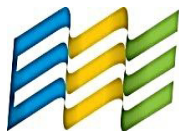




# ENERGY STAR for Industry

E3 Energy Management Web Conference  
October 25, 2012

Walt Tunnessen  
ENERGY STAR  
National Program Manager  
US EPA



**E3: ECONOMY · ENERGY · ENVIRONMENT**

SUPPORTING MANUFACTURING LEADERSHIP THROUGH SUSTAINABILITY

Learn more at [energystar.gov](http://energystar.gov)

# What is ENERGY STAR?



- Voluntary Government Partnership Program
- Established by EPA in 1992 to help address climate change
- Focused on the energy efficiency of:
  - Products
  - Homes
  - Buildings & Industrial Plants
  - Organizations
- The national symbol for energy efficiency



# What we believe

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Effective energy management practices

+

Strong energy programs

+

Organizational culture focused on efficiency

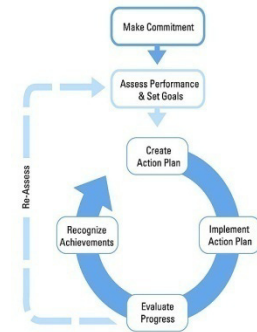
= Continuous energy performance improvement

# ENERGY STAR for Buildings & Plants



ENERGY STAR works with companies to develop stronger energy management programs by offering:

- ✓ Energy Management Guidance
- ✓ Energy Program Resources
- ✓ Benchmarking & Tacking Tools
- ✓ Recognition Opportunities for Achievements
- ✓ Sector Specific Tools & Resources
- ✓ Instructive Partnership Program



**ENERGY STAR helps companies build a culture focused on efficiency.**

# Energy Management Guidance



ENERGY STAR offers proven guidance for developing strong energy management programs. Key tools include:

## Guidelines for Energy Management

- Provides a framework for how to implement an energy program; based on a “plan-do-act-check” approach.

## Energy Program Assessment Matrix

- Evaluates energy management practices and program to identify gaps.

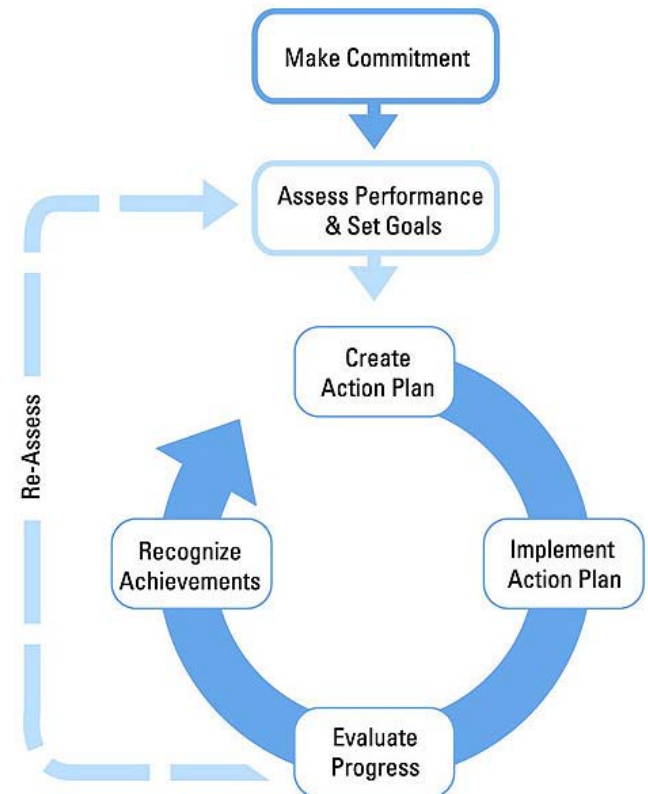
## Facility Energy Assessment Matrix

- Evaluates facilities energy management practices to identify gaps.

## Energy Strategy for the Road Ahead

- Helps company develop long-term strategies for addressing energy risks to the business.

## ENERGY STAR Guidelines for Energy Management



# Energy Program Resources



ENERGY STAR offers tools and resources to support energy programs:

## Teaming Up to Save Energy

- Guidance on how to build an energy team.



