



Superior Energy Performance[®] (SEP[™]) Certification Protocol

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Table of Contents

1. Introduction.....	1
2. Scope	2
2.1 Requirements for SEP	2
3. Key Terms	2
4. Standards, Normative References, and Forms	3
4.1 ISO 50001	3
4.2 ANSI/MSE 50021.....	3
4.3 Normative References	3
4.4 SEP Enrollment and SEP Application Forms	4
4.5 Standards for SEP Verification Bodies.....	4
4.6 SEP Energy Performance Improvement Report.....	4
5. Performance Levels and Scoring	5
5.1 SEP Performance Levels	5
5.2 SEP Scoring System for Initial Certification.....	5
5.3 SEP Scoring System for Recertification	7
6. SEP Certification Process.....	8
6.1 SEP Enrollment and SEP Application	8
6.2 Certification.....	9
7. Suspension or Revocation of SEP Certification	12
8. Confidentiality.....	12
9. Use of Superior Energy Performance [®] Logo and Materials.....	13
APPENDICES	14
A. [Normative] Technical areas	14
B. (Informative) Initial Certification and Recertification Scenarios	16
C. [Informative] Certified Professionals.....	22
Certified ISO 50001 Lead Auditors	22
Certified Practitioners in EnMS to Assist Facilities Implement Energy Management.....	22

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1. Introduction

Superior Energy Performance® (SEP™) is a certification program that provides facilities with a roadmap for achieving continual improvement in energy performance while maintaining competitiveness. The program provides a transparent system for verifying energy performance improvement and energy management practices through application of an internationally-accepted standard.

A central element of SEP is implementation of ISO 50001 *Energy management systems-Requirements with guidance for use* (ISO 50001). Facilities pursuing SEP certification must also demonstrate a specified improvement in energy performance. SEP offers four levels of verified achievement: Bronze, Silver, Gold, and Platinum. The additional SEP requirements to achieve documented and verified energy performance improvements are defined in ANSI/MSE 50021 *Superior Energy Performance® - Additional Requirements for Energy Management Systems*, the *SEP Measurement and Verification Protocol*, the *SEP Scorecard*, and this *SEP Certification Protocol*. Resources to help organizations with SEP can be found on the SEP website: <http://energy.gov/eere/amo/superior-energy-performance>.

Third-party conformity assessment to SEP is accredited by approved Accreditation Bodies, which are International Accreditation Forum (IAF) accredited. Currently approved SEP National Accreditation Bodies can be found on the SEP website.

Accredited SEP Verification Bodies perform verification for the SEP program. SEP Verification Bodies are accredited to national and international standards. ANSI/MSE 50028 *Superior Energy Performance® - Requirements for verification bodies for use in accreditation or other forms of recognition* defines the requirements for SEP Verification Bodies.

SEP-certified facilities receive a SEP certificate.

SEP is administered by the U.S. Department of Energy (DOE). To develop SEP, DOE worked with the U.S. Council for Energy-Efficient Manufacturing—a partnership that combines the strengths of industry, standards authorities, federal agencies, national laboratories, and technical experts. The U.S. DOE owns the SEP certification mark bearing the SEP logo and grants the use of the mark to SEP-certified facilities.

This *SEP Certification Protocol* describes the requirements related to energy performance improvement and timeframes, along with the processes for applying and becoming certified to the SEP program.

2. Scope

The SEP certification program recognizes facilities that meet the requirements of the ISO 50001 international energy management standard and that achieve a verified energy performance improvement level over a specified interval. An organization or major business unit of an organization that meets ISO 50001 requirements may seek SEP certification for individual facilities included in their EnMS.

Currently, SEP applies to four technical areas as defined in ISO 50003:2014: “Industry-Light and Medium”, “Industry-Heavy”, “Buildings”, and “Building Complexes”.¹ Appendix A lists additional technical areas that may be incorporated into the program in the future.

2.1 Requirements for SEP

The additional SEP requirements must be verified by an Accredited SEP Verification Body. Facilities are subject to third-party verification and must:

- ▶ Conform to the international energy management system standard, ISO 50001.
- ▶ Conform to the additional requirements in the American National Standard, ANSI/MSE 50021 and the associated normative references.
- ▶ Achieve a verified performance level
 - The Bronze and Silver performance level are based on the SEP Applicant’s verified energy performance improvement.
 - Gold and Platinum performance levels are based on the SEP Applicant’s verified energy performance improvement and achievement of *SEP Scorecard* credits.

3. Key Terms

ANSI/MSE 50021 defines the following terms for participation in SEP, with the exception of energy performance improvement, which is defined in the *SEP Measurement and Verification Protocol*. These definitions can be found in ANSI/MSE 50021.

- ▶ **Achievement period**
- ▶ **Baseline period**
- ▶ **Energy performance improvement**
- ▶ **Facility**
- ▶ **Reporting period**
- ▶ **Superior Energy Performance facility energy performance indicator (SEnPI)**

¹ ISO 50003:2014- Requirements for bodies providing audit and certification of energy management systems

4. Standards, Normative References, and Forms

The following two standards and three normative references are required for organizations wishing to participate in the SEP certification program.

4.1 ISO 50001

SEP requires that participating facilities meet the requirements of the ISO 50001 energy management system (EnMS) standard. Conformance with ISO 50001 demonstrates that an organization has established the systems and processes needed to continually improve both energy performance and the performance of the EnMS.

4.2 ANSI/MSE 50021

ANSI/MSE 50021 defines the additional requirements of the SEP program beyond ISO 50001. In particular, this American National Standard specifies additional requirements for the EnMS.

