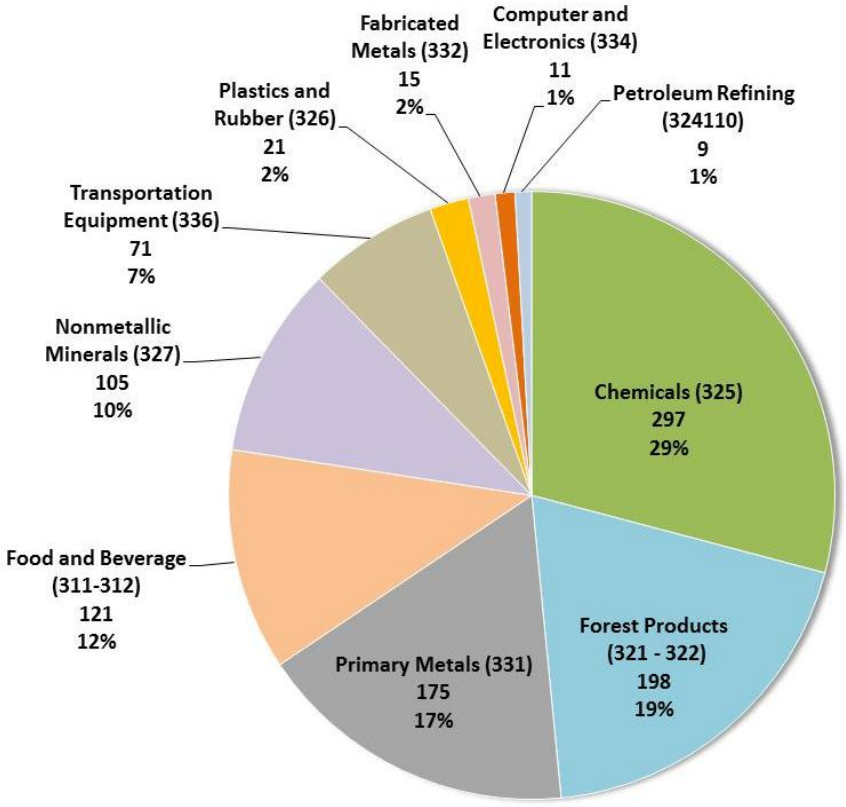
Market Barrier	SEP Offering
Lack of dedicated systems	*EnPI Tool*, to help plant and corporate managers: ▶ Establish an energy consumption baseline ▶ Develop a regression model to predict energy consumption ▶ Track annual energy intensity improvements and calculate energy savings against baseline ▶ Calculate performance indicators DOE eGuide, to help implement an energy management system for complying with ISO 50001 Plant Energy Profiler, to assist with: ▶ Identifying energy sources, use, and consumption ▶ Beginning to scope opportunities ▶ Network of CP EnMS ™ to train staff on using these and other tools
Lack of support/resources from top management	SEP engages key personnel from all levels, including top management staff
Time and effort required to implement an Energy Management System (EnMS)	In-depth, sustained support from PAs through engagement of CP EnMS and training for industrial facilities
Competing commitments for time and funding	Greater savings attainment with longer-term, continuous commitment, more efficient use of time and resources
Bias toward lower first cost versus reduced operating costs	Program incentives to lower upfront costs, shift in business culture to include energy management in all decision making
Undervalued verified energy performance improvement	Reputational benefits with certification, improved data collection allowing analysis of business value for proposed improvements
Lack of ability to connect energy use and consumption with production	Framework for evaluating energy use and consumption across all sources and identification of savings potential at the facility level

Target Market

The industrial sector has the largest energy savings potential of all major energy-using sectors in the United States (Glatt and Schwentker 2010). In the United States, the DOE has identified in excess of 3,000 initial facilities in ten key sectors to target for SEP certification, out of a total of approximately

200,000 U.S. industrial facilities.[1] By 2023, DOE projects the number of SEP-certified facilities to grow to more than 1,000. The cumulative energy consumption (in source TBtu/year) of these projected SEP-certified facilities are forecast to represent 23% of the manufacturing energy footprint nationwide[2] and a wide range of industrial sectors, as shown in Figure 1.

Figure 1. Sector breakdown of projected SEP certified facilities by 2023, by NAICS code



In their program filings, PAs should discuss their approach to segmenting and targeting this market. Good candidates for participation in SEP are facilities with:

- high annual energy spending (DOE considers prime candidates to be those who spend more than $1 million annually and secondary candidates to be those who spend between $300,000 and $1 million annually),

[1] The factors used to identify the target market include:

- source energy consumption greater than or equal to 0.22 TBtu;
- familiarity and experience with ISO 14001 and 9001 certifications;
- strength of the corporate sustainability program; and,
- prior participation in related DOE or EPA programs such as SEP demonstration, Better Plants, or ENERGY STAR.

[2] "Energy footprint" means the energy consumption of the manufacturing sector (in source TBtu/year).

- prior ISO management system certification[3] or experience with other management systems (e.g., Six Sigma, Lean Manufacturing), and
- a favorable corporate culture, demonstrated by elements such as dedicated energy management resources and/or strong existing sustainability programs.

PAs can proactively identify and target customers with robust management systems that can demonstrate commitment from top management to allocate the necessary staff and resources. An existing practice/system for tracking energy consumption and energy expenditure data does not need to be in place in order for a company to participate, but having such processes will aid the implementation and is very helpful at various points (e.g., for setting the facility's baseline, or preparing for certification).

A facility is generally not a good candidate for SEP if:

- executives do not demonstrate support for strategic energy management or adoption of SEP,
- it is unwilling or unable to dedicate staff, time, and other resources to energy management and to SEP implementation, or
- it is currently undergoing major restructuring or management changes (as it may divert attention and resources away from SEP implementation).

In addition, if a facility has recently implemented one (or more) large capital project, the facility should either have twelve months of energy consumption data since implementation of the project, or it should have sufficient documentation to permit isolation of energy savings associated with the capital project in setting the facility's initial energy baseline.

Marketing Strategy

Primary marketing strategies for SEP can include direct marketing by the PA's account executives, promotion by word of mouth, using success stories, engaging in outreach through the Local Manufacturing Extension Partnership, presence at conferences, and leveraging energy service companies and energy management system vendors to target hard-to-reach customers.