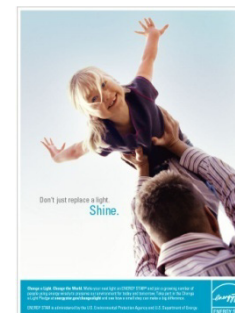
## Partner Networking Web Conferences

- Monthly series showcasing successful energy management strategies among the partnership.



## Employee Engagement Materials

- Information, posters, literature, and other resources to help build energy awareness among employees.

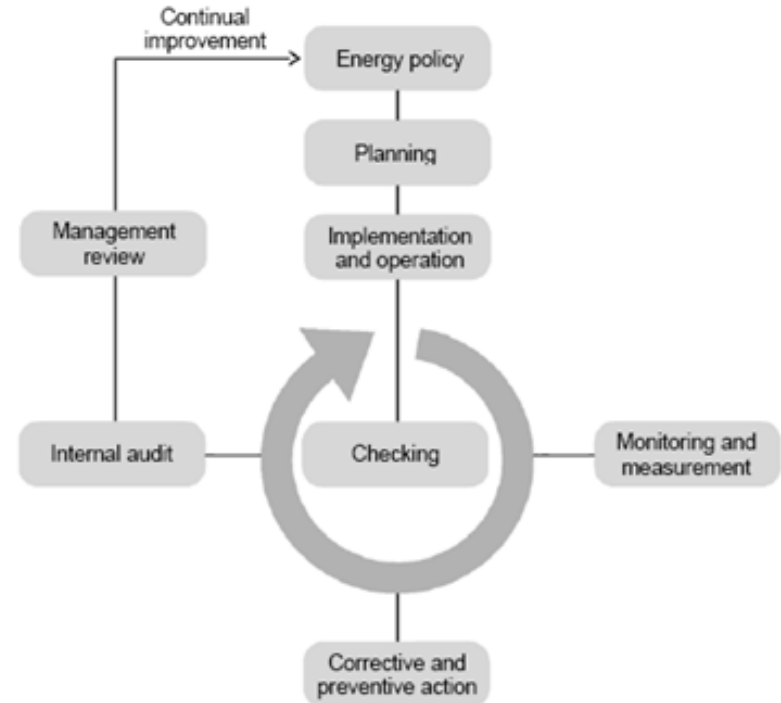
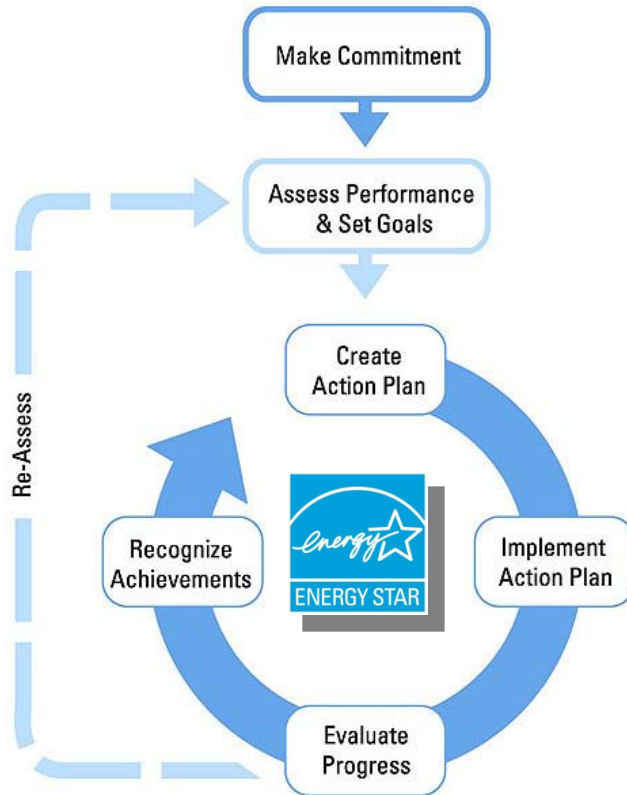


# ENERGY STAR & ISO 50001



Guidelines for Energy Management

ISO 50001



# Differences



	ENERGY STAR	ISO 50001
Certifies energy performance	Yes	No
Certifies management practices	No	Yes
Offers energy management tools	Yes	No
Requires documentation of management processes	No	Yes
Provides guidance on energy management	Yes	No
Requires staffing at site seeking certification	No	Yes
Requires top management to be engaged with energy management	For partnership only	Yes
Cost for certification	Free to low cost	\$\$\$ (15,000 & up)*



