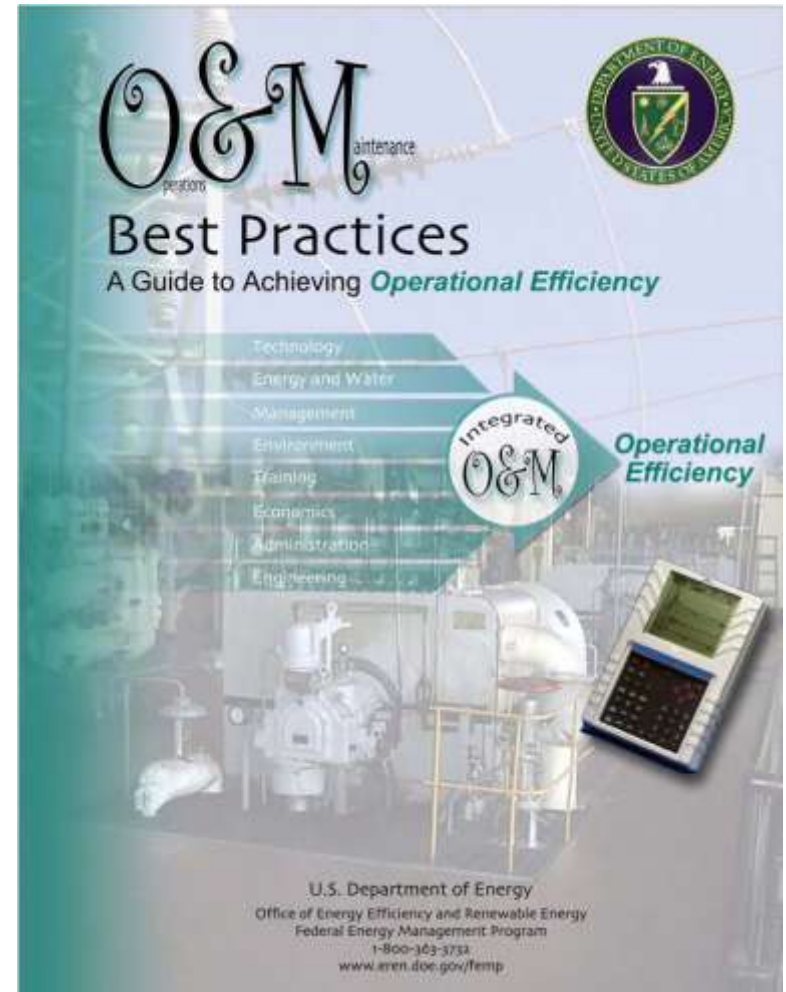




Resources Available to Improve Energy Performance

Federal Energy Management Program

- **FEMP O&M BEST PRACTICES:**
- **Good overall O&M guidelines for all facilities to follow, including:**
 - O&M management tips
 - Commissioning
 - Metering
 - Computerized Maintenance / Management Systems
 - Maintenance Types
 - Major Equipment Types
 - Resources including training materials, sample reports, etc.



- **Potential for 5-20% in operational efficiency gains**

Federal Energy Management Program

▪ **10 Steps to Operating Efficiency:**

- 1. Increase Management Awareness of Facility Operating Efficiency**
- 2. Identify Troubled Systems**
- 3. Commit to Address Worst-Performing System**
- 4. Commit to Operational Efficiency for Selected System**
- 5. Implement Metering/Monitoring Selected System**
- 6. Commit to Trending Diagnostic Data from M+M System**
- 7. Use Trending Data to Select, “Sell” & Complete OE Project**
- 8. Publish Results**
- 9. Select Next Troubled System**
- 10. Start OE Project Process Over Again & Fund Project from Previous Energy Savings**

