



STRATEGIC ENERGY MANAGEMENT FOR INDUSTRY

Energy Management Information Systems (EMIS) Application Guide

The purpose of the Energy Management Information Systems (EMIS) Application Guide (“Guide”) is to provide you with step-by-step guidance on how to participate in the SEMI activity of the Strategic Energy Management for Industry (SEMI) Program. The Guide is intended to provide the following:

- ▶ Provide an overview of the SEMI program and the various eligible activities
- ▶ Provide detailed information on the EMIS Activity including the registration process

Please contact our program support team if you have questions or would like more information:

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SEMI Program Overview

Emissions Reduction Alberta's Strategic Energy Management for Industry program (SEMI) helps eligible industrial facilities improve their energy performance by co-funding activities to implement an integrated system of practices, processes, and capital retrofits.

With funding from the Government of Alberta's Technology Innovation and Emissions Reduction (TIER) fund and Natural Resources Canada (NRCAN), the objective of SEMI is to support eligible facilities to:

- ▶ Understand energy use;
- ▶ Identify methods and approaches to optimize energy use;
- ▶ Implement energy-saving capital retrofits; and
- ▶ Improve energy productivity and competitiveness.

SEMI offers financial incentives that cover up to 50% of eligible project costs for for-profit organizations and up to 100% for not-for-profits and Indigenous organizations. Additional funding caps are stated on the SEMI website. SEMI also allows in-kind contributions from the facility to offset the co-funding requirement for certain activities.

SEMI is structured around five key activities to drive energy efficiency and emissions reduction in industrial and manufacturing facilities:

1. FACILITY READINESS ASSESSMENT (FRA)

The first step in SEMI is to complete a Facility Readiness Assessment (FRA) at your facility. For-profit organizations must cover 50% of the cost; however, it is anticipated that your contributions can be provided as an in-kind contribution. In-kind contributions can include facility staff time necessary to complete any aspect of the FRA and prior energy management activities that contribute value to eligible activities. The FRA will provide you with recommendations to implement further eligible activities.

Not all recommendations are mandatory to implement for participation in SEMI.

The FRA provides a facility-wide assessment of how, where, and when energy is used in the production process. The FRA will:

- ▶ **Provide an energy assessment. The FRA will assess and analyze** all energy uses and energy management systems.
- ▶ **Identify opportunities for improvement.** The FRA will highlight immediate opportunities to enhance energy efficiency and provide an energy roadmap for the facility based on site-specific considerations.
- ▶ **Define a path forward in SEMI.** The FRA identifies the most suitable next steps of eligible SEMI activities such as further detailed studies, engaging in strategic energy management (SEM), implementing energy management information systems (EMIS), and/or initiating capital retrofits. The path forward will consider the current situation and the capabilities and capacity of your facility, including financial considerations and other constraints. Not all of the next steps identified are mandatory to implement for participation in SEMI.

2. ENERGY ASSESSMENTS AND AUDITS (EAA)

After completing the FRA, facilities may proceed with more detailed studies. These studies can include:

- ▶ **Comprehensive Energy Assessment (CEA):** This assessment thoroughly evaluates the facility's overall energy consumption, pinpointing inefficiencies and suggesting targeted energy-saving strategies. The CEA is facility-wide and provides further detailed analysis of energy-saving opportunities. The scope of a CEA may include systems that operate across the facility.

- ▶ **Computational Fluid Dynamics Studies (CFDS):** CFDS involve using advanced simulation techniques to model and analyze thermal and fluid dynamics within industrial processes. These studies help to optimize energy use by identifying areas where energy losses occur and suggesting modifications to improve energy efficiency.
- ▶ **Process Integration Studies (PIS):** This approach focuses on optimizing the interactions between different processes to reduce energy consumption. PIS analyze how energy flows through the entire facility, looking for opportunities to reuse waste energy, improve heat exchange systems, and streamline operations for better energy efficiency.

3. STRATEGIC ENERGY MANAGEMENT (SEM)

The FRA contains an initial assessment of a facility's readiness to participate in Strategic Energy Management (SEM). The assessment allows a facility to be placed within the correct SEM group training with a customized curriculum. SEM is a systematic approach to energy management that integrates energy-saving practices into the daily operations of a facility. SEM supports facilities in developing and implementing long-term energy management plans that align with their business objectives. This approach includes:

- ▶ **Setting Clear Goals:** Establishing measurable energy performance targets and creating a roadmap to achieve them.
- ▶ **Engaging Employees:** Involving employees at all levels to foster a culture of continuous improvement and energy awareness.
- ▶ **Continuous Monitoring:** Encouraging regular monitoring and reviewing of energy use to ensure that energy efficiency remains a priority and that opportunities for improvement are continually identified.

