

The image features a dark blue background with horizontal bands of glowing light blue lines and binary code (0s and 1s). The text 'ISO 50001' is prominently displayed in the upper half, and 'Energy Management Systems' is in the lower half. The overall aesthetic is futuristic and digital.

**ISO 50001**

**Energy Management Systems**



# ISO 50001 EnMS Webinar



Terry Boboige  
PJR President



Scott Jones  
EnMS Program Manager



Sharada Rao  
Environmental  
Assistant Program Manager

- Welcome From PJR Headquarters:
  - PJR
  - 755 W. Big Beaver Rd, Suite 1340
  - Troy, MI 48084
  - Phone: 1-800-800-7910
  - Email: [PJR@PJR.com](mailto:PJR@PJR.com)
- Audience for today's meeting
- Introduction of speakers
- Today's Session (1 Hour)
  - Informational Standard Overview
  - ISO 50001 Breakdown
  - Energy Performance
  - Certification Process
  - Program Launch Candidate
  - EnMS Auditor Training
  - Resources
  - Questions





## Poll #1



### Where do you stand with ISO 50001?

- I have an established EnMS in place
- I am interested in implementing an EnMS
- I am a consultant interested in ISO 50001
- I am an auditor interested in ISO 50001





## What is ISO 50001?



- The cornerstone for improving energy performance.
  - ❖ Energy performance = Measurable results related to energy efficiency, energy use and energy consumption.
- A new standard for energy management developed by the International Organization for Standardization (ISO).
- Published by ISO on June 15, 2011.



[www.pjr.com](http://www.pjr.com)



## Why consider ISO 50001 when ISO 14001 already exists?



- ISO 50001 has been designed solely for the management of energy.
- Energy management is often overlooked with ISO 14001.
- Most companies do not truly understand how much energy they currently use and how much money they can potential save by implementing an EnMS.
- Forces companies to establish baselines and identify areas for significant improvements in energy performance.
- Encourages companies to look into renewable energy sources.



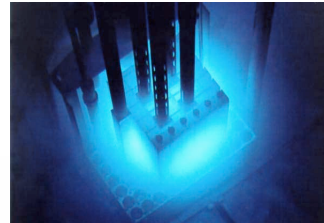
[www.pjr.com](http://www.pjr.com)



## What is the purpose of ISO 50001?



- To provide a framework for managing energy performance.
- Provide a systematic approach to set and reach organizational energy use and consumption goals.
- Provide organizations with management strategies to increase energy efficiency, reduce costs and improve energy performance.



[www.pjr.com](http://www.pjr.com)



## What is the purpose of ISO 50001?



- ISO 50001 intends to help organizations:
  - Better manage their existing significant energy uses.
  - Promote energy management best practices.
  - Evaluate and prioritize the implementation of new energy-efficient technologies or OFIs.
  - Integrate an EnMS with other management systems.
    - Examples: environmental, health and safety.



[www.pjr.com](http://www.pjr.com)



## ISO 50001 Benefits



- Realization of energy cost savings
- Maximize the use of energy sources and assets
- Reduced energy consumption
- increased energy efficiency
- increase energy performance
- Reduced environmental impact
- Helps to achieve energy compliance
- Worldwide credibility for energy consciousness.
- Able to be used by small to large organizations across diverse commercial, industrial, and public sectors.



- ❖ **Improves the ability to set baselines, measure, monitor and report on energy performance**



[www.pjr.com](http://www.pjr.com)





## The Future of Energy Management



- In an effort to reduce energy consumption and greenhouse gas emissions, federal, state, and local regulations are being implemented across the US and worldwide.
- With ever growing number of regulations, ISO 50001 provides the framework to not only reduce energy use and consumption, but meet these mandatory regulations.
- In an effort to help organizations reduce energy use and consumption, a number of incentive programs are being offered.
  - For example, President Obama announced the Better Building Initiative in February 2011. This Initiative will provide tax breaks, grants and loans to private companies with the goal of making commercial buildings 20 percent more energy efficient by 2020.



[www.pjr.com](http://www.pjr.com)



## How does it work?



- ISO 50001 follows the plan-do-check-act process for continual improvement of the EnMS.
- One key difference from other management systems is that an EnMS has a requirement that the organization shall achieve continual improvement of its **energy performance** and of its EnMS.