# Energy Management Pathways

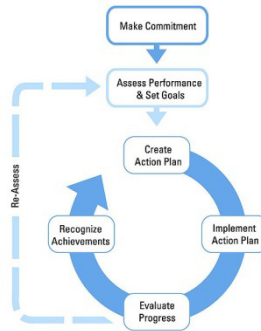
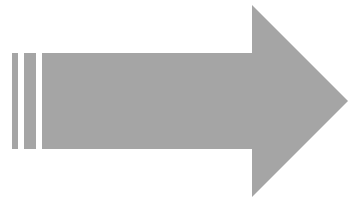


Interested in energy management systems?

Wants a "standardized" approach?

Wants to demonstrate conformance to ISO

Encourage Certification



Use 50001 as a reference



Introduce the ENERGY STAR tools

Wants to show that energy management is important

Recommend ENERGY STAR Partnership

Wants recognition of energy performance

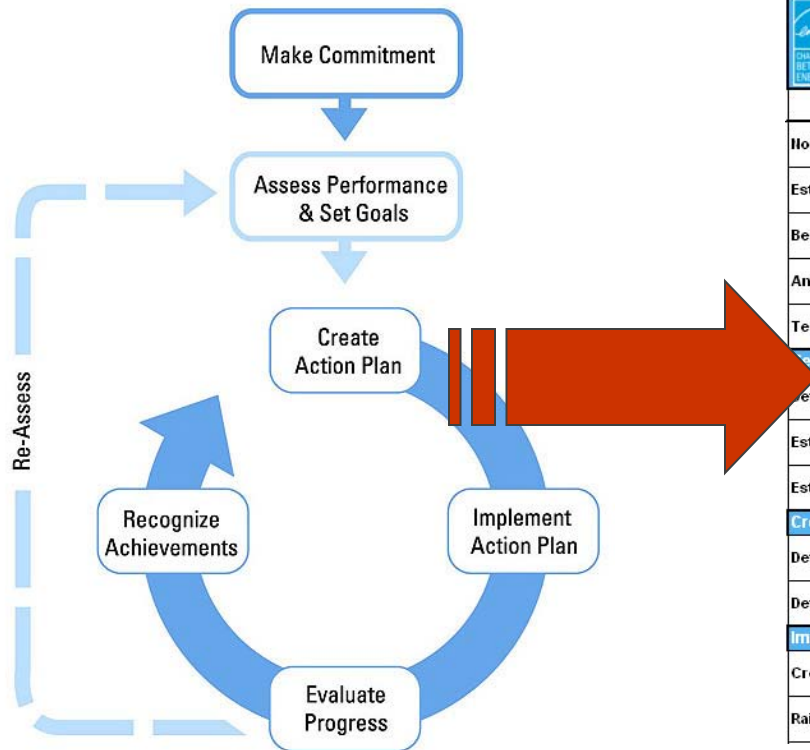
Encourage ENERGY STAR recognitions



# Energy Management Starting Point



## Energy Program & Facility Assessment Matrixes



ENERGY STAR <sup>®</sup> Guidelines for Energy Management Matrix			
	Little or no evidence	Some elements/degree	Fully implemented
<b>Normalize</b>	Not addressed	Some unit measures or weather adjustments	All meaningful adjustments for corporate analysis
<b>Establish baselines</b>	No baselines	Various facility-established	Standardized corporate base year and metric established
<b>Benchmark</b>	Not addressed or only same site historical comparisons	Some internal comparisons among company sites	Regular internal & external comparisons & analyses
<b>Analyze</b>	Not addressed	Some attempt to identify and correct spikes	Profiles identifying trends, peaks, valleys & causes
<b>Technical assessments and audits</b>	Not addressed	Internal facility reviews	Reviews by multi-functional team of professionals
<b>Set Performance Goals</b>			
<b>Determine scope</b>	No quantifiable goals	Short term facility goals or nominal corporate goals	Short & long term facility and corporate goals
<b>Estimate potential for improvement</b>	No process in place	Specific projects based on limited vendor projections	Facility & corporate defined based on experience
<b>Establish goals</b>	Not addressed	Loosely defined or sporadically applied	Specific & quantifiable at various organizational levels
<b>Create Action Plan</b>			
<b>Define technical steps and targets</b>	Not addressed	Facility-level consideration as opportunities occur	Detailed multi-level targets with timelines to close gaps
<b>Determine roles and resources</b>	Not addressed	Informal interested person competes for funding	Internal/external roles defined & funding identified
<b>Implement Action Plan</b>			
<b>Create a communication plan</b>	Not addressed	Tools targeted for some groups used occasionally	All stakeholders are addressed on regular basis
<b>Raise awareness</b>	No overt effort made	Periodic references to energy initiatives	All levels of organization support energy goals