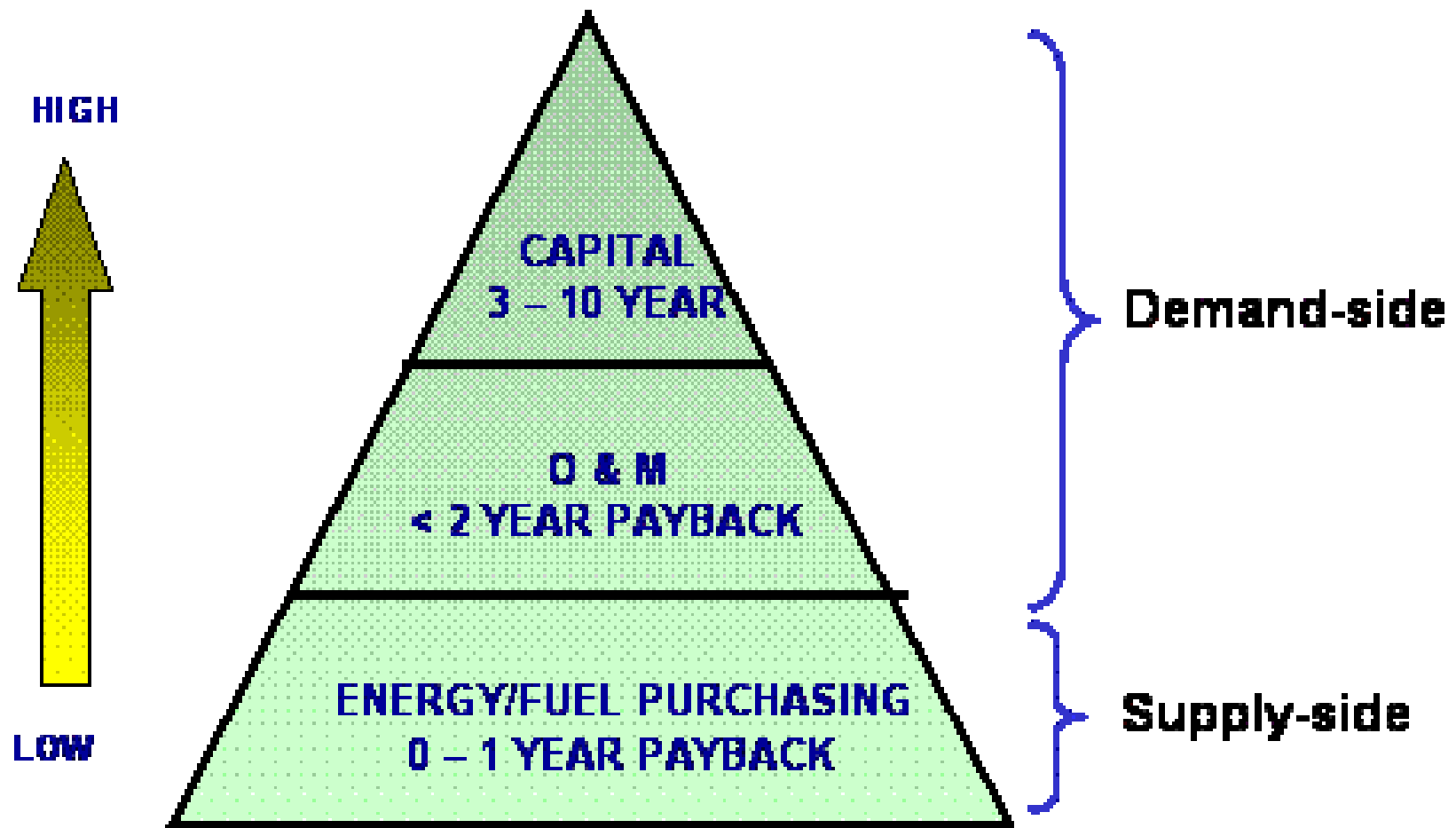
Save Energy Now LEADER

- Voluntarily pledge to reduce energy intensity by 25% or more over 10 years
- Make continuous improvements in energy efficiency and carbon reduction as part of a robust business strategy
- Gain enhanced access to enabling resources: tailored technical assistance, training, assessments, and more
- Receive high-level recognition for participation and achievements



Reduced energy costs and carbon emissions

The Energy Assessment Process



Move up the opportunity hierarchy

DOE Energy Assessment Resources

DOE Energy Assessment Programs Available:

- Industry Assessment Center (IAC)
→ \$200k to \$3MM per year
- Save Energy Now Assessments (SENA)*
→ greater than \$3MM

* SENA assessments also called ESAs

Industry Assessment Center (IAC)

- For plants with utility cost of \$200k to \$3MM per year.
- Energy assessments are plant-wide, which means the scope is not limited to specific systems.
- Energy assessments consist of one day in plant and final assessment report delivered in 60 days.
- Work completed by engineering students under faculty supervision.
- IAC Centers are based at engineering accredited universities the U.S.



IAC Center Locations



Save Energy Now Assessments

- For plants with utility cost greater than \$3MM per year and with which a large portion of energy is consumed by one large energy system.
- Assessments are three days and conducted by DOE Energy Experts who have been determined to be a qualified specialists for a specific energy system.
- A SENA assessment focuses on one of a plant's large energy intensive systems, including:
 - **Steam**
 - **Process Heating**
 - **Compressed Air**
 - **Fans**
 - **Pumps**

Superior Energy Performance

SEP is a market-based, ANSI-accredited plant certification program that provides industrial facilities with a roadmap for achieving continual improvement in energy efficiency while boosting competitiveness.