4. ENERGY MANAGEMENT INFORMATION SYSTEMS (EMIS)

The FRA contains an initial assessment of the facility's Energy Management Information Systems (EMIS). These systems are critical tools within the SEMI framework, providing facilities with the ability to collect, analyze, and manage energy data to inform operating decisions. EMIS activities include hardware and software components that support:

- ▶ **Data Collection and Monitoring:** Using sensors, meters, and software to gather real-time data on energy consumption and production levels.
- ▶ **Analysis and Optimization:** Analyzing data to identify inefficiencies, track energy consumption patterns, and optimize processes.

- ▶ **Reporting and Decision Making:** Providing insights into energy use, which helps in making informed decisions, detecting anomalies, and implementing corrective actions promptly.

5. CAPITAL RETROFITS

The FRA will provide additional insight to support capital retrofits. Capital retrofits are essential for implementing the energy-saving measures identified through the energy assessments or studies and supported by SEM and EMIS. SEMI provides co-funding to assist facilities in upgrading energy-efficient equipment, adopting advanced technologies, and making infrastructure improvements that contribute to reduced energy consumption and lower greenhouse gas (GHG) emissions. Examples of capital retrofits include:

- ▶ **Equipment Upgrades:** Installing high-efficiency electric motors with variable frequency drive controls, LED lighting, and waste heat recovery systems.
- ▶ **Renewable Energy:** Investing in renewable energy sources, such as solar panels, to reduce dependence on non-renewable energy.
- ▶ **Process Improvements:** Upgrading a facility's energy consuming processes, such as improved compressed air systems or upgraded process cooling to enhance energy efficiency.

By integrating these five activities -FRA, EAA, SEM, EMIS, and Capital Retrofits -SEMI offers a comprehensive approach to energy management. This approach enables industrial and manufacturing facilities to optimize energy use, reduce costs, and lower their environmental impact, contributing to a more sustainable and competitive industrial sector in Alberta.

Energy Management Information Systems (EMIS) Overview

An EMIS provides relevant information that makes energy performance visible so that key individuals and departments within a business can take effective action to create financial value for the organization. An EMIS will:

1. Gather information on energy consumption.
2. Gather information on the useful outputs derived from the consumption of energy (e.g., production, heating, lighting).
3. Gather information on any other factors that may influence energy consumption (e.g., environmental factors such as ambient temperature and relative humidity, or operational factors such as building occupancy and packaging sizes).
4. Contain analysis routines to allow for a comparison between energy consumption and utility drivers.
5. Build and display energy performance reports.

With effective management systems in place, these energy performance reports can:

1. Act as a stimulus for investigation and identification of the root causes of both good and poor performance.
2. Promote operational best practices by eliminating the root causes of poor performance and promoting activities that lead to good performance.
3. Provide the justification for energy saving projects by making the costs of current energy performance visible and providing a baseline against which savings projects can be compared.
4. Demonstrate the success or benefits of projects that have been implemented.

EMIS are crucial for industrial and manufacturing facilities as they provide monitoring, analysis, and reporting of energy usage. The EMIS enables facilities to identify inefficiencies, track performance, and optimize operations, leading to significant cost savings and reduced environmental impact. By leveraging EMIS, facilities can implement data-driven strategies for energy conservation, ensure compliance with energy regulations, and support sustainability goals. The insights gained from EMIS not only improve operational efficiency but also enhance the overall competitiveness and resilience of the facility in a market increasingly focused on energy efficiency and sustainability.

The FRA conducted by ERA's Service Provider, Enerva Energy Solutions Inc. will include an assessment of the current EMIS in your facility and provide a recommendation to install or upgrade the existing EMIS (if applicable). You will need to submit an

application to receive the funding for either of these activities. You can utilize an internal resource or hire an Eligible Contractor for your facility. After the completion of this activity, you will have to submit a report summarizing the energy management changes implemented in your facility and its outcome.

Eligibility Requirements

1. ELIGIBLE PARTICIPANTS

An eligible participant must meet the two following eligibility requirements:

1. Operates a business—whether as a corporation, non-profit, co-operative, sole proprietorship, partnership, government or public entity, or Indigenous-owned* organization—by owning or leasing at least one Eligible Facility.