Of these strategies, **direct marketing** will be the most effective and should be employed when feasible, especially with large customers and highly specialized industries. Direct marketing by the PA's account executives is a good strategy to:

- promote a dialog about the benefits, process, and requirements of SEP,
- support energy managers as they pitch SEP to their corporate officers,
- assess internal commitment to the process and culture change, and
- initiate discussion of complementary program offerings.

A **request for information** (RFI) or a **request for qualifications** (RFQ) can be used to attract candidates. The RFI or RFQ may be held on a rolling, ongoing basis until the PA receives enough

[3]Prior ISO management system certification means certification to ISO 50001, to any of the standards in the ISO 14000 family, or to any of the standards in the ISO 9000 family.

commitments in order for the program to meet its goals.

Word of mouth (e.g., through the supply chain) can provide a substantial boost to participation. PAs can actively encourage existing or previous program participants to share their success stories with other companies.

Success stories can play an important role in demonstrating the success of the SEP program to prime targets. Where relevant to the PA's jurisdiction, PAs are encouraged to use the existing DOE SEP case studies, available at http://www.energy.gov/eere/amo/business-case-sep. Over time, PAs are also encouraged to develop their own success stories highlighting their participants' experiences with SEP.

Local Manufacturing Extension Partnership (MEP) can be a useful partner in conducting outreach to industrial customers. MEP is built on a nationwide system of centers located in all 50 states and Puerto Rico. Each center is a partnership between the federal government and a variety of public or private entities, including state, university, and nonprofit organizations. These centers tailor services to small and mid-sized manufacturers' most critical needs, ranging from process improvement and workforce development to business practices, including supply chain integration, innovation, and technology transfer. See http://www.nist.gov/mep/about/network.cfm. Other industrial manufacturing associations may also provide a channel for communicating with potential new participants in the program.

Presence at conferences where industrial customers are likely to attend can be useful for building awareness of continual energy improvement and SEP and for marketing the PA's SEP offering.

PAs may also be able to **leverage third-party service providers**, such as energy service companies and energy management system vendors, to assist with outreach, recruiting, and delivery of services. These third-party providers can be especially helpful for targeting and marketing to hard-to-reach and medium-sized customers (annual energy spending of $0.3 to $2.0 million).

Program plans should describe who is marketing SEP to customers and how it is being marketed.

Messaging

Messaging strategies should be designed for a diverse audience at various levels of the organization, from energy managers to corporate executives, and throughout the industrial sector, including medium and large manufacturers. More focused messaging can target other sectors that can benefit from participating in SEP, such as wastewater facilities.

Effective messaging to potential participants will communicate the benefits of SEP from the business perspective. Valuable benefits that messaging can highlight include:

- Overlooked opportunities to reduce energy costs at low or no cost: facilities reported that the ISO 50001 framework helped them identify operational improvement opportunities that previously had gone unnoticed.
- Facility-wide, deeper, and more sustained energy savings: participants realized energy savings of greater than 10% on average over 3 years through SEP.
- Short payback period: large energy users achieved a payback of less than 2 years on average based on operational improvements alone (excluding capital improvements).
- Increased operational efficiency: improved data tracking and utilization leads to better understanding of how energy is being used and how processes can be improved.

- Reduced operations and maintenance (O&M) costs: process improvements and capital projects can lead to reductions in O&M costs.[4]
- Meeting sustainability targets: SEP provides a cost-effective approach for meeting or exceeding corporate sustainability goals.
- Integration of energy management into existing management system processes: SEP increases awareness of energy management throughout the organization, making efficiency a primary and early consideration in corporate decision making.
- Improvements in product quality, increased speed of production, and better business retention: some measures improve product quality or increase the speed of production, both of which can improve customer satisfaction and customer retention (Megdal & Associates et al. 2012, 3-16 and 5-3).
- Increased implementation of emerging and underutilized energy performance improvement technologies: by implementing an ISO 50001 EnMS, businesses have a structure for evaluating their energy use and for understanding the benefits of improved efficiency within their business context, leading to more confident and improved decision making concerning the adoption of emerging and underutilized technologies.[5]

Messaging can reference success stories and/or participation by peers and competitors of targeted facilities.

Finally, one-on-one communications between account executives and industrial customers about SEP should describe the cultural change required to achieve some of the benefits listed above and the commitment of time and other resources involved.

Collateral

DOE has developed a number of collateral pieces and tools that PAs can use for marketing and communicating about SEP. See Table 2.

Table 2. Collateral pieces available from DOE

Collateral Piece	Link
Case studies	http://www.energy.gov/eere/amo/business-case-sep
eGuide for ISO 50001	https://ecenter.ee.doe.gov/EM/tools/Pages/HomeTools.aspx
EnPI Tool	https://ecenter.ee.doe.gov/EM/tools/Pages/HomeTools.aspx

[4] An evaluation report for NYSERDA's Industrial and Process Efficiency Program found evidence of these non-energy benefits, but full evaluation of these specific benefits has not yet been conducted (Megdal & Associates et al. 2012). See also, Lung et al. 2005.

[5] Instead of relying on vendor information, companies are empowered to use their own energy use and consumption data to evaluate the relative benefits of new technologies. Implementation of the energy review component of ISO 50001 also supports the identification and prioritization of associated energy performance improvement opportunities. With this knowledge, businesses are able to focus their attention and resources on high priority improvements, while maintaining a list of additional opportunities for longer-term planning purposes. This approach is what provides the business context for evaluating decisions concerning the adoption of emerging or underutilized technologies.

Collateral Piece	Link
Fact sheet	http://www.energy.gov/eere/amo/downloads/superior-energy-performance-fact-sheet
Superior Energy Performance™: Customer Information (presentation slides)	http://energy.gov/eere/amo/downloads/sep-presentations-materials
ISO 50001 and Superior Energy Performance™ Overview (presentation slides)	http://energy.gov/eere/amo/downloads/superior-energy-performance-overview-slides
Superior Energy Performance™ for Energy Efficiency Program Administrators (presentation slides)	http://energy.gov/eere/amo/downloads/sep-presentations-materials
Web site	www.superiorenergyperformance.energy.gov

PAs can also develop their own collateral pieces that outline PA-specific offerings, target major industries in the area, and highlight benefits that matter most in terms of local opportunities, trends, and priorities.