4.3 Normative References

Facilities seeking SEP certification must follow the additional requirements in the normative references for ANSI/MSE 50021, which include:

1. The ***SEP Certification Protocol*** (this document), which describes the requirements related to energy performance improvements and timeframes, along with the processes for applying for and becoming certified to the SEP program.
2. The ***SEP Measurement and Verification Protocol (SEP M&V Protocol)***, which sets forth verifiable the methodology to determine energy performance improvement including accounting for energy consumption, application of adjustments as appropriate, and calculation of energy performance improvement. The determination and demonstration of energy performance improvement is based upon the comparison of two approaches to calculating energy performance improvement:
 - a. **Top-Down.** Top-down energy performance improvement is based upon facility-wide energy consumption accounting for all energy types that are delivered into or away from the facility boundaries. Top-down energy performance improvement is calculated as the ratio of baseline period to reporting period facility-wide consumption, with adjustments to make the two periods comparable. The top-down analysis is the initial basis for determining facility-wide energy performance improvement for the purposes of SEP conformance and certification.
 - b. **Bottom-Up.** Bottom-up energy performance improvement is based upon facility-wide energy performance improvement calculated by aggregating energy saving from individual energy performance improvement actions. The bottom-up analysis serves as a required comparison to the top-down approach.

3. The **SEP Scorecard**, which defines the credits that an organization must earn to become certified at the Gold and Platinum performance levels. *SEP Scorecard* use is not required to achieve the Bronze and Silver levels. Credits are available for actions, processes, or procedures beyond the minimum requirements for ISO 50001 and ANSI/MSE 50021. Additional detail about the *SEP Scorecard* is provided in section 5.1 of this document.

Each normative reference can be downloaded at no charge from the SEP website.

4.4 SEP Enrollment and SEP Application Forms

Organizations wishing to participate in the SEP program must submit completed SEP Enrollment and SEP Application Forms to the SEP Administrator. These forms collect facility and contact information, basic energy data and other data pertaining to the facility's preliminary estimation of its energy performance improvement, and methods used to calculate its SEnPI. These forms collect energy information in British Thermal Units (BTU). Organizations that use international units may be required to convert them to BTU when filling out these forms. Section 8.0 of this document addresses confidentiality of energy data by the SEP Administrator and SEP Verification Body. The SEP Enrollment and SEP Application Forms are available on the SEP website.

4.5 Standards for SEP Verification Bodies

The SEP Verification Bodies follow the requirements from ANSI/MSE 50028, ISO/IEC 17021-1, and ISO 50003. ANSI/MSE 50028 builds on the requirements of ISO/IEC 17021-1 – *Conformity assessment for bodies providing audit and certification of management systems* and *ISO 50003– Requirements for bodies providing audit and certification of energy management systems*. Meeting the requirements of these three standards ensures that SEP Verification Bodies use competent personnel to conduct energy management system certification and energy performance verification audits in a competent, consistent, and impartial manner.

4.6 SEP Energy Performance Improvement Report

After a facility achieves SEP certification, the SEP Verification Body submits an SEP Energy Performance Improvement Report to the SEP Administrator. The form summarizes basic information about the energy performance improvement, how it was achieved, and how adjustment models were applied from the *SEP M&V Protocol*. This form collects energy information in BTU. SEP Verification Bodies may be required to convert international units to BTU before the Energy Performance Improvement Report is submitted to the SEP Administrator.

5. Performance Levels and Scoring

5.1 SEP Performance Levels

SEP recognizes increasing excellence in energy management and energy performance through four performance levels: Bronze, Silver, Gold, and Platinum.

- ▶ To achieve Bronze or Silver, facilities must meet the requirements of the ISO 50001 and ANSI/MSE 50021 standards and achieve the specified energy performance (EP) improvement using the methodology set forth in the *SEP M&V Protocol*.

The intent of the Bronze and Silver levels is to recognize those organizations that are new to energy management and to encourage those who have mature systems to continually improve and sustain energy savings.

- ▶ To achieve Gold or Platinum, in addition to meeting the requirements of the ISO 50001 and ANSI/MSE 50021 standards and achieving the specified EP improvement using the methodology set forth in the *SEP M&V Protocol*, facilities must also earn credit points using the *SEP Scorecard* (see Section 4.3 for details about the *SEP Scorecard*).

The intent of the Gold and Platinum levels is to recognize increased levels of energy management through the use of the *SEP Scorecard* and outstanding energy performance improvement while encouraging sustained energy savings.

The EP improvement requirements are different for initial certification (Section 5.2) and for recertification (Section 5.3).

5.2 SEP Scoring System for Initial Certification

For **initial SEP certification**, [Table 1](#) lists the minimum EP improvement and corresponding achievement periods for Silver, Gold, and Platinum levels.

- ▶ For the Bronze level, the minimum EP improvement is greater than or equal to 1.0% and the achievement period is between 12 consecutive months (1 year) and 36 consecutive months (3 years).
- ▶ For the Silver, Gold, and Platinum levels, the minimum EP improvement required is greater than or equal to 5.0% over an achievement period that can range from 12 months (1 year) to 120 months (10 years) (see [Table 1](#)).
- ▶ Facilities that wish to pursue SEP certification at the Gold or Platinum levels must also earn a specified number of credit points from the *SEP Scorecard* ([Table 2](#))

The EP improvement percentage rounded to the nearest tenth of a percentage point must meet or exceed the minimum EP improvement percent requirement for the performance level sought. For example, an EP improvement percentage of 9.95% rounds to 10.0% (5's always rounding up) and satisfies a 10.0% or greater improvement requirement. An EP improvement percentage of 9.94% rounds to 9.9% and does not satisfy a 10.0% improvement requirement.

The Bronze level requires an EP improvement percentage of at least 1.0% (0.0095 which is 0.95% rounds to 1.0%).

TABLE 1: MINIMUM ENERGY PERFORMANCE IMPROVEMENT TO ACHIEVE INITIAL SEP CERTIFICATION TO SILVER, GOLD, AND PLATINUM LEVELS*

Achievement Period	Energy Performance (EP) Improvement
12 – 36 months (1-3 years)	5.0%
37 – 48 months (~3-4 years)	7.0%
49 – 60 months (~4-5 years)	8.0%
61 – 72 months (~5-6 years)	10.0%
73 – 84 months (~6-7 years)	12.0%
85 – 96 months (~7-8 years)	13.0%
97 – 108 months (~8-9 years)	15.0%
109 – 120 months (~9-10 years)	16.0%

*Bronze level requires an energy performance improvement greater or equal to 1.0%, and an achievement period of between 12 months (1 year) and 36 months (3 years).