*To be considered Indigenous owned, your organization must meet the following criteria:

- ▶ *Be a sole proprietorship, limited company, cooperative, partnership, or not-for-profit organization in which Indigenous peoples own and control at least 51% of the enterprise.*
- 2. Is not insolvent.

2. ELIGIBLE FACILITIES

To be an eligible facility, a facility must meet all the following requirements:

1. The facility is located in Alberta.
2. The facility has been in operation for at least one year with fixed equipment and energy consumption information.
3. You own or lease the facility. For a leased facility, you have obtained permission from your landlord to undertake the key activities.
4. The facility belongs to one of the following North American Industry Classification System (NAICS) economic sectors¹:

▶ **Agriculture, Forestry, Fishing, and Hunting (NAICS 11)**

- Crop Production
- Animal Production and Aquaculture
- Forestry and Logging
- Fishing, Hunting, and Trapping
- Support Activities for Agriculture and Forestry

¹ Sectors may also include those that are engaged in energy consuming processes, and that involve the physical or chemical transformation of materials or substances into new products. Products may be finished (ready to use or consume) or semi-finished (raw material). Related activities include assembling component parts, blending materials, and finishing products.

▷ **Mining, Oil, and Gas (NAICS 21)**

- Oil and Gas Extraction
- Mining (except Oil and Gas)
- Support Activities for Mining

▷ **Utilities (NAICS 22)**

- Electric Power Generation, Transmission, and Distribution
- Natural Gas Distribution
- Water, Sewage, and Other Systems

▷ **Construction (NAICS 23)**

- Construction of Buildings
- Heavy and Civil Engineering Construction
- Specialty Trade Contractors

▷ **Manufacturing (NAICS 31-33)**

- Food Manufacturing
- Beverage and Tobacco Product Manufacturing
- Textile Mills
- Textile Product Mills
- Apparel Manufacturing
- Leather and Allied Product Manufacturing
- Wood Product Manufacturing
- Paper Manufacturing
- Printing and Related Support Activities
- Petroleum and Coal Products Manufacturing
- Chemical Manufacturing
- Plastics and Rubber Products Manufacturing
- Nonmetallic Mineral Product Manufacturing
- Primary Metal Manufacturing
- Fabricated Metal Product Manufacturing
- Machinery Manufacturing
- Computer and Electronic Product Manufacturing
- Electrical Equipment, Appliance, and Component Manufacturing
- Transportation Equipment Manufacturing
- Furniture and Related Product Manufacturing
- Miscellaneous Manufacturing

▷ **Transportation (NAICS 48)**

- Air Transportation
- Rail Transportation

- Water Transportation
- Truck Transportation
- Transit and Ground Passenger Transportation
- Pipeline Transportation
- Scenic and Sightseeing Transportation
- Support Activities for Transportation

▷ **Services and Waste Management (NAICS 56)**

- Waste Collection
- Waste Treatment and Disposal
- Remediation and Other Waste Management Services

3. ELIGIBLE CONTRACTORS

Eligible Contractors are companies approved or certified by SEMI program to perform certain types of work, such as energy studies, energy efficiency upgrades, or renewable energy installations under the SEMI program.

4. ELIGIBLE ENERGY MANAGEMENT INFORMATION SYSTEMS

Eligible EMIS must include the following critical components and requirements:

1. **Energy Review:** The EMIS must include a comprehensive analytical assessment capable of tracking current energy use, identifying significant energy-consuming areas, and highlighting opportunities for improvement.
2. **Energy Baseline:** A reference point for measuring energy performance over time, established using historical data to track changes in energy consumption.
3. **Energy Performance Indicators (EnPIs):** Metrics used to assess and quantify energy performance relative to the established baseline.
4. **Energy Targets and Action Plans:** A place to clearly define measurable goals that align with the facility's energy policy, aimed at improving energy efficiency and reducing consumption. The EMIS must also be capable of adding action plans to achieve the energy targets. The energy action plan at the minimum should have timelines, assigned responsibilities, and necessary resources.
5. **Competence, Training, and Awareness:** Ensuring that personnel at all levels have the necessary knowledge and skills to implement the energy management system, supported by continuous training and awareness programs.

6. **Monitoring and Measurement:** A structured method to track, analyze, and improve energy performance over time. This includes capturing and visualizing data in real-time or near real-time. Features such as energy heat maps, overlay charts, and graphs are utilized to provide detailed insights.
7. Implemented by an Eligible Contractor (if using an external resource).