Goals:

- Drive continual improvement in energy intensity
- Develop a transparent system to validate energy intensity improvements and management practices
- Encourage broad participation throughout industry
- Support and build the industrial efficiency market and workforce


Superior Energy Performance Strategy

- Foster a corporate culture of **continuous improvement** in energy efficiency
- Use **ISO 50001** standard as foundational tool for energy management
- Establish a **tiered program** that provides an entry point for companies at all levels of experience with energy management
- Create a **verified record** of energy intensity/efficiency improvement.
- Potentially **create value** for corporate energy savings and carbon reductions in utility, state, regional, national, and international trading markets



Benefits of SEP for Manufacturers

Industrial plants can use certification to differentiate themselves from competition, validate energy reduction claims, and achieve continual improvement in energy efficiency



Recognition

- Public: Recognized leader in sustainable use of energy resources
- Supply Chain: Customers grant preferred supplier status

External financial incentives

- Energy efficiency credits (electric utility & others)
- Establishes a foundation for future carbon credits (state, region, and national)

Systematic framework for continuous improvement

- ISO 50001 energy management and ASME system assessment standards
- Tools and resources to assist implementation and validation of energy performance improvement

Superior Energy Performance Certification

Superior Energy Performance Certification:

An ANSI-accredited Certification Body will conduct a third-party audit to verify that the following requirements are met:



1. Energy Management System Conformance to ISO 50001 Energy Management Standard
2. Energy Performance Improvement

ISO 50001: Energy Management Standard

ISO 50001 energy management standard will establish a framework for industrial plants, facilities, and organizations to manage energy.



Uptake of ISO 50001 will be driven by companies seeking an internationally recognized response to:

- Corporate sustainability programs
- Energy cost reduction initiatives
- Demand created along the manufacturing supply chain
- Future national cap and trade programs; carbon or energy taxes; increasing market value of “green manufacturing” / reduced carbon footprint
- International climate agreements

Status of ISO 50001

- Under development by ISO Project Committee 242; United States and Brazil lead effort with United Kingdom and China
- 51 countries participating
- Draft International Standard by April 2010
- Ready for publication by mid 2011

ISO 50001: Energy Management Standard

Characteristics of ISO 50001:



- Requires an organization to establish, implement, maintain, and improve an energy management system, enabling **systematic** achievement of **continual improvement in energy performance**, energy efficiency, and energy conservation.
- **Imposes requirements on energy supply and consumption:**
 - **Measurement**
 - **Documentation and reporting**
 - **Design and procurement practices for energy-using equipment and systems**
 - **Processes and personnel**
- Applies to all factors that can be monitored and influenced by the organization to affect energy use.
- **Does not prescribe specific energy performance criteria**

Measurement and Verification Protocol

- **The Superior Energy Performance Measurement and Verification (M&V) Protocol is a methodology to:**
 1. Verify results and impact from implementing the energy management standard.
 2. Quantify energy savings from specific measures or projects.
 3. Track energy intensity changes over time for the overall manufacturing facility
- **The M&V protocol will also:**
 - Document normalized energy performance indicators, such as Btu per pound of product.
 - Validate energy savings so that reported savings can be used to determine carbon impact.

Superior Energy Performance Program Design

Partner

Criteria

- Conformance with ISO 50001
- Measure and audit energy performance improvement

Performance Levels

- Energy intensity improvement required

Method of Verifying Results

- Self Declaration

Registered Partner

Criteria

- Conformance with ISO 50001
- Measure and verify energy performance improvement

Performance Levels

- Energy intensity improvement required, minimum requirements set by program
- Two Pathways Available: Energy Intensity or Mature Energy

Method of Verifying Results

- Third-party verification via remote review

Certified Partner

Criteria

- Conformance with ISO 50001
- Measure, verify, and certify energy performance improvement

Performance Levels

- Energy intensity improvement required, minimum requirements set by program
- Two Pathways Available: Energy Intensity or Mature Energy

Method of Verifying Results

- ANSI-accredited certification with onsite visit

Other DOE Resources Available

Resources Available at www1.eere.energy.gov/industry

- **Software Tools**

- Steam System Scoping Tool
- Steam System Assessment Tool (SSAT)

- **Publications and Tip Sheets**

- “Achieve Steam System Excellence”
- “Steam Pressure Reduction Opportunities and Issues”
- “How to Calculate the True Cost of Steam”

- **Case Studies – Save Energy Now Leaders**

- “Boiler Blowdown Heat Recovery Project Reduces Steam System Energy Losses at Augusta Newsprint”
- “Control Scheme Modifications Increase Efficiency of Steam Generation System at ExxonMobil Gas Plant”
- “FMC Chemicals: Burner Management System Upgrade Improves Performance and Saves Energy at a Chemical Plant”

Additional Information

More information on the various DOE resources and programs can be found on the DOE website:

www1.eere.energy.gov/industry