TABLE 2: SEP SCORECARD CREDITS FOR BOTH INITIAL CERTIFICATION AND RECERTIFICATION TO GOLD AND PLATINUM LEVELS

Credits	Minimum points needed	
	Gold	Platinum
Energy Management (EM) System Credits	20	35
Combination of: Advanced Practices (AP) credits and Additional Energy Performance (AEP) credits	No minimum	10
Total	40	60

SEP Scorecard credits are organized in three focus areas: Energy Management System (EM), Advanced Practices (AP), and Additional Energy Performance (AEP). Two AEP credit points are earned for each 1.0% energy performance improvement above the required minimum improvement listed in [Table 1](#).

5.2.1 Baseline considerations for initial certification

Details on baseline periods are provided in the *SEP M&V Protocol*. Facilities seeking SEP certification as part of a multi-site, enterprise-based EnMS certification may choose to use the same baseline period as the other sites or a different baseline period than other sites.

Any other exceptions to the baseline or achievement period must be approved by the SEP Administrator, and a request must be submitted with the SEP Application.

[Appendix B](#) provides example scenarios that illustrate complying with these three different levels.

5.3 SEP Scoring System for Recertification

5.3.1 Energy performance improvement and *SEP Scorecard* credit points for recertification

For recertification, the required EP improvement for Silver, Gold, or Platinum levels is 3.0% over the most recent three years. Bronze level requires an EP improvement greater or equal to 1.0% over the most recent three years. These results must be verified.

If the SEP Applicant keeps the baseline period used in its previous SEP certification, the SEP Applicant must demonstrate a minimum EP improvement equivalent to the verified EP improvement from its previous certification plus 3.0% for Silver, Gold, and Platinum, or plus greater or equal to 1.0% for Bronze.

For Gold and Platinum levels, additional credit points are required from the *SEP Scorecard* (see [Table 2](#)). AEP credit points for Gold and Platinum are awarded based on the EP improvement in the most recent three years that is both verified and above the minimum 3.0% EP improvement for the recertification.

Recertification typically is not awarded until the three years have elapsed beyond the initial certification. If the facility chooses to recertify earlier than three years in order to align with the certification cycle of other corporate facilities or other reasons, this must be disclosed in the SEP Application and submitted for pre-approval by the SEP Administrator. The facility is still required to meet all of the EP improvement requirements for recertification, even with a shortened recertification achievement period.

For recertification, the initial step is a facility submits an SEP Application to the SEP Administrator a recommended six months prior to the expiration of the SEP certificate to avoid any lapse in SEP certification. The recertification audit is conducted a minimum of three months prior to the certificate expiration.

5.3.2 Baseline considerations for recertification

For recertification, a facility has two options for the baseline period:

- ▶ **Option 1: Reset the baseline period to the reporting period from the previous SEP certification.** The facility must demonstrate a minimum EP improvement of 3.0% for the Silver, Gold, or Platinum levels or greater or equal to 1.0% for the Bronze level in the most recent three-year recertification cycle.
- ▶ **Option 2: Maintain the existing baseline period used in the previous SEP certification.** The facility must demonstrate a minimum EP improvement equivalent to the verified EP improvement from the previous certification plus 3.0% for the Silver, Gold, or Platinum levels or greater or equal to 1.0% for the Bronze level.
 - *Option 2A: Retain model and baseline period from previous SEP certification in accordance with the SEP M&V Protocol model validity criteria.*
 - *Option 2B: Change model from previous SEP certification, but keep the same baseline period.*

If a facility must change its model to apply option 2, the new model must meet all validity requirements as outlined in the *SEP M&V Protocol* for the combined previous and current achievement period (baseline period to new reporting period). The determination of the EP improvement is independent of the continuous use of a model for successive certifications.

[Appendix B](#) provides example scenarios that illustrate these options.

If a facility seeks to use a baseline period other than Option 1 or Option 2, a request for approval and supporting documentation must be submitted to the SEP Administrator with the recertification SEP Application. This requirement includes facilities seeking SEP recertification as part of a multi-site, enterprise-based EnMS certification that want to adjust their baseline periods for recertification to align with a group of facilities or an existing corporate baseline.

5.3.3 Recertifying to a higher level of verified achievement

To progress from Bronze or Silver to Gold or Platinum during recertification, the additional *SEP Scorecard* points ([Table 2](#)) identified on the SEP Application must be verified during the recertification audit. Similarly, to move from Gold to Platinum, the additional *SEP Scorecard* points identified on the SEP Application must be verified during the recertification audit.

6. SEP Certification Process

6.1 SEP Enrollment and SEP Application

An organization submits the SEP Enrollment and SEP Application to the SEP Administrator for each facility seeking SEP certification. The SEP Enrollment Form may be submitted before the SEP Application. Organizations are encouraged to submit the SEP Enrollment Form early and will be asked by the SEP Administrator to confirm that the information on the SEP Enrollment Form is still current when the organization submits the SEP Application. Organizations are highly encouraged to submit the SEP Application five to six months before the facility wants the audit to take place, especially if pre-approvals from the SEP Administrator are being requested, as these take additional time to review. The same conditions apply for SEP recertification and must be met to avoid any lapse in SEP certification. For recertification, if the SEP Application is received by the VB from the SEP Administrator too late for the audit to be scheduled and completed before the expiration of the SEP certification, a new stage 1 and stage 2 audit are required.

If the SEP Applicant uses an alternative approach to modeling or data gathering/assessment as noted in the *SEP M&V Protocol* (including, but not limited to model choice, data interval, other derived energy sources calculation, or baseline adjustment methods) or any *SEP Scorecard* credits that require prior approval, the SEP Applicant must submit the request for approval form with the SEP Application, and receive approval by the SEP Administrator. A list of alternative approaches that require approval are available on the SEP website. The SEP Administrator will provide the relevant evaluation criteria to both the organization and the SEP Verification Body.

The SEP Administrator will review the forms for completeness and notify the SEP Applicant when finished. The SEP Administrator will send the SEP Application to the SEP Verification Body selected by the SEP Applicant.

An updated SEP Application is required if the organization applies for the Bronze or Silver performance level and later determines that it is eligible for the Gold or Platinum performance level.