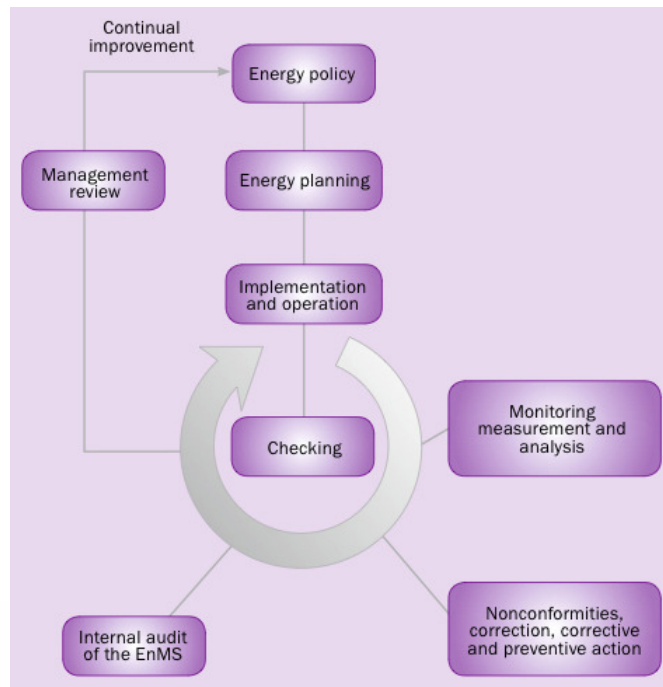




# EnMS System Model



Energy Management System Model

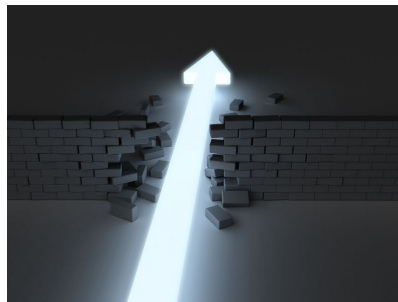




## Scope and Boundaries



- EnMS Scope and Boundaries
  - Scope: extent of activities, facilities and decisions that the organization addresses through an EnMS, which can include several boundaries.
    - Note: the scope can include energy related to transport
  - Boundaries: physical or site limits and/or organizational limits as defined by the organization.
    - Note: a process; a group of processes; a site; an entire organization; multiple sites under the control of an organization.



[www.pjr.com](http://www.pjr.com)



## Poll #2



If a company has one meter to monitor all of their natural gas usage, can they exclude their natural gas boiler system from their EnMS?

- Yes
- No





## Poll #3



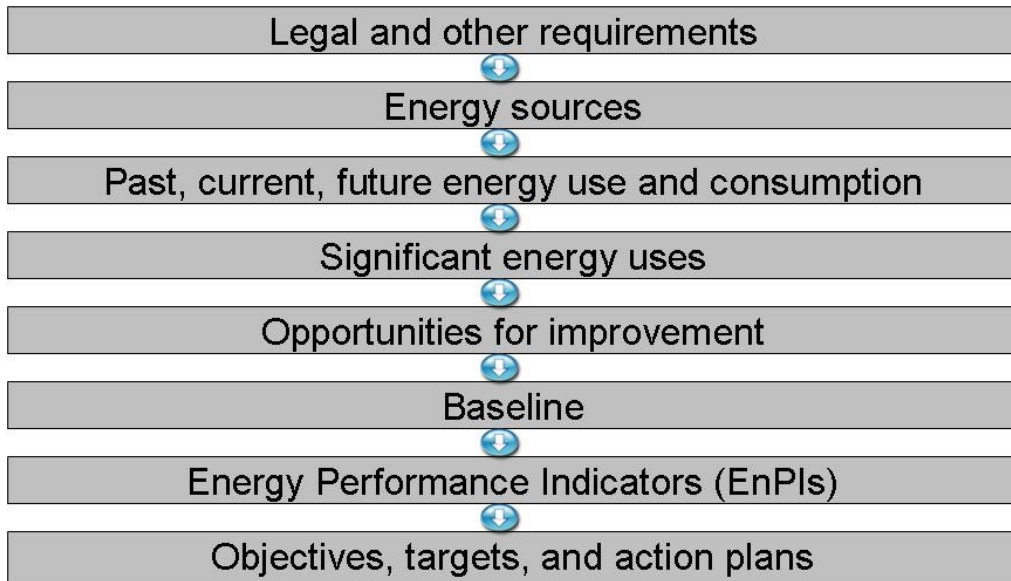
If a company has three buildings on their property, can they exclude one of the buildings from their EnMS?