Future PA efforts might include development of collateral pieces such as videos, testimonials, and success stories that highlight their participants' experiences with SEP. PAs should also consider compiling a list of contacts willing to serve as references for future potential participants.

Incentive Strategy and Delivery Mechanism

PAs can offer technical assistance, financial incentives, direct installation services, or a combination of these to their customers in support of SEP implementation at their facilities.

Technical Assistance

Technical assistance represents the largest opportunity for the PA to provide value to facilities, by smoothing their transition into SEP and helping them get the most out of it. The primary areas where technical assistance is helpful include:

- Helping customers to understand and establish an ISO 50001-conformant EnMS
- Providing assistance with identifying a baseline year and collecting historic data to establish an energy baseline
- Assisting customers with:
  - Completing energy review (e.g., energy audits, system assessments, and engineering studies)
  - Developing action plans
  - Developing energy performance indicators (EnPIs) to track energy performance improvement

  - Meeting ISO 50001 internal training and competency requirements, including building capacity to conduct internal audits to prepare for certification and ensure continual improvement

- Helping customers to establish a measurement and monitoring program that meets basic SEP requirements, including:
  - Providing incentives for studies of current metering and potential improvements, or assisting customers with procurement, cost reimbursement, and installation of energy metering and monitoring equipment
  - Assisting customers with establishing SEP M&V protocol-compliant regression models to determine energy performance improvement against a baseline period
- Helping customers to prepare for SEP certification, including preparing for third-party verification of facility-wide energy savings

Technical assistance offerings should be designed to support a shift in energy management practices and integration of these practices into corporate culture. For most companies, this requires an energy management team that is representative of the major functions of the organization (e.g., production, purchasing, facilities, maintenance, and human resources).

To ensure top management commitment, it is good practice to execute an agreement with management prior to the provision of technical assistance so that they understand the resource requirements of SEP participation, plus any additional reporting requirements that the PA may have. A sample agreement is provided in Appendix A. A brief (no more than 20 minutes) introductory presentation with the proposed management team, either in-person or via the web, followed by a question and answer session is a useful way to introduce the agreement for signature.

Technical assistance services can be contracted to a third party by the PA or by the participating facility, or technical assistance could be provided by trained PA staff in service areas with significant target markets. To be effective, contractors or staff providing technical assistance will need a deep understanding of, and ability to implement, both ISO 50001 and SEP. The CP EnMS certification is a defined pathway for demonstrating the necessary knowledge and skills. (See, http://www.energy.gov/eere/amo/become-energy-management-professional.) PAs can consider providing education and training to facility staff in cohorts to reduce costs.[6]

PAs should fully describe the type and value of their technical assistance offerings in program plans.

Financial Incentives

Financial incentives may be helpful in supporting the capital expenditures associated with SEP action plans and the ongoing maintenance costs of the EnMS. These financial incentives can take many forms (e.g., cost sharing/rebates, performance based incentives, loans, loan guarantees) and can leverage other industrial program incentives already being offered by the PA.[7] Financial incentives can also be

[6] For example, Bonneville Power Administration's High Performance Energy Management continuous improvement program requires participants to join a cohort meeting once a month for a year.

[7] As used in this Guide, direct financial incentives also include direct installation services, whether or not they involve paying any money directly to customers.

used to bolster the claim of savings. For example, providing incentives for submeters or for metering studies is likely to help with savings verification efforts. PAs should fully describe the type and value of their financial incentive offerings in program plans.

Paying incentives based on energy savings may encourage participants to save more than a fixed incentive amount would. However, PAs should be cautious about tying financial incentives directly to operations or process energy performance improvements on a per-unit-of-energy basis. An essential component of SEP is long-term, sustained energy savings and corporate culture change. Per-unit financial incentives may not sufficiently encourage the facility to change its culture or practices, and thus it may not realize the benefits of the program once financial incentives are removed. If a PA decides to tie financial incentives to energy savings, then the program design should include elements to encourage participants to sustain energy performance improvement efforts after incentives have been provided. This could include: training, a requirement that the participant provide evidence that a plan for monitoring and measurement of significant energy uses has been implemented, ongoing PA follow up, or even a smaller performance-based bonus incentive (perhaps tied to achievement of SEM elements) in later years.

Implementation Strategies

For either technical assistance offerings or financial incentives, implementation strategies should be tailored to a continual energy improvement approach. Account executives should initiate ongoing, regular contact with the customer to understand its processes and to help uncover additional energy savings opportunities.

Goals

Goals can take the form of a participation target, a program-level savings target, or a combination of both. Suggestions for quantifying each type of goal are provided below.

Participation Goal

Participation goals can take the form of an absolute number of facilities, a percent of all potential facilities in the PA's service area, or a number of facilities accounting for a percentage of industrial electricity and gas consumption in the PA's territory per year. First-year goals should reflect that SEP offerings will take some time to ramp up, while PA and facility staff build their energy management capabilities. Other factors that should be considered when estimating future SEP participation in a PA's service area include:

- Number and annual energy use (electricity, natural gas, and other fuel) of primary-target industrial and water/wastewater facilities in the PA's service area.[8] DOE's criteria for the primary target market include:
  - Top management support, especially when supported by ongoing efforts to improve energy efficiency and/or strong existing sustainability programs

[8] Certification is currently at the facility level, not on the company level, although it can be combined with a company-level ISO 50001 certification. Additional sectors are anticipated for SEP in the coming year.

  - High energy spending (more than $1 million annually)
  - Prior ISO management system certification (e.g., ISO 90001, ISO 14001) or experience with other management systems (e.g., Six Sigma, Lean Manufacturing)
- Annual energy bills
- Incentives to be offered by the PA (see Incentive Strategy and Delivery Mechanism, above)
- Number of years of the PA's SEP program offering
- Other supporting programs and policies (e.g., financial assistance for capital improvements, tax incentives)
- Opt-out policies, which can reduce the number of facilities that are eligible to receive incentives from the PA

As a second tier, PAs could consider the number, annual electricity use, and annual gas use of industrial and water/wastewater facilities with medium-level energy spending (between $300,000 and $1 million annually).