The SEP Applicant must choose and contract with an Accredited SEP Verification Body to conduct the SEP verification audit. Alternatively, the SEP Applicant may choose a Verification Body that has applied for, but not yet completed their accreditation process. If the SEP Applicant chooses an Applicant Verification Body, an Accreditation Body assessment witness team may be present during the SEP certification audit. SEP certifications by Applicant Verification Bodies are only valid upon the Verification Body achieving accreditation.

6.2 Certification

Participating facilities are required to demonstrate conformance to ISO 50001 and ANSI/MSE 50021. During the audit, the SEP Performance Verifier will use information that the facility provides on the bottom-up comparison to:

- ▶ Select a sample of Energy Performance Improvement Actions and spot check calculations for reasonableness.
- ▶ Remove improvement actions from the sample that were not or could not reasonably be demonstrated to improve energy performance.
- ▶ Confirm the final SEnPI as indicated in the *SEP M&V Protocol*.

While these actions may result in a change to the final SEnPI, these actions shall not be documented as audit nonconformities.

Organizations seeking a multi-site, enterprise-based ISO 50001 EnMS and seeking SEP certification for multiple facilities within the EnMS must ensure that the SEP facilities are within the scope of the EnMS. The EnMS will be sampled based on the requirements of ISO 50003. Verification of energy performance improvements for SEP, however, will occur at each individual facility seeking SEP certification.

SEP certification can occur under three different circumstances:

- 1) **Initial certification to both ISO 50001 and SEP:** For initial certification to both ISO 50001 and SEP, the SEP Verification Body will conduct an SEP conformity audit using appropriate personnel for both a stage 1 and stage 2 audit. A stage 1 review is conducted to confirm whether the facility is prepared for the stage 2 audit.
- 2) **Recertification after 3 years:** For recertification, a Stage 1 audit shall be required if:
 - there are major changes to energy-using facilities, equipment, systems or processes;
 - the client changes the chosen SEP performance level from either Bronze or Silver to either Gold or Platinum;
 - the client modifies the SEnPI model such that SEP Administrator approval is required; the client changes the SEP Scorecard credits such that SEP Administrator approval is required.

- 3) **Scope extension from ISO 50001 to SEP:** A scope extension from ISO 50001 is typically conducted during the three year recertification audit for ISO 50001. A stage 1 review is required.

A facility that obtains ISO 50001 certification from a non-SEP Certification Body may seek a scope extension from ISO 50001 to SEP. The facility will request the transition from the SEP Administrator and complete the steps outlined in either Scenario 1 or Scenario 2.

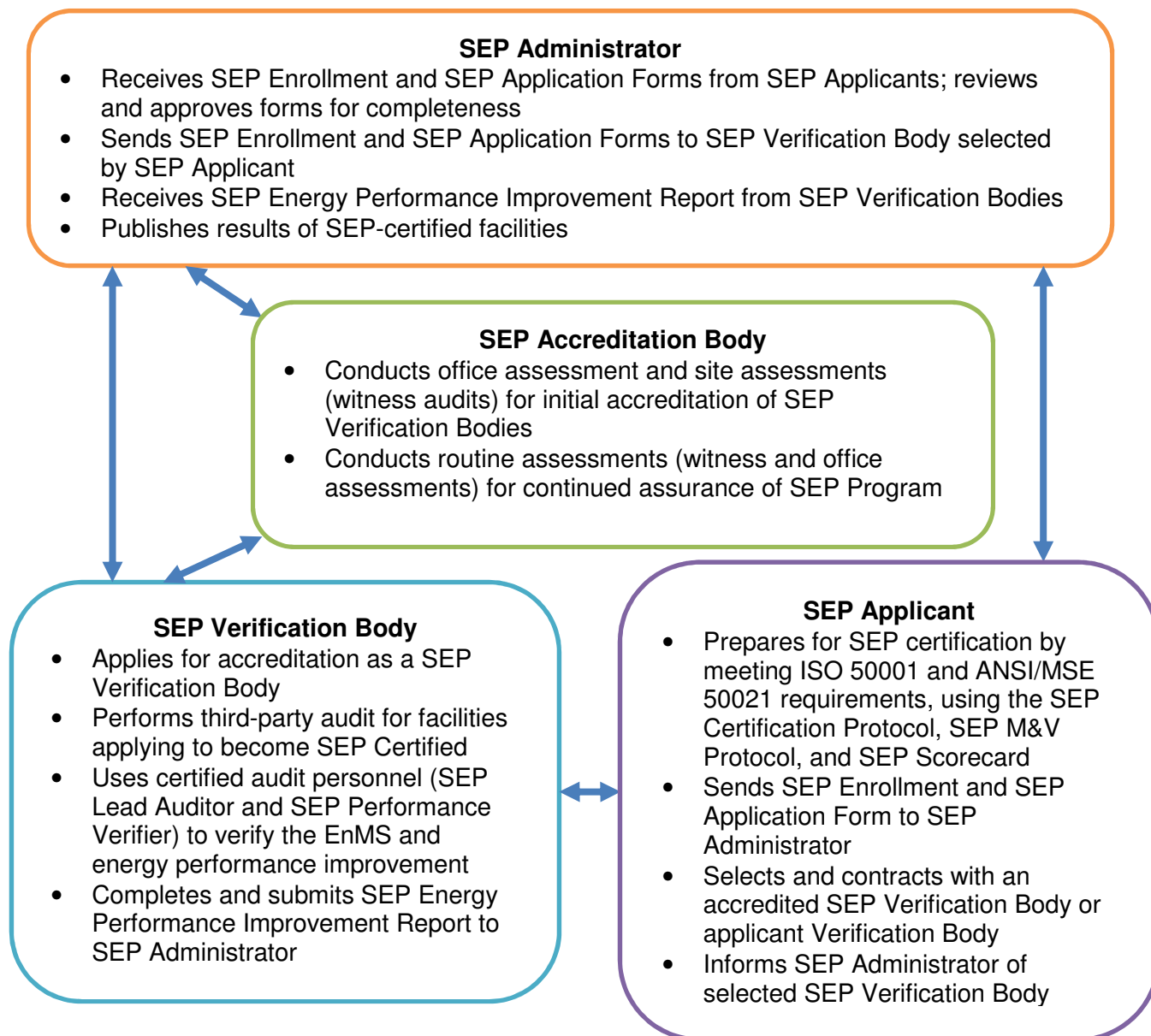
<p>Scenario 1: The organization decides to remain with their current Certification Body, which is seeking to become an accredited SEP Verification Body. The Certification Body must apply to the Accreditation Body to become an accredited SEP Verification Body.</p> <ol style="list-style-type: none"> 1. The applicant SEP Verification Body conducts a stage 1 audit in accordance with ANSI/MSE 50028. 2. The applicant SEP Verification Body conducts an audit of the existing the ISO 50001 EnMS against the SEP requirements as set forth in ANSI/MSE 50021 at either the next scheduled surveillance or recertification audit. This audit will include the Performance Verification using the <i>SEP M&V Protocol</i>. Note: The SEP audit could be the site of the accreditation body witness audit for accrediting the applicant SEP Verification Body. 3. The SEP certification is released when the Certification Body has become fully accredited as a SEP Verification Body. 4. The dates for the ISO 50001 certificate are not impacted by this scope extension, therefore, the expiration dates may not align. 5. If the next scheduled audit is a surveillance audit, the client will have a choice to: <ol style="list-style-type: none"> i. Maintain different certification dates for ISO 50001 and SEP certification; or ii. Undergo a full ISO 50001 audit to align the ongoing recertification dates 	<p>Scenario 2: The ISO 50001 certification was awarded by a Certification Body that is <i>not</i> a candidate for SEP Verification Body accreditation. Under this scenario:</p> <ol style="list-style-type: none"> 1. The organization transfers its existing ISO 50001 certification to an accredited SEP Verification Body following the defined Accreditation Body process for the transfer of management system certifications. 2. The SEP Verification Body conducts stage 1 audit in accordance with ANSI/MSE 50028. 3. The SEP Verification Body conducts an audit of the existing ISO 50001 EnMS against the SEP requirements as set forth in ANSI/MSE 50021 at either a next scheduled surveillance or recertification audit. This audit will include the Performance Verification using the <i>SEP M&V Protocol</i>. 4. Following successful completion of steps 2 and 3 above, a SEP certificate may be issued. 5. The SEP audit (step 3) will be conducted at the next scheduled audit or as a special audit at the request of the client. If the next scheduled audit is a surveillance audit, the organization will have a choice to: <ol style="list-style-type: none"> i. Maintain different certification dates for ISO 50001 and SEP certification; or ii. Have a full ISO 50001 audit to align the ongoing recertification dates. <p>The additional time to be added to the next scheduled audit for the SEP audit is defined in ANSI/MSE 50028.</p>
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The Certification Body (Scenario 1) or the applicant SEP Verification Body (Scenario 2) needs to be accredited by a signatory to the ISO 14001 multilateral agreement (MLA), ISO 50001 MLA when available.