- Yes
- No





# Energy Planning

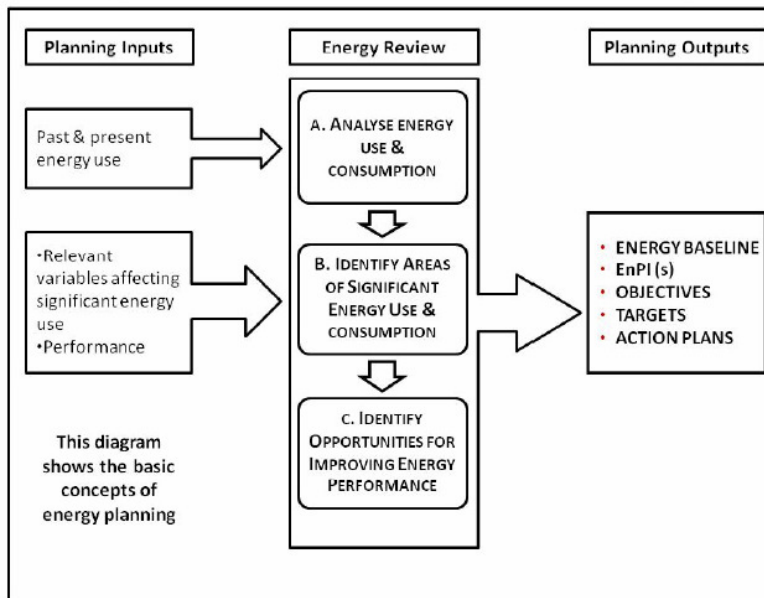




# Energy Planning Process



## Energy Planning Process







## Energy Review



- Determination of energy performance, leading to identification of opportunities for improvement.
- The energy review shall include:
  - Current energy sources
  - Past and present energy use and consumption
  - Significant energy uses (SEUs)
    - Facilities, equipment, systems, processes and personnel that may affect SEUs
    - Relevant variables affecting SEUs
    - Current energy performance of facilities, equipment, systems and processes related to identified SEUs
    - Estimate future energy use and consumption
  - Identify and prioritize opportunities for improving energy performance





## Opportunities for Improvement



- Identify opportunities for improvement through:
  - SEUs
  - Relevant variables
  - Internal/external audits
  - Employee communication





## Prioritizing Improvement Opportunities



- When prioritizing improvement opportunities, some things to consider are:
  - Costs involved vs. payback
  - Risk factors
  - SEUs





## Energy Performance OFIs



| Facility Type        | Yearly Energy Costs | Recommendation  | Cost to Implement (\$) | Annual Savings (\$) | Payback Period (Yr) |
|----------------------|---------------------|---|------------------------|---------------------|---------------------|
| Aluminum Die Casting | \$534,927           | Investigate the Possibility of Alternative Electric Rate Schedule | \$0                    | \$12,973            | 0                   |
|                      |                     | Install Economizers on the Existing Pad-mounted Units             | \$2,400                | \$3,034             | 0.8                 |
|                      |                     | Insulate the Gas Kilns  | \$3,782                | \$7,575             | 0.5                 |
|                      |                     | Implement A Regular Maintenance Program to Eliminate Air Leaks    | \$535                  | \$6,211             | 0.1                 |
|                      |                     | Install Adequate Compressed Air Storage                           | \$3,690                | \$2,882             | 1.3                 |
|                      |                     | Replace T12 Fluorescent Lighting with T8 Fluorescent Lighting     | \$5,444                | \$763               | 7.1                 |
|                      |                     | Retrofit Exit Signs With LED Kits                                 | \$745                  | \$464               | 1.6                 |
|                      |                     | Replace Mercury Vapor With Metal Halide                           | \$1,846                | \$550               | 3.4                 |



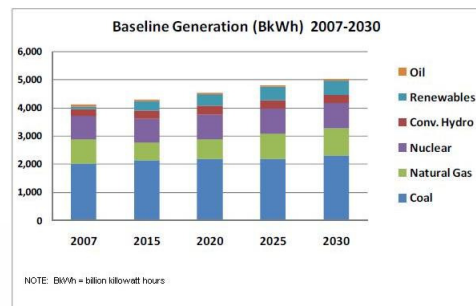
[www.pjr.com](http://www.pjr.com)



## Energy Baseline



- Basis for comparison of energy performance (starting point)
- Initial baseline should be developed from the energy review





## Poll #4



Which of the following describe energy baselines?

- a. Cannot vary
- b. Covers a representative time period chosen by the organization
- c. Measures energy performance
- d. Are developed only at the facility level





## Recalculating Energy Baselines



- EnPIs no longer reflect organizational energy use and consumption
- Major changes to the process, operational patterns or the EnMS
- According to predetermined methods



[www.pjr.com](http://www.pjr.com)



## Energy Performance Indicators (EnPIs)



- Quantitative value or measure of energy performance:
  - Helps turn energy data into useful information for top management
  - Can be expressed as a simple metric, ratio or a more complex model
  - Examples:
    - Btu per widget
    - Btu per lb of paint







## Energy Objectives and Targets



- Energy Objectives
  - Specified result set to meet the organization's energy policy related to improved energy performance
- Energy Targets
  - Detailed and quantifiable energy performance requirement related to the energy objective
- Objectives and targets can apply to an entire organization or specific areas or functions.