Savings Goal

Participation can be the foundation of an annual savings goal. For example, an annual electricity and fuel savings goal could be calculated as the product of the projected number of participants per year, annual average electricity and fuel consumption by the target market segment, and average annual SEP electricity and fuel savings. SEP participants have realized annual energy savings ranging from 2% to 23%, with an average value of 11%. Excluding a facility that engaged in fuel switching projects from natural gas to electricity, annual electricity savings rates range from roughly zero to 20%, with an average value of roughly 7%. Annual fuel savings (largely natural gas) range from 4% to 26%, with an average of roughly 17%.[9]

As with participation goals, energy savings goals for the first year should reflect that the PA's SEP offerings will take some time to ramp up, and that savings typically do not occur for up to three months after facility staff begins SEP training.

Future Planning and Reporting

For future program planning cycles and/or progress reports, PAs' program plans could also include major accomplishments or milestones reached, progress achieved versus goals and objectives, what's working and what's not, changes to SEP offerings, and a recap of portfolio savings, participation levels, prior year comparisons, and trends.

Budget

PAs may incur costs related to incentives to customers, marketing, administration, and evaluation, measurement, and verification efforts (EM&V), and should consider including all of these costs in their budgets for SEP activities. See Box 1. Each of these costs is described in the following sub-sections.

[9] Based on experience of DOE's initial SEP cohort.

Box 1. Components of a SEP Program Offering

Budget Components

Customer Incentive Costs

- EnMS and Operational Improvement Costs (EOI Costs)
  - Initial EOI Costs
    - Months 1 – 12 of Participation (Participation Basis, or Participation and Savings Basis)
    - Months 13 – 24 of Participation (Participation Basis, or Participation and Savings Basis)
  - EOI Costs after the Initial SEP Period (Months 25 – 36 of Participation)
- Capital Investment Costs

Marketing, Administration, and EM&V Costs

An initial budget for a PA's incentives to customers pursuing SEP can be estimated using the SEP-related costs incurred by DOE's initial cohort of SEP participants, described in this section. Additional information about historical cost data, trends, cost effectiveness, and the SEP Cost Effectiveness Screening Tool, is provided in the SEP Cost Effectiveness Guide, available at [TBD]. In addition to incentive costs, PAs are likely to incur costs for marketing, administration, and EM&V, which are described further in the sub-sections below.

While the costs discussed in this section are a good starting point for an initial budget, going forward PAs should capture data on the different types of costs associated with their SEP efforts. As soon as data become available from facilities participating in the PA's program, PAs should modify inputs to budgets (and other program filing elements) based on actual experience.

Customer Incentive Costs

PA customer incentives may consist of incentives to help SEP participants with the costs of developing and maintaining the EnMS and making operational improvements, incentives for capital investments in energy efficient equipment, or both. Customer incentive costs can take the form of financial incentives (including direct installation services) or technical assistance to customers, consistent with the types of incentives described in the Incentive Strategy and Delivery Mechanism section above.

Costs related to EnMS development and maintenance and Operational Improvements (hereafter, called "EOI costs") consist of (a) participants' internal staff costs associated with EnMS development, preparation for the SEP certification audit, and EnMS annual maintenance costs; (b) program costs, including the costs for technical assistance provided by the PA or by a third party, and the cost of a combined ISO 50001/SEP certification audit; and (c) metering and monitoring equipment costs. For budgeting purposes, this guide assumes that PAs will provide incentives equivalent to a certain

percentage of EOI costs (i.e., a cost share).

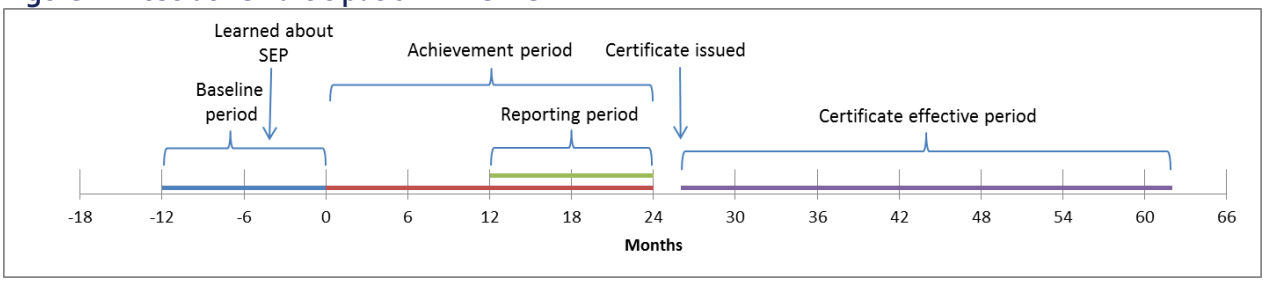
As used in this Guide, capital investments include expenditures for all energy efficient equipment except metering equipment, which are included in EOI costs.

To develop a total annual budget for customer incentive costs, total incentives for offsetting EOI costs and for energy efficient equipment can be developed separately and summed.

EOI Costs

EOI costs will vary by how long the customer has participated in the program. Generally, EOI costs are highest when the participant begins to implement SEP, due to the internal staff time and technical assistance costs associated with training, implementation of the EnMS, process audits, development of action plans, and other program implementation activities. Initial EOI costs are defined as EOI costs incurred during the achievement period (from the end of the baseline period to the end of the reporting period). Figure 2, below, depicts an illustrative timeline of a facility's participation in SEP. Some facilities are ready for SEP certification in as few as 24 months—a 24-month achievement period[10] is shown in Figure 2. Estimation of initial EOI costs is described in the following sub-section.

Figure 2. Illustrative Participation Timeline



EOI costs are typically lower in months 25 to 36, and include costs associated with preparation for the ISO 50001 and SEP combined re-certification audit and EnMS maintenance. Estimation of EOI costs for months 25 to 36 is described in the sub-section, "EOI Costs after the Initial SEP Period."