If certification has been granted, the SEP Administrator will publish the results of the certification decision on the SEP website

The SEP certification and performance level designation is awarded for an interval of three years. Participating facilities choosing to recertify must submit an SEP Application and updated performance and management system information documenting that they continue to meet the SEP criteria.

Overview of the Relationship between the SEP Administrator, SEP Applicant, SEP Verification Body, and SEP Accreditation Body



7. Suspension or Revocation of SEP Certification

Accredited SEP Verification Bodies have documented procedures for suspension and revocation of SEP certifications. Conditions under which certificates are suspended include when a verification audit finds that substantial structural breakdowns in ISO 50001 or SEP requirements have occurred at a facility or the organization has failed to implement elements of its EnMS, and there is no credible commitment to take appropriate corrective action. The corrective action must be completed and accepted within the maximum interval for a suspended certificate, which is six months. The suspended certificate can be re-established following verification of an acceptable corrective action.

The SEP Verification Body will revoke certificates when the facility encounters substantial issues in which structural ISO 50001 or SEP requirements have not been met, and it is apparent that conformance cannot be reestablished in a reasonable time frame. If an organization loses its ISO 50001 certification, it also loses its SEP certification.

The SEP Verification Body shall communicate information on certificates that have been suspended or revoked to the SEP Administrator.

8. Confidentiality

The U.S. DOE, as the SEP Administrator, maintains the confidentiality of proprietary energy and production related data as proprietary that is submitted to the Superior Energy Performance (SEP) program by SEP certified facilities, to the fullest extent of U.S. federal law. Data included within the SEP Enrollment and SEP Application forms, SEP Energy Performance Improvement Report and SEP Voluntary Cost Benefit Form will not be released publicly. DOE will make public the following information about each SEP-certified facility:

1. Facility name
2. Facility location (city, state)
3. Verified Performance Level (i.e., Bronze, Silver, Gold, or Platinum)
4. Verified Achievement Period Energy Performance Improvement
5. Verified Achievement Period Length
6. Certification date (month/year)

DOE will, from time-to-time, publicly share aggregate, program-wide metrics, such as number of SEP certified facilities, and annual and cumulative SEP program energy savings.

All data provided to DOE is subject to the Freedom of Information Act (FOIA), however, DOE will notify the SEP certified facility if a FOIA request has been submitted for which their data might be responsive. DOE will consult with the SEP certified facility and ensure the facility has an opportunity to inform DOE what data they view is proprietary. DOE will review the SEP certified facility's suggestions and will not release to the public any data DOE deems proprietary.

Accredited SEP Verification Bodies have established and implemented procedures for ensuring confidentiality. These procedures address both the Verification Body organization as well as the individual auditor/verifier. Subcontracted or outsourced activities are subject to the same requirements.

9. Use of Superior Energy Performance® Logo and Materials

The U.S. DOE owns the Superior Energy Performance® certification mark, which bears the SEP logo. DOE will define and provide SEP-certified facilities with guidelines on appropriate use of the certification mark.

Public reference to SEP certification and use of the related logos must be in accordance with SEP Administrator guidelines for publicizing certification as well as those of the individual SEP Verification Body. Specific references to SEP certification must clearly indicate the part of the organization that has been certified and must not infer that other parts of the organization, or products produced, are also certified. Use of the certification mark outside of the guidelines must be reviewed and approved by DOE prior to use.