## Examples of Energy Objectives and Targets



| OBJECTIVES                                  | TARGETS  |
|---|--|
| Reduce energy use                           | <ul style="list-style-type: none"><li>Σ Reduce electricity use by 5% in 1999</li><li>Σ Reduce natural gas use by 15% in 1999</li><li>Σ Reduce use of diesel oil by 10% in 1999</li></ul> |
| Reduce usage of hazardous chemicals         | <ul style="list-style-type: none"><li>Σ Eliminate use of CFC's by 2005</li><li>Σ Reduce use of high-VOC paints by 50%</li></ul>  |
| Reduce hazardous waste generation           | <ul style="list-style-type: none"><li>Σ Reduce chrome wastes in plating area by 50% in 1997</li></ul>  |
| Improve employee awareness of environmental | <ul style="list-style-type: none"><li>Σ Hold monthly awareness training courses</li><li>Σ Train 100% of employees by end of 1999</li></ul>   |
| Reduce waste water discharge                | <ul style="list-style-type: none"><li>Σ Recycle water by 20% in boiler by 1999</li></ul>   |



[www.pjr.com](http://www.pjr.com)



## Action Plans



- Developed to achieve objectives and targets
- Shall include:
  - Designation of responsibility
  - Means and time frames by which individual targets are to be achieved
  - A statement of the method by which an improvement in energy performance shall be verified
  - A statement of the method of verifying results





## Implementation and Operation – “Do”



- Action plans and other outputs of the planning process shall include the following:
  - Competence, training and awareness
  - Communication
    - Internal
    - External
  - Documentation
    - Documentation requirements
      - Scope and boundaries, energy policy, energy objectives, targets, and action plans, required records and other documentation required by the organization.
    - Control of documents
  - Operational control
  - Design
  - Procurement of energy services, products, equipment and energy



[www.pjr.com](http://www.pjr.com)



## Checking



- The following items should be completed to ensure an effective EnMS:
  - Monitoring, measurement and analysis
  - Evaluation of compliance with legal and other requirements
  - Internal audit of the EnMS
  - Nonconformities, correction, corrective action and preventive action
  - Control of records



[www.pjr.com](http://www.pjr.com)



## Management Review – “Act”



- Management reviews of the EnMS should be completed at planned intervals to ensure its continuing suitability, adequacy and effectiveness and should include:
  - Input to management review
  - Output from management review





## Energy Performance



- Measurable results related to energy efficiency, energy use and energy consumption
- EnPIs are used to determine changes in energy performance
- Examples:
  - Btu/widget
  - Btu/lb of paint





## Energy Performance



- Related to energy efficiency:
  - Relationship between an output of performance, service, goods or energy, and an input of energy
- Examples:
  - Equipment efficiency
  - Process efficiency
  - Conversion efficiency







## Energy Performance



- Related to energy use:
  - Manner or kind of application of energy (e.g. lighting, heating, cooling)
- Examples
  - Incandescent vs. fluorescent light bulbs
  - Blowers vs. compressed air
  - Electric vs. gas heating

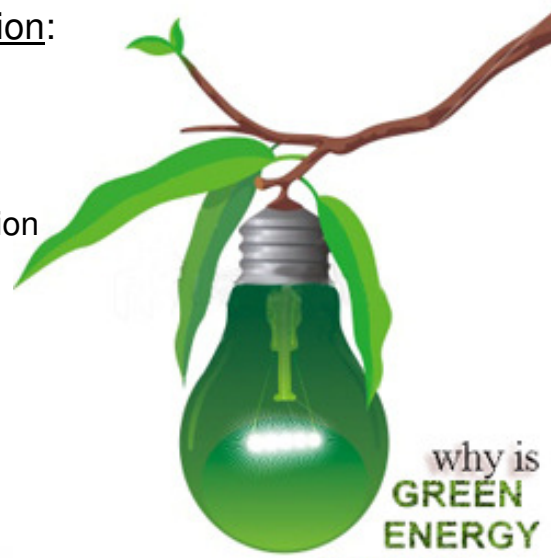




## Energy Performance



- Related to energy consumption:
  - Amount of energy applied
- Examples:
  - 500 gallons of oil consumption
  - 15,000 kWh of electricity consumption
  - 750 MBtu of natural gas consumption



why is  
**GREEN  
ENERGY**  
important?