The EOI incentive budget for the PA's first program year consists of the budget for incentives to offset EOI costs for the initial cohort's first 12 months of participation. For the second program year, the EOI incentive budget should consist of budget for the first cohort's months 13 to 24 of participation (if incentives are provided over multiple years), as well as budget for a second cohort's first 12 months of participation. EOI incentives for each cohort by its respective participation year can thus be summed to develop a program year budget for operational improvement incentives. See Figure 3.

[10] Most facilities use a 36-month achievement period, and additional baseline period data, normally 12 months, is also needed, but shorter time frames are allowed. Contact the SEP Administrator to request approval to use a shorter achievement period.

Figure 3. EOI incentives over three program years

	Program Year 1	Program Year 2	Program Year 3
Cohort 1	EOI Incentives for mo. 1-12	EOI Incentives for mo. 13 - 24	EOI Incentives: 25+ mo.
Cohort 2		EOI Incentives for mo. 1-12	EOI Incentives for mo. 13 - 24
Cohort 3			EOI Incentives for mo. 1-12

Initial EOI Costs

Consistent with the form of the program goal (discussed in the previous section, Goals), initial EOI costs (for a participant's first 24 months) can be estimated in two ways: solely as a function of participation, or as a function of participation and savings.

Participation Basis

In DOE's experience, costs of third party services (for activities such as certification audits and technical assistance) are fairly similar among different facilities despite differences in their energy consumption and savings. In contrast, costs associated with internal staff time for EnMS development and certification audit preparation vary by entity. For DOE's initial SEP cohort, the average initial EOI cost was roughly $300,000. If costs spent on energy management activities prior to SEP participation (referred to as EnMS sunk costs) are excluded, the initial EOI cost was roughly $200,000.

Participation and Savings Basis

For budgets based on a savings target, the initial EOI cost budget should reflect the PA's expectations for the type of savings that SEP participants will achieve. Based on experience with the initial cohort, 70% of savings was operational and 30% was capital improvement related. If a PA intends to offer additional incentives to SEP participants for energy efficient equipment, the PA could expect a ratio reflecting higher savings from equipment (>30%) and less from operational savings (<70%).

Initial EOI costs consist of (a) participants' internal staff costs associated with EnMS development, SEP certification audit preparation, and EnMS annual maintenance costs; (b) program costs, including the costs for audits (energy audits, and ISO 50001/SEP) and technical assistance; and (c) metering and monitoring equipment costs.

(a) **Internal staff costs.** A relationship between total cost of internal staff time (including EnMS sunk costs) and total operational energy savings (including both electricity and fuel savings) was observed with DOE's initial SEP cohort. Thus, a simple regression model, shown in Box 2, can be used to estimate internal staff time, consisting of EnMS development and audit preparation. Based on DOE's experience, EnMS costs average about 91% of the total EOI costs, with the remaining 9% spent on internal audits for SEP certification. In addition, PAs should consider adjusting the internal staff costs derived from the regression model equation in Box 2 for any investment in EnMS development prior to participation in SEP (sunk costs) in order to develop a more accurate budget. The equations in Box 3 take into account EnMS sunk costs. In DOE's experience, the EnMS sunk costs range from 0% to 98% with an average of 53% as a percent of total EnMS development cost. PAs may wish to use a lower (more conservative) EnMS sunk cost ratio for new participants with little experience with other ISO

management systems, energy management, or energy efficiency in general. In contrast, a higher EnMS sunk cost value may be appropriate for participants with a rich history of energy efficiency and energy management implementation. In the Cost-Effectiveness Screening Tool, the default EnMS sunk cost value is 40%.

Box 2. Regression model for internal staff costs

$y = 0.7683(x) + 159022$ $(R^2 = 0.52)$

Where,

y = internal staff time cost (unadjusted for sunk costs), and

x = total energy savings from operational improvements in MMBtu

Box 3. Calculation of internal staff costs for months 1-12 and 13-24

Internal staff costs for months 1 to 12 = [0.7683 (x) + 159022] x [(1 – z) x 91% + 9%] x (12 / 24)

Internal staff costs for months 13 to 24 = [0.7683 (x) + 159022] x [(1 – z) x 91% + 9%] x (12 / 24)

Where,

x = total energy savings from operational improvements in MMBtu

z = the level of EnMS sunk cost as a percentage of EnMS development internal staff cost (40% is recommended)

91% = the EnMS cost portion of the initial EOI costs

9% = the internal audit cost portion of the initial EOI costs

12 / 24 = a factor to adjust the initial EOI costs to a 12-month basis

(b) **Program costs.** In DOE's experience, program costs, including the costs for certification audits and technical assistance provided by the PA or by a third party, ranged from $40,000 to $72,000 per facility and averaged $69,000. These costs were incurred during the initial SEP implementation period. No trend was observed in this cost in relation to facility energy load or energy savings.

(c) **Monitoring and metering equipment costs.** Monitoring and metering equipment costs do not appear to vary with energy consumption or savings and averaged $14,000 for DOE's initial SEP cohort, excluding expenditures observed at a single, anomalous facility.

The formulas in Box 4 and Box 5 can be used to estimate the incentive budgets for months 1 to 12 and months 13 to 24 in the SEP implementation and certification cycle, respectively (excluding incentives for capital equipment).

Box 4. Calculating incentive budget for any cohort's months 1 – 12

Months 1 - 12

EOI Incentive Budget for Cohort A's Months 1 - 12 of Participation =

Projected Number of Participants in Cohort A x

Expected Average EOI Costs for Months 1 - 12 x

PA's Incentive Cost Share as a Percent of Total EOI Costs for Months 1 – 12

Where,

Projected number of participants in Cohort A = new participation in a single year

Expected Average EOI Costs for Months 1 – 12 =

Internal Staff Costs for Months 1 - 12 + Program Costs + Monitoring and Metering Equipment Costs

Where,

Internal Staff Costs for Months 1 to 12 = value determined in Box 3

Program Costs = $69,000 x (12/24)

Monitoring and Metering Equipment Costs = $14,000 x (12/24) (*or value determined by PA*)

Box 5. Calculating incentive budget for any cohort's months 13 – 24

Months 13 - 24

EOI Incentive Budget for Cohort A's Months 13 – 24 of Participation =

Projected Number of Participants in Cohort A x

Expected Average EOI Costs for Months 13 – 24 x

PA's Incentive Cost Share as a Percent of Total EOI Costs for Months 13 - 24

Where,

Expected Average EOI Costs for Months 13 – 24 =

Internal staff costs for months 13 to 24 + Program Costs + Monitoring and Metering Equipment Costs

Where,

Internal staff costs for months 13 to 24 = value determined in Box 3

Program Costs = $69,000 x (12/24)

Monitoring and Metering Equipment Costs = $14,000 x (12/24) (*or value determined by PA*)

EOI Costs after the Initial SEP Period

Costs after the initial SEP certification period include costs for EnMS maintenance and for preparation for ISO 50001 and SEP surveillance and re-certification audits.