APPENDICES

A. [Normative] Technical areas

Source: ISO 50003:2014

Technical area	Description	Examples	Typical energy use
Industry – light to medium	Manufacturing facilities producing consumer intermediates or end user oriented products	<ul style="list-style-type: none"> • clothing, • consumer electronics • home appliances, furniture • plastics • fabrication • speciality chemicals • food processing • water and wastewater treatment 	<p>Typical energy uses:</p> <ul style="list-style-type: none"> • process heating (electricity, natural gas, coal or other source) • machine drive (pumps, fans, compressed air, materials handling) • steam systems • small cooling towers • other process uses • building energy uses (lighting, HVAC, hot water, portable devices)
Industry – heavy	Manufacturing facilities requiring high capitalization and consuming large quantities of raw materials and energy	<ul style="list-style-type: none"> • chemicals • steel and metals • oil refining • ship-building • pulp and paper mills • industrial machinery • semiconductors • cement and ceramic 	<p>Typical energy uses:</p> <ul style="list-style-type: none"> • process heating (electricity, natural gas, coal or other source, raw materials, intermediates) • process cooling and refrigeration • machine drive (pumps, fans, compressed air, materials handling) • turbines, condensers • steam systems • large cooling towers • transportation
Buildings	Facilities with standard commercial building practices	<ul style="list-style-type: none"> • offices • lodging • retail • warehouse 	<p>Typical energy uses:</p> <ul style="list-style-type: none"> • portable devices • water heating • lighting • heating and cooling systems, related fans • pumping systems
Building complexes	Facilities with operations requiring specific expertise due to the complexity of energy sources and uses	<ul style="list-style-type: none"> • health care facilities • laboratories • data centres • educational campuses • military and government campuses with integrated energy supply (district heating and cooling) • municipalities 	<p>Typical energy uses:</p> <ul style="list-style-type: none"> • centralized and district heating and cooling systems • portable devices • water heating • lighting • local HVAC • compressed air, materials handling systems • elevator /lifts
Transport	System or means for transporting people or goods/cargo	<ul style="list-style-type: none"> • passenger services (vehicle, train, ship, airplanes) • municipalities • trucking services • fleets 	<p>Typical energy uses:</p> <ul style="list-style-type: none"> • mobile energy uses • HVAC • lighting • portable devices • materials handling

Technical area	Description	Examples	Typical energy use
		<ul style="list-style-type: none"> • rail operations • cruise lines • airlines, airfreight • fleets 	<ul style="list-style-type: none"> • sources (fuel oil, electricity, coal, etc.)
Mining	Open cast, underground and fluid extraction of raw materials and transport	<ul style="list-style-type: none"> • mineral separation • hydrometallurgy • smelting and refining • oil and gas drilling operations • gas and oil pipelines 	<p>Typical energy uses:</p> <ul style="list-style-type: none"> • extraction • transportation on (loaders, trucks, and conveyors) • machine drive (water pumping, ventilation, turbines, fans) • materials preparation (crushing, grinding, separation) • steam systems, condenser and cooling towers
Agriculture	Livestock, seed or crops products	<ul style="list-style-type: none"> • farming • seed production • hauling of materials • animal production 	<p>Typical energy uses:</p> <ul style="list-style-type: none"> • extraction • sources (fuel oils electricity, natural gas, coal, etc.) • renewables (biomass, solar, geothermal, etc.) • transport • motors • drives, (pumps, fans, material handling) • pumps • water treatment • dryers
Energy supply	Energy generation (nuclear, CHP, electricity, renewable, etc.) and transport (transmission and distribution)	power generation (coal, oil, natural gas, renewable, CHP, IGCC, etc.)	<p>Typical energy uses:</p> <ul style="list-style-type: none"> • raw materials transformation • transmission and distribution turbines • combustion • steam systems • condenser and cooling towers

B. (Informative) Initial Certification and Recertification Scenarios

Appendix B provides a variety of scenarios to provide readers with examples of using the *SEP Scorecard* scoring system to achieve ISO 50001 and SEP initial certification and recertification at Bronze, Silver, Gold, and Platinum performance levels (see [Table 1](#) and [Table 2](#) for the requirements for each level).

Five scenarios are provided for initial certification. For recertification, two scenarios are provided: Scenario 1 describes an initial certification for a typical three-year achievement period and options for recertification. Scenario 2 describes an initial certification for a ten-year achievement period and recertification considerations.

Establishing SEP Energy Performance Levels:

1. A facility applies for the Bronze level with an achievement period of 3 years. An energy performance (EP) improvement of 1.7% (SEnPI is 0.983; $1.7\% = 100 \times (1 - 0.983)$) is verified.
 - The facility exceeds the required 1.0%, but less than 5.0% EP improvement over 3 years ([Table 1](#)); the Bronze level is awarded.
2. A facility applies for the Silver level with an achievement period of 3 years. An energy performance (EP) improvement of 5.7% (SEnPI is 0.943; $5.7\% = 100 \times (1 - 0.943)$) is verified.
 - The facility exceeds the required 5.0% EP improvement over 3 years ([Table 1](#)); the Silver level is awarded.
3. A facility applies for the Gold level with an achievement period of 5 years. An EP improvement of 13.3% (SEnPI is 0.867), 32 Energy Management (EM) credit points, and 1 Advanced Practices (AP) credit point are verified.
 - With a 13.3% EP improvement, the facility exceeds the required 8.0% EP improvement over 5 years ([Table 1](#)) and receives 10 AEP credit points for the additional 5.3% energy performance beyond the required EP improvement.² Those 10 points plus the 32 EM points and 1 AP point total 43 points. The Gold level, which requires a minimum level of 40 points ([Table 2](#)), is awarded.
4. A facility applies for the Platinum level with an achievement period of 4 years. An EP improvement of 22.1%, (SEnPI is 0.779) and 36 EM points are verified.
 - With a 22.1% EP improvement, the facility exceeds the required 7.0% EP improvement over 4 years ([Table 1](#)) and receives 30 AEP credit points for the additional 15.1% beyond the required EP improvement. Those 30 points plus the 36 EM points total 66 points. The Platinum level, which requires a minimum level of 60 points ([Table 2](#)), is awarded.
5. A facility, whose organization is a Better Buildings/Better Plants participant, is using a baseline period of 2005 and applies for Gold level with an achievement period of 10 years. An EP improvement of 30.0% (SEnPI is 0.700) and 24 EM points are verified.
 - With a 30.0% EP improvement, the facility exceeds the required 16.0% EP improvement ([Table 1](#)) and receives 28 AEP credit points for the additional 14.0% energy performance beyond the EP improvement. Those 28 points plus the 24 EM points total 52 points. The Gold level, which requires a minimum level of 40 points ([Table 2](#)), is awarded.