Used to evaluate energy program practices & identify gaps

# Benchmarking & Tracking Tools



ENERGY STAR offers tools to help companies benchmark and track their energy performance:

## Plant Energy Performance Indicators (EPIs)

- Scores the energy performance of specific industrial sites against the sector nationally. Spreadsheet based tool.

## Energy Tracking Tool


- Helps establish production based energy intensity metrics, set goals, and track performance. Spreadsheet based tool.

## Portfolio Manager

- Scores the energy performance of selected commercial buildings and warehouses. Web-based energy tracking system for buildings.

[www.energystar.gov/industrybenchmarkingtools](http://www.energystar.gov/industrybenchmarkingtools)

# Plant Energy Performance Indicators



## Energy Performance Indicator for Automobile Assembly Plants

Version 2r2 (11/9/2010) Back

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### Plant Characteristics

<b>SIC Code:</b> 3711 (Motor Vehicle Assembly)	<b>Current</b>	<b>Reference</b>
<b>ZIP Code:</b> 21737	Fredrick	Fredrick
<b>Location:</b> Frederick, MD	<b>Select Year:</b> 2012	<b>Select Year:</b> 2010
<b>30 Year HDD:</b> 4,707	<b>Production (# of vehicles):</b> 40,000	<b>Production (# of vehicles):</b> 40,000
<b>30 Year CDD:</b> 1,137	<b>Line speed (vehicles per hour):</b> 20.0	<b>Line speed (vehicles per hour):</b> 20.0
<b>Notes:</b> Use this space to describe the source of HDD/CDD data used to compute the EPI score.	<b>Capacity (# of vehicles):</b> 68,320	<b>Capacity (# of vehicles):</b> 68,320
	<b>% Utilization (production/capacity):</b> 59%	<b>% Utilization (production/capacity):</b> 59%
	<b>HDD:</b> 4,500	<b>HDD:</b> 4,300.0
	<b>CDD:</b> 1,200	<b>CDD:</b> 1,500.0
	<b>Wheelbase of the largest vehicle produced (inches):</b> 36.0	<b>Wheelbase of the largest vehicle produced (inches):</b> 36.0
	<b>Is this plant air-tempered?:</b> yes	<b>Is this plant air-tempered?:</b> yes

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### Energy Consumption

	<b>Electricity</b>	<b>Gas</b>	<b>Distillate Oil</b>	<b>Residual Oil</b>	<b>Coal</b>	<b>Other</b>
<b>Select Units</b>	MWh	MMBtu	Gallons	Gallons	Short Tons	MMBtu
<b>Fredrick (2012)</b>	Annual Purchases: 30,000	17,500				
	Annual Cost (\$): Enter cost	Enter cost				
<b>Fredrick (2010)</b>	Annual Purchases: 30,000	35,000				
	Annual Cost (\$): Enter cost	Enter cost				

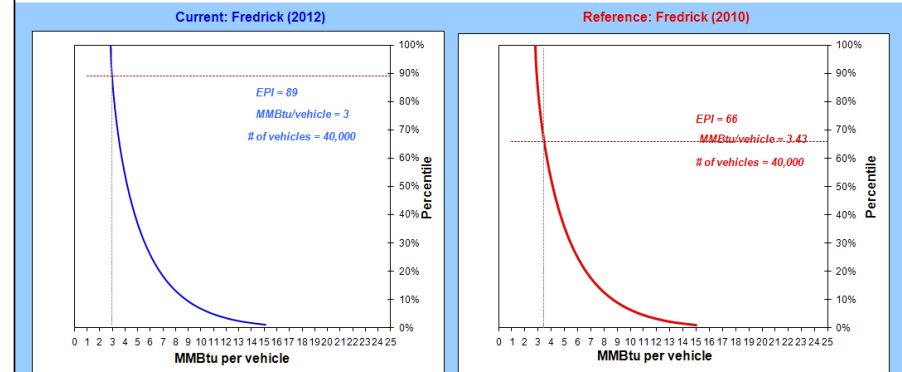
\* Entering cost data is optional and does not impact the computation of the EPI score