The ongoing maintenance cost of a SEP project differs based on how many full time equivalent (FTE) staff members are needed to maintain the EnMS. According to LBNL's preliminary survey of DOE's initial SEP cohort, many companies expected to need 0.5 to 1.0 FTE per year after the initial implementation period for maintaining the EnMS (with corresponding cost estimates of $62,500 to $125,000 per year), but a few expected 1.0 to 1.5 FTE (with corresponding cost estimates of $125,000 to $187,500 per year). The median of all of the cost estimates LBNL received is $93,750 per year, starting in the year following implementation and continuing for the lifetime of the EnMS.

During the 3rd year, or months 25 to 36, some facilities may decide to pursue renewing their SEP certifications beyond the initial SEP cycle of three years. Such facilities need to prepare for renewing their SEP and ISO 50001 certifications, which involve internal audits, external audits and technical assistance (the latter two are categorized as "program costs" as discussed above). The time and costs required for renewing the certifications should be less than the initial time and costs, as the facilities would have more experience by then; however, no data on such efficiencies exists to date. DOE suggests that two thirds of the initial internal and external audit and technical assistance costs is a reasonable proxy for the 2nd SEP cycle, until more concrete data are available. In DOE's experience, internal audit preparation costs range from 3% to 15% of the total internal staff costs with an average of 9% (including sunk EnMS costs).[11] Thus, DOE suggests that 6% (two thirds of the 9% factor) be applied to the total internal staff costs (including sunk EnMS costs) to estimate the internal audit preparation costs during the 3rd year, or months 25 to 36. See Box 5 for the calculation of incentive budget for any cohort's months 25 – 36.[12] In DOE's experience, the costs associated with external audits and technical assistance (i.e., program costs) is $69,000 for the initial SEP cycle (i.e., 24 months) and $34,500 for a 12 month period, as presented in Box 4. For the ongoing external audits and technical assistance cost for months 25 to 36, DOE suggests using a value of two thirds of $34,500, or $23,000.

Beyond the 36th month, facilities would likely need to spend a similar level of internal staff time to maintain and use the EnMS.

[11] If sunk labor costs have been removed, internal audit preparation costs range from 10% to 42% of the total internal staff costs, with an average of 17%.

[12] If sunk labor costs have been removed from internal staff costs, the factor would be 2/3 *17%, or 11%.

Box 5. Calculating incentive budget for any cohort's months 25 – 36

Months 25 to 36

EOI Incentive Budget for Cohort A's Months 25 to 36 =

Projected Number of Participants in Months 25 to 36 x

Expected Average EOI Costs for Months 25 to 36 (i.e., EnMS maintenance, audit and program costs) x
PA's Cost Share as a Percent of Total EOI Costs for Months 25 to 36 x

(12 / 24)

Where,

Expected Average EOI Costs for Months 25 to 36 = EnMS Maintenance cost of $93,750 (as discussed above in this sub-section) + Audit Preparation and Technical Assistance Costs for Months 25 to 36 (Refer to Box 6)

Box 6. Calculating audit preparation and technical assistance costs for any cohort's months 25 – 36

Months 25 to 36

Audit Preparation and Technical Assistance Costs for Months 25 to 36 =

Internal Audit Costs + Program Costs (i.e., external audit and technical assistance costs)

Where,

Internal Audits Costs = 6% of the Total Internal Staff Time Related Costs in the first SEP Cycle x (12/24)

Program Costs = 2/3 x ($69,000 x (12/24)) (as discussed previously in this sub-section)

Where, Total Internal Staff Time Related Costs in the first SEP Cycle (including sunk EnMS costs) = 0.7683(x) + 159022 (as presented in Box 2 above)

Capital Investment Costs

The timing of capital investments will vary by participant, consistent with its development of capital-related action plans. Ideally, energy efficient equipment costs should reflect the PA's experience with its local industrial customers and be consistent with available state-level data. In the absence of local data on the cost of electric savings from installation of energy efficient equipment, PAs can assume an average total resource cost of 5 cents per lifetime kWh for commercial and industrial energy efficiency programs, based on the findings from a national LBNL survey of the cost of saved energy.[13] This cost

[13] The total resource cost of 5 cents per kWh was estimated using LBNL's findings for the PA cost of saved energy for different sectors and program types, from LBNL 2014, Appendix C, Table E-4. A selection of relevant commercial and

estimate can be converted to an upfront, first-year cost of 55 cents per kWh savings based on an average measure life of 13.5 years[14] and a 3 percent discount rate. The total incentive budget can be estimated based on this cost estimate and the expected total first-year energy savings from capital improvement projects in the first year.

For the cost of natural gas savings, PAs can assume an average total resource cost of $3.5 per lifetime MMBtu (or $0.35 per therm) for commercial and industrial energy efficiency programs based on the findings from a national LBNL survey of the cost of saved energy. This lifetime fuel savings cost is based on (a) $14 per lifetime MMBtu natural gas savings (or $0.14 per lifetime therm) for program administrators and (b) a 60%/40% cost split between participant costs and PA costs.[15] This cost estimate can be converted to an upfront, first-year cost of $38.40 per annual MMBtu saved based on an average measure life of 13.5 years[16] and a 3 percent discount rate.