² Two Additional Energy Performance (AEP) credit points are earned for each 1.0% energy performance improvement above the required minimum improvement listed in [Table 1](#).

Baselines and Achievement Period Scenarios

Scenario 1: Initial Certification

A facility uses a calendar year as the basis for their baseline and reporting periods. For initial certification in January 2016, the facility chooses an achievement period of 12 months to 120 months (see [Table 1](#)) and establishes a baseline period based on the achievement period chosen. In this scenario, the facility chooses calendar year 2012 as the baseline period and calendar year 2015 as the reporting period with an achievement period of 3 years, as shown in [Figure B1](#). The specified EP improvement and *SEP Scorecard* points for each level for this initial certification would be greater or equal to 1.0% for Bronze, 5.0% for Silver, 5.0% for Gold plus 40 *SEP Scorecard* points, and 5.0% for Platinum plus 60 *SEP Scorecard* points. The facility's EP improvement is verified as 7.2% over the three year achievement period, awarding them the Silver level.

FIGURE B1: INITIAL CERTIFICATION – BASELINE, ACHIEVEMENT, AND REPORTING PERIODS

Year 0 2012	Year 1 2013	Year 2 2014	Year 3 2015
Baseline Period	Achievement Period - Initial Certification (3 years) Required EP improvement: Bronze ≥ 1.0%, Silver ≥ 5.0%, Gold ≥ 5.0% + 40 points, Platinum ≥ 5.0% + 60 points 7.2% EP improvement verified		
			Reporting Period 2015

Scenario 1: Recertification

This same facility decides to recertify. For recertification in January 2019 with 2018 as the recertification reporting period, this facility has several options for choosing its baseline:

- ▶ Option 1: Reset the baseline period (2012) to the reporting period from the previous SEP certification (2015).
- ▶ Option 2A: Keep the existing baseline period (2012) and use the same model.
- ▶ Option 2B: Keep the existing baseline period (2012) and change the model.

The facility may choose to request SEP Administrator approval for an exception that would allow some other baseline period and achievement period, but this is not typical.

Option 1: Reset the baseline period to the reporting period from the previous SEP certification

The facility chooses to reset its baseline period of calendar year 2012 to the reporting period calendar year 2015 from the previous SEP certification. The achievement period of three years for the recertification audit is shown in [Figure B2](#).

Items to note:

- ▶ For recertification, the required EP improvement is 3.0% (greater than or equal to 1.0% for Bronze).
- ▶ The *SEP Scorecard* points for Gold and Platinum must be verified.
- ▶ The model must still meet the requirements of a valid model *in accordance with the SEP M&V Protocol model validity criteria*.

FIGURE B2. RECERTIFICATION OPTION 1 – CHANGE BASELINE PERIOD TO PREVIOUS REPORTING PERIOD

Year 0 2012	Year 1 2013	Year 2 2014	Year 3 2015			
Baseline Period	Achievement Period - Initial Certification (3 years) Required EP improvement: Bronze $\geq 1.0\%$, Silver $\geq 5.0\%$, Gold $\geq 5.0\% + 40$ points, Platinum $\geq 5.0\% + 60$ points 7.2% EP improvement verified			Reporting Period for Initial Certification 2015		
Baseline Period for Recertification		Achievement Period - Recertification (3 years) Required EP improvement: Bronze $\geq 1.0\%$, Silver $\geq 3.0\%$, Gold $\geq 3.0\% +$ 40 points, Platinum $\geq 3.0\% + 60$ points			Reporting Period for Recertification 2018	

Option 2A: Maintain the baseline period used in the previous SEP certification, retain model from previous SEP certification.

The facility chooses to maintain its original baseline period of calendar year 2012 and to maintain their original model. ([Figure B3](#))

Items to note for recertification:

- ▶ The required EP improvement for the Silver, Gold, and Platinum levels is 3.0% over the 7.2% EP improvement verified in the previous SEP certification, which totals 10.2%. For the Bronze level, the required EP improvement is 1.0% over the 7.2% EP improvement verified in the previous SEP certification, which totals 8.2%.

- ▶ The Bronze and Silver levels do not require any *SEP Scorecard* points. Achieving Gold or Platinum levels requires additional points based on [Table 2](#). For example, to move from Bronze or Silver to Gold, the facility needs to achieve 40 *SEP Scorecard* points.

FIGURE B3: RECERTIFICATION OPTION 2A – KEEP BASELINE PERIOD USED IN PREVIOUS SEP CERTIFICATION

Year 0 2012	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	
Baseline Period	Achievement Period - Initial Certification (3 years) Required EP improvement: Bronze $\geq 1.0\%$ Silver $\geq 5.0\%$ Gold $\geq 5.0\% + 40$ points Platinum $\geq 5.0\% + 60$ points 7.2% EP improvement verified						
Baseline Period	Achievement Period - Recertification (6 years) Required EP improvement is 3.0% over the 7.2% = 10.2% (1.0% for Bronze = 8.2%): Bronze $\geq 8.2\%$ Silver $\geq 10.2\%$ Gold $\geq 10.2\% + 40$ points Platinum $\geq 10.2\% + 60$ points						
			Reporting Period for Initial Certification 2015				Reporting Period for Recertification 2018

- ▶ The next recertification achievement period would end in December 2021, which would be a 9-year achievement period if the facility maintains the same baseline period. The model must still meet the validity requirement (details for a valid model are located in the *SEP M&V Protocol*). The required EP improvement over the 9-year interval would be the verified EP improvement from their first recertification plus 3.0% for Silver, Gold, and Platinum or plus 1.0% for Bronze.
- ▶ The maximum allowable achievement period is 10 years, so for a recertification audit in 2025, a different baseline period will need to be chosen.