[www.pjr.com](http://www.pjr.com)



## System Optimization



- Component vs. system efficiency
- Maintenance for system efficiency
- System adjustments in response to changes in demands over time
- Commissioning





## Key Characteristics of Measuring Energy Performance



- SEUs and other outputs of the energy review
- The relevant variables related to SEUs
- EnPIs
- The effectiveness of the action plans in achieving objectives and targets
- Evaluation of actual versus expected energy consumption

*ISO 50001:2011 4.6.1*





## Benefits of Certification



- Intangible EnMS benefits include:
  - Reduce energy costs
  - Improved corporate image among regulators, customers and the public
  - Proof of social responsibility
  - Improved employee morale





## Certification Process



The initial audit consists of two stages:

- Stage 1:
  - On-site document review of your EnMS
  - Evaluates the readiness of your organization to move to stage 2.
- Stage 2:
  - Scheduled 30 to 45 days after the stage 1 audit.
  - On-site audit of your entire EnMS.
  - Nonconformities will need to be resolved prior to issuing of the certificate.



[www.pjr.com](http://www.pjr.com)



## Certification Process



- **Surveillance audits**
  - Scheduled at either six or twelve month intervals depending on the contract.
  - Partial system audit.
- **Re-certification audit**
  - On-site audit conducted prior to the third anniversary of the initial certification
  - Surveillance visits will then continue, as before, on a 3-year cycle.





## Seeking ISO 50001 Program Launch Candidate



- PJR is offering an ISO 50001 Certification Audit at a 50% discount with no travel costs to the first company to sign up as our program launch audit candidate.
- PJR has been a leader in the ISO 50001 standard since its inception. Here are just a few reasons why PJR is at the top for ISO 50001:
  - We participated in the first ever ISO 50001 Lead Auditor training course
  - We provide technical expertise to guide our clients in the field of energy
  - We are creating a training program for lead auditors and internal auditors
  - We provide a 24 hotline – you can utilize the knowledge of an ISO 50001 Certified Lead Auditor; and discover what is expected to effectively meet the requirements of ISO 50001 certification, as well as learn common pitfalls so that your organization can utilize key aspects to lessen time spent preparing for certification
  - We provide flexibility
  - We always consider the best interests of the client
- For more information about this exciting opportunity and to learn more about ISO 50001, please contact PJR at 1-800-800-7910.



[www.pjr.com](http://www.pjr.com)





## PJR and ISO 50001



### Coming Soon!

- Three ways to enhance your EnMS knowledge:
  - Accredited ISO 50001:2011 Lead Auditor Course (face to face)
  - 3 day ISO 50001:2011 Internal Auditor Course (online)
  - 1 day ISO 50001:2011 Lead Auditor Exam Preparation Course (online)





## Networking



- PJR is looking to establish a network with those interested in working with PJR in the development of our ISO 50001 program. Network to include:
  - Energy Consultants
  - Auditors
  - Technical Experts
  - Academia
  - Local, municipal, state and federal government organizations
  - Industry Groups
- If you are interested, please submit your request to:

Scott T. Jones  
Environmental Specialist  
Perry Johnson Registrars, Inc.  
Phone: (248) 358-3388 Ext 4761  
Mobile: (248) 302-3707  
Email: [stjones@pjr.com](mailto:stjones@pjr.com)





## Resources for Establishing and Implementing an EnMS



- <http://www1.eere.energy.gov/energymanagement/>
  - Information and resources provided by the U.S. Department of Energy (DOE)
- ❖ <https://save-energy-now.org>
  - ❖ Step by step guide for establishing and implementing an EnMS
  - ❖ Provides templates for requirements of the standard
- <http://www.iso.org>
  - Information on purchasing the ISO 50001:2011 standard
- <http://www.energystar.gov>
  - Provides guidelines for Energy Management
- [http://www.rabqsa.com/qb\\_iso50001.html](http://www.rabqsa.com/qb_iso50001.html)
  - Auditor competency requirements and exam details



www.pjr.com



# Questions



Please type any questions you may have.



[www.pjr.com](http://www.pjr.com)



## ISO 50001 EnMS Webinar



For additional technical information, please contact  
**Scott Jones.**

Scott Jones  
EnMS Program Manager  
Perry Johnson Registrars, Inc.  
Phone: (248) 358-3388 Ext 4761  
Mobile: (248) 302-3707  
Email: [stjones@pjr.com](mailto:stjones@pjr.com)

For a quote, please contact  
the sales department at:  
1-800-800-7910