Marketing, Administration, and EM&V

In addition to expenses for incentives to participants, PAs are likely to incur costs relating to marketing, administration, and EM&V, which should be included in their SEP budgets. PAs can estimate SEP marketing and administration costs based on their historical experience with marketing and administration costs for their non-SEP, industrial energy efficiency program offerings. PAs may also incur additional EM&V expenses to the extent that the PA's EM&V reporting, timing, and data requirements differ from the SEP M&V Protocols. Refer to the Evaluation, Measurement, and Verification section in this Guide for more information on EM&V for SEP.

Quality Control

The SEP certification process requires conformance with several international and national standards and protocols, including:

- ISO 50001 – Energy management system standard

industrial energy efficiency programs yielded a PA cost of saved energy of 2 cents per kWh. The levelized cost data from LBNL 2014 were converted to a first-year value using a 3% discount rate. The calculation assumed that the ratio of TRC to PA costs is 100%:40%, based on the ratio of TRC to PA cost data for the "CI: Custom" and "CI: Prescriptive" program types in LBNL 2014, page xv.

[14] The average measure life value for relevant commercial and industrial program types is based on the measure life data provided in Appendix C, Table C-3 of LBNL (March 2014).

[15] The $0.14 per lifetime therm savings is based on the levelized cost of saved natural gas for commercial and industrial programs from LBNL 2014, Table 3-5. Given the lack of data for the ratio of PA costs to total resource costs for gas savings measures, PAs could assume that PA costs are 40% of total resource costs, based on the data for electric savings measures in the LBNL 2014 study (Figure 3-21). Program costs were converted to total cost by multiplying $0.14/therm by (100%/40%) / 0.1. The 0.1 factor is used to convert therms to MMbtu. The first year cost of saved energy assumes a 3% discount rate.

[16] The average measure life value for relevant commercial and industrial program types is based on the measure life data provided in Appendix C, Table C-3 of LBNL (March 2014).

- ANSI MSE 50021 – Superior Energy Performance – Additional Requirements for Energy Management Systems
- SEP Measurement and Verification Protocol for Industry
- SEP Certification Protocol
- ANSI MSE 50028 – Superior Energy Performance – Requirements for verification bodies for use in accreditation or other forms of recognition

ISO 50001 requires that the organization subject its EnMS to an internal auditing process to ensure continual improvement of both the EnMS and of energy performance. ANSI MSE 50021 sets forth additional requirements that an organization must meet beyond ISO 50001—especially concerning energy performance improvement, including baselines, energy performance indicators, and use of the SEP Measurement and Verification Protocol and Certification Protocol.

SEP participating facilities are encouraged (but not required) to use the tools that DOE has developed for the purpose of assisting them in implementing their EnMS and meeting certification requirements. These tools include the DOE eGuide for ISO 50001 and the EnPI Tool, both available at https://ecenter.ee.doe.gov/EM/tools/Pages/HomeTools.aspx.

Education & Training

ISO 50001 requires a facility to continually improve both its energy management system (EnMS) and energy performance. Robust implementation of ISO 50001 is needed to meet SEP energy performance improvement targets.

Certified Practitioners in Energy Management Systems (CP EnMS™) are ANSI/ISO/IEC 17024 accredited professionals with the knowledge and skills in both EnMS and energy performance required to assist an industrial facility in implementing ISO 50001 and preparing for an SEP certification audit. An SEP Audit Team must include an SEP Lead Auditor and an SEP Performance Verifier. The CP EnMS™ credential is a prerequisite to ensure that members of the Audit Team have a thorough understanding of ISO 50001 requirements.

All three credentials—CP EnMS™, SEP Lead Auditor, and SEP Performance Verifier—are administered by the Institute for Energy Management Professionals (IEnMP), which was established with DOE support.[17] PAs that are planning an SEP program offering can build their local capacity to support participating facilities by sponsoring their staff or consultants to train and test to become CP EnMS. It is also highly desirable to support training and qualification of at least one EM&V expert as an SEP Performance Verifier, to assist the PA in aligning verified SEP performance improvements with program M&V requirements.

Initial program plans can provide details about whether internal or external PA staff members are to be trained, in what capacity, and when. In future years, program plans and reports should provide statistics on training achievements.

[17] For more information, see http://ienmp.com/.

PA account executives, sales, and marketing staff will need to have a working understanding of SEP in order to effectively engage industrial customers. The presentation "ISO 50001 and Superior Energy Performance Overview" is designed for that purpose. For a more in-depth treatment, DOE offers a four-part, self-paced web series on ISO 50001 as well as online access to the DOE eGuide to ISO 50001 and SEP.

Evaluation, Measurement & Verification Planning

Participant Data Needs

DOE commissioned the development of a standardized approach for maintaining records of energy savings actions, to assist industrial facilities with documentation for the SEP M&V Protocol "Bottom-Up Sanity Check". Participants and PAs will be able to draw on a register of implemented actions that use eGuide Action Plans as a resource for creating a record for the participant's SEP certification audit.

Data to Be Tracked by the PA

PAs should track the following program-level information to facilitate proper evaluation of the SEP offering:

- New participants: number and percent of all potential facilities per year
- Repeat participants: number and percent of existing participating facilities per year
- Certifications: number of CP EnMS™, SEP Lead Auditor, and SEP Performance Verifiers, internal PA staff and external consultants
- Training offered by the PA: number of planned and completed sessions, number of attendees per session
- Drop outs: facilities that underwent training, accepted technical assistance, or accepted other incentives but did not complete SEP certification or did not complete the minimum term defined by PA

Facility-level data should also be collected and tracked, but the schedule for collecting these data should be consistent with each facility's SEP certification timeline to minimize documentation and reporting costs. PAs can request that the customer provide the following facility-level data from the facility's EnPI regression, action plans, and SEP certification documentation:

- Baseline usage: monthly kWh and other fuel use
- Energy savings: monthly kWh and other fuel savings, on a first-year and lifecycle basis
- Training offered by the PA: attendees per session (by facility)
- Energy reviews facilitated by the PA: planned and completed, areas identified for energy performance improvement

Action plans: number of action plans completed per customer, projected energy savings per action plan, areas targeted by action plan for energy performance improvement

Glossary of Terms

Continuous Energy Improvement - Industrial facilities that have fully integrated energy management into their business and manufacturing operations, leading to reduced costs and increased profitability, are implementing continuous energy improvement. Source: http://www.energyimprovement.org.