Option 2B: Maintain the baseline period used in the previous SEP certification, but change model from previous SEP certification.

The facility chooses the same baseline period as the original baseline period but changes the model (see [Figures B1](#) and [B3](#)).

- ▶ The model must demonstrate a 3.0% EP improvement for the Silver, Gold, and Platinum levels over the previous result of 7.2%, which is 10.2%. For the Bronze level, the required EP improvement is 1.0% over the 7.2% EP improvement verified in the previous SEP certification, which totals 8.2%.
- ▶ The model must meet all validity requirements as outlined in the *SEP M&V Protocol* for the new achievement period (2012 baseline period to new 2018 reporting period). The determination of the minimum EP improvement is independent of the continuous use of a model for successive certifications.
- ▶ The change in model may result in the need for a stage 1 review.
- ▶ Achieving Gold or Platinum levels requires additional *SEP Scorecard* points based on [Table 2](#).

Scenario 2: Initial Certification

A facility uses a calendar year as the basis for their baseline and reporting periods. For initial certification in January 2016, the facility chooses an achievement period (see [Table 1](#)) and establishes a baseline period based on the achievement period chosen. In this scenario, the facility chooses calendar year 2005 as the baseline period and calendar year 2015 as the reporting period with an achievement period of 10 years, as shown in [Figure B4](#). The required EP improvement for each level for this initial certification is 16.0% (see [Table 1](#)). The required *SEP Scorecard* points for achieving Gold or Platinum levels are listed in [Table 2](#). The Bronze level is not available with an initial achievement period greater than three years.

FIGURE B4: INITIAL CERTIFICATION BASELINE, ACHEIVEMENT AND REPORTING PERIODS

Year 0 2005	Year 1 2006	Year 2 2007	Year 3 2008	Year 4 2009	Year 5 2010	Year 6 2011	Year 7 2012	Year 8 2013	Year 9 2014	Year 10 2015
Baseline Period	Achievement Period - Initial Certification (10 years) Required EP improvement: Silver ≥ 16.0% Gold ≥ 16.0% + 40 points Platinum ≥ 16.0% + 60 points Bronze is not available for an initial 10 year achievement period									
										Reporting Period for Initial Certification 2015

Scenario 2: Recertification

This same facility decides to recertify. For recertification in January 2019, this facility must reset the baseline to the previous reporting period (2015), because the maximum allowable achievement period is 10 years. The facility chooses to reset its former reporting period of calendar year 2015 to be the baseline period for the achievement period ending with a reporting period in calendar year 2018. The achievement period of three years for the recertification audit is shown in [Figure B5](#).

Items to note:

- ▶ For recertification, the required EP improvement is 3.0% for the Silver, Gold, or Platinum levels or greater or equal to 1.0% for the Bronze level.
- ▶ The baseline year and achievement period cannot be more than 10 years apart.

FIGURE B5: RECERTIFICATION RESETTING THE BASELINE

Year 0 2005	Years 1, 2, 3, 4 2006, 2007, 2008, 2009	Year 5 2010	Year 6 2011	Year 7 2012	Year 8 2013	Year 9 2014	Year 10 2015	
Baseline Period	<p>Achievement Period - Initial Certification (10 years) Required EP improvement: Silver $\geq 16.0\%$, Gold $\geq 16.0\% + 40$ points, Platinum $\geq 16.0\% + 60$ points Bronze does not allow an initial 10 year achievement period</p>							
					Initial Certification Reporting Period 2015, now Recertification BASELINE PERIOD 2015	2016	2017	2018
						<p>Achievement Period - Recertification (3 years) Required EP improvement: Bronze $\geq 1.0\%$ Silver $\geq 3.0\%$, Gold $\geq 3.0\% + 40$ points, Platinum $\geq 3.0\% + 60$ points</p>		
								Reporting Period for Recertification 2018

C. [Informative] Certified Professionals

Certified Practitioners provide assistance to organizations that is related to assessing energy efficiency opportunities in various types of energy systems and conformance to the requirements of the ISO 50001 energy management system standard and ANSI/MSE 50021. These professionals are facility personnel, consulting professionals, or service providers with the appropriate technical experience in industrial and commercial energy systems.

A list of certified practitioners can be found at: www.ienmp.org/pro_search/index.php?action=1.

Requirements for becoming a Certified Practitioner in EnMS can be found at: www.ienmp.org.

Certified ISO 50001 Lead Auditors

Members of the Clean Energy Ministerial (CEM) Energy Management Working Group (EMWG) formed the Energy Professionals International (EPI) effort to develop the ISO 50001 Lead Auditor Certification Scheme and International Exam. The EPI consists of the following EMWG members and partners:

- ▶ Canada (co-sponsor): Natural Resources Canada
- ▶ United States (co-sponsor): U.S. Department of Energy
- ▶ Chile: Agencia Chilena de Eficiencia Energética
- ▶ Mexico: Comisión Nacional para el Uso Eficiente de la Energía
- ▶ Republic of Korea: Korea Energy Management Corporation and Korea Auditor Registration
- ▶ South Africa: South African National Energy Development Institute and National Cleaner Production Centre
- ▶ United Nations Industrial Development Organization (observer)

The EMWG was launched in 2010 by the Clean Energy Ministerial (CEM) and International Partnership for Energy Efficiency Cooperation (IPEEC). Through the EMWG, government officials worldwide share best practices and leverage their collective knowledge and experience to create high-impact national programs that accelerate the use of energy management systems in industry and commercial buildings.

More information on the EMWG is available at: www.cleanenergyministerial.org/energymanagement and on EPI is available at: <http://epicertified.org/>.

Certified Practitioners in EnMS to Assist Facilities Implement Energy Management

ANSI-accredited Certified Practitioners in Energy Management Systems (CP EnMS) support facilities in assessing energy efficiency opportunities and implementing an EnMS that conforms to ISO 50001. The CP EnMS credential, which is available only through the Institute for Energy Management Professionals® (IEnMP), identifies professionals competent to prepare facilities for SEP certification.

An SEP Applicant may apply for SEP certification without engaging a CP EnMS. However, using a competent individual adds a level of assurance for the facility that the standards and protocols will be properly applied.