EMIS Application Process

The EMIS registration process is easy and secure. Please complete the registration form on the SEMI online portal ("Portal") at portal.semiprogram.ca. The process flow below outlines the main steps for the EMIS.



Tips: Your Eligible Contractor can submit the EMIS application on your behalf.

STEP 1 SUBMIT AN EMIS APPLICATION

STEP 2 APPLICATION REVIEW BY ERA'S SERVICE PROVIDER

STEP 3 CONFIRM EMIS SCOPE AND BUDGET, SIGN TERMS AND CONDITIONS

STEP 4 IMPLEMENT EMIS IN YOUR FACILITY

STEP 5 SUBMIT THE POST-ACTIVITY DELIVERABLES

STEP 6 SUBMIT INVOICES AND RECEIVE INCENTIVE

STEP 1: SUBMIT AN EMIS APPLICATION

- ▶ Use the [SEMI Portal](#) to submit your EMIS Application. The Application should be supported by following document:
 - ▶ Proposal from an Eligible Contractor showing the scope of EMIS implementation/upgrade and the budget to carry out these activities. This proposal must align with ERA's Service Provider's FRA recommendations.

STEP 2: APPLICATION REVIEW BY ERA'S SERVICE PROVIDER

- ▶ ERA's Service Provider will review the submitted documents to confirm the activity scope. ERA's Service Provider may reach out to you to request any additional information required to complete the review.
- ▶ Once ERA's Service Provider has completed the review, you will be notified of the successful completion of the review. The e-mail will include an estimate of the eligible incentive, and a date by which you are expected to complete the EMIS implementation.

STEP 3: CONFIRM EMIS SCOPE AND BUDGET, SIGN TERMS AND CONDITIONS

- ▶ The approval e-mail from ERA's Service Provider will include a link to the SEMI EMIS Terms & Conditions document.
- ▶ The document contains the Terms & Conditions for EMIS, with following fields populated by the ERA's Service Provider:
 - ▶ Schedule A – EMIS Scope & Estimated Savings
 - ▶ Schedule B – Projected Eligible Expenditures
 - ▶ Schedule C – Co-Funding Details
- ▶ Review, sign, and date the document, and then upload the completed document on the portal.

After signing, participants can proceed with the EMIS implementation that should be conducted as per the approved scope and work plan.

STEP 4: IMPLEMENT EMIS IN YOUR FACILITY

After signing the Terms & Conditions document, you can begin implementing the EMIS as per the scope outlined in the EMIS Application document.

Notify ERA in case of

- ▶ Any change in the EMIS scope
- ▶ Any delays in the EMIS schedule
- ▶ Any factors leading to EMIS underperformance

 **Tips: Your Eligible Contractor can submit the EMIS scope change request on your behalf.**

STEP 5: SUBMIT THE POST-ACTIVITY DELIVERABLES

- ▶ Submit the required documents for ERA's Service Provider to complete the EMIS verification. ERA's Service Provider may reach out to you to request any additional information required to complete the review.
- ▶ ERA's Service Provider will review the documents to confirm that the installation of EMIS was done as per the scope.

 **Tips: Your Eligible Contractor can submit post-activity deliverables on your behalf.**

STEP 6: SUBMIT INVOICES AND RECEIVE INCENTIVE

- ▶ Once ERA's Service Provider has determined that the EMIS installation conforms to the activity scope, it will request you to submit the contractor and incentive invoices.
- ▶ List out all the eligible EMIS cost items in a worksheet.
- ▶ Submit the worksheet in the portal along with supporting contractor invoices, details on in-kind contribution including supporting documents, and incentive invoice.
- ▶ You will receive an automated e-mail upon successful submission of the invoices and completed worksheet. Once ERA's Service Provider has reviewed the invoices, you will get an automated e-mail to provide your banking details.
- ▶ Provide your banking details including a copy of void cheque. You will be notified confirming the successful submission.
- ▶ ERA's Service Provider will review your payment request. If the payment details you entered matches the information on your void cheque, payment will be processed within four weeks. You can track the progress of your payment by visiting the portal.

Once the post-activity application and supporting documentation have been reviewed and approved, the EMIS incentive of up to \$250,000 will be processed.

 **Tips: Your Eligible Contractor can submit required information on your behalf.**

ELIGIBLE ACTIVITIES & INCENTIVES