Energy Management System (EnMS) - set of interrelated or interacting elements to establish an energy policy and energy objectives, and processes and procedures to achieve those objectives. Source: ISO 50001:2011.

Energy Performance - measurable results related to energy efficiency, energy use, and energy consumption. Energy performance is one component for the energy management system. Source: ISO 50001:2011.

Energy Performance Indicator (EnPI) - quantitative value or measure of energy performance, as defined by the organization. EnPIs could be expressed as a simple metric, ratio or a more complex model. Source: ISO 50001:2011.

ISO 50001 - The ISO 50001 energy management standard is an international framework for industrial plants, commercial facilities, or entire organizations to manage energy, including all aspects of procurement and use. The standard provides organizations and companies with technical and management strategies to increase energy efficiency, reduce costs, and improve environmental performance. Source: http://www.superiorenergyperformance.energy.gov/enms.html.

Measure – Any product (i.e., equipment or controls) or process (i.e., changes in operations, servicing, or practice) or combination of these designed to provide energy and/or demand savings. Includes both capital and operational improvements. Source: http://ma-eeac.org/wordpress/wp-content/uploads/TRM_PLAN_2013-15.pdf.

SEM (Strategic Energy Management) - Strategic energy management is a long-term approach to efficiency, and includes goals, tracking, and reporting. SEM puts in place an energy management system (EnMS) that follows the Deming Plan-Do-Check-Act (P-D-C-A) framework that has been successfully applied within manufacturing facilities for quality, environment, and safety practices. Continuous Energy Improvement, ISO 50001, and Superior Energy Performance™ are all approaches to SEM. Source: http://www1.eere.energy.gov/seeaction/pdfs/commercialbuildings_factsheet_strategicenergymanagement_stateandlocal.pdf

Superior Energy Performance™ (SEP) - SEP is a certification program that provides industrial facilities with a transparent, globally accepted system for verifying energy performance improvements and management practices. SEP enables facilities to achieve continual improvements in energy efficiency while boosting competitiveness. To qualify for SEP, a facility will have to demonstrate conformance to ISO 50001. Source: http://www.superiorenergyperformance.energy.gov/

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Other SEP Resources for PAs

Resource	Description	Link
LBNL Mutual Non-Disclosure Agreement	Allows industrial customers to share data with LBNL, e.g., for the purposes of program evaluation, measurement, and verification.	[TBD]
SEP Cost Effectiveness Screening Tool	Assists PAs with determining if developing offerings for SEP is likely to achieve positive net benefits. The Screening Tool evaluates the cost-effectiveness of an SEP program using the Program Administrator Cost (PAC) test, the Total Resource Cost (TRC) test, the Societal Cost (SC) test and the Participant Cost (PC) test. Using this tool, PAs can estimate the net benefits of a new SEP program offering to one or more facilities participating in a single year. The key assumptions for the Screening Tool are based on data from SEP program experience to date and other sources. Outputs are presented in a way that is directly useful for a state regulatory filing for a new energy efficiency program pursuing SEP projects.	http://energy.gov/eere/amo/downloads/sep-cost-effectiveness-screening-tool
SEP Presentation slides	Includes Superior Energy Performance™: Customer Information; ISO 50001 and Superior Energy Performance™ Overview; and Superior Energy Performance™ for Energy Efficiency Program Administrators	http://energy.gov/eere/amo/downloads/sep-presentations-materials
SEP Program Planning Template	Provides a format for PAs to input data for developing program plans and to be used in conjunction with the SEP Guide for the Development of Energy Efficiency Program Plans (this document).	http://energy.gov/eere/amo/downloads/sep-program-planning-template-program-planning-template
Strategic Energy Management and Superior Energy Performance™: Key Areas of Difference	Discusses the ways that SEP expands on typical SEM efforts.	[TBD]

Appendix A: Sample Participation Agreement

Please fill out the application form below. If extra space is needed you may include responses on an extra sheet of paper. **Please return the application to:**

[Program Administrator contact]

1. **Provide basic information about your facility**

   Organization name:

   Corporate address (Street, City, State, ZIP):

   Participating facility name:

   Facility address (Street, City, State, ZIP):

   Primary contact person at facility (Name, title, email, phone, fax):

2. **Describe your facility**

   Industry sector:

   Primary product lines:

   Size (number of employees):

   Square footage:

   Approximate annual energy expenditures:

Energy Source	Annual Cost (approximate)
Electricity	
Natural Gas	
Fuel Oil	
Propane	
Steam	
Biomass	
Other fuel sources	

3. **Please indicate if your facility currently has any of the following by checking the box provided:**

   Energy management goals

   If yes, are these related to corporate goals?

   Framework to track progress toward goals

   If so, please describe.

   Performance metrics for energy, quality, or productivity

   If so, please describe.

   An energy team?

4. **Has your facility implemented a management system standard, such as quality, environmental, or safety?**

   yes no

   If yes, is there currently a management system specialist at your plant who could participate with your team in the demonstration project?

   yes no

5. **Is your facility willing to commit to pursuing certification under Superior Energy Performance?** Read more about participating in the Superior Energy Performance program: http://www.energy.gov/eere/amo/sep-and-iso-50001-certification-process

6. **Does your facility use calibrated meters to measure energy use? If not, are you willing to install them?**

7. **Has your facility gone through some significant production changes recently? If so, please describe:**

   [Note: recent major changes can create challenges in demonstrating energy performance improvement against a baseline.]

8. **To succeed in ISO 50001 implementation and SEP certification, your facility will need senior-level commitment to energy management. Resources will need to be allocated towards workforce training and education, tracking and reporting energy use, and implementing the energy management system. Would the top management at your facility or in your company be willing to briefly discuss the expectations, resources, and commitments of the demonstration project on the phone with [**Program Administrator**] representatives?**

9. **For senior-level manager: Briefly describe your commitment to ensuring the resources necessary to completing the demonstration project and to participating in quarterly management reviews of the demonstration progress.**

Please have a representative from your plant's senior management sign and return this form to the contact that recruited your organization for the demonstration.

Name: _____

Title: _____

Date: _____


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