Data in:  
Production, plant  
& energy

Results out:  
Comparative metrics,  
Energy Performance  
Score

### Total Site Energy Results

	<b>Electric</b>	<b>Fuels</b>	<b>Current</b>	<b>Reference</b>	<b>Average</b>	<b>Efficient</b>
			<b>Fredrick (2012)</b>	<b>Fredrick (2010)</b>	<b>Fredrick (2012)</b>	<b>Fredrick (2012)</b>
Energy Performance Score			89	66	50	75
Annual Energy Cost (\$/year)			\$0	\$0	\$0	\$0
Number of Vehicles			40,000	40,000	40,000	40,000
\$ Energy/vehicle			0.00	0.00	0.00	0.00
Energy Intensity (MMBtu/vehicle)			3.00	3.43	4.20	3.28



# Energy Tracking Tool



- Basic energy tracking tool
- Spread sheet based
- Intended for manufacturing sites
- Tracks energy, energy costs, & production
- Fairly flexible & customizable
- Provides various energy & GHG metrics
- Designed to encourage goal setting
- Designed to support sites take the Challenge for Industry
- Dashboard feature
- Generates Reports

[Main Menu](#)   [Reduction Goal](#)   [Report Control Panel](#)   [Show/Hide Instructions](#)

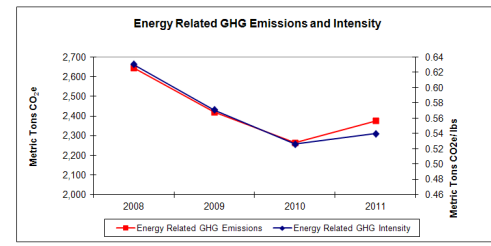
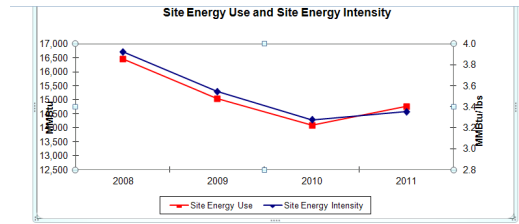
Current Year: 2011   Current Month: Full Year

Select View: Source Energy Consumption

Legend:  
● = On Track to Meet Goal  
● = Almost On Track to Meet Goal (below "On Track to Meet Goal" by up to 5%)  
● = Not On Track to Meet Goal

Your organization-wide energy goal is a 10% reduction in Intensity terms by 2010

Source Energy Use (MMBtu)						
	Current Year (2011) using Baseline Intensity	Current Year (2011)	Goal Year (2010)	Energy Saved over the Last 12 Months Compared to 2008	Energy Intensity Reduction Goal	Energy Intensity Reduction Achieved
Organization	64,496	51,405	55,916	13,092	10.0%	20.3% <span style="color: green;">●</span>
Kilbourne	32,184	27,530	28,307	4,654	10.0%	14.5% <span style="color: yellow;">●</span>
San Diego	32,113	23,875	27,568	8,239	10.0%	25.7% <span style="color: green;">●</span>



# ETT or Portfolio Manager?

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ETT – tracks BTU/production


PM – tracks KBTU/Sq Ft

- Where are the biggest energy loads?
- Does production drive energy use?
- Is weather a key driver of energy use?

“**60% rule**” – If 60% of energy loads are tied to industrial processes, the site should use a production based EUI metric. (MMBTU / lbs of product)


# ENERGY STAR Industrial Focuses



Focus	Peer Exchange Network	Industrial Energy Guide	Energy Performance Indicator	
<b>Cement Manufacturing</b>	★	Published	Released 2 <sup>nd</sup> Version – Fall 2010	✓
<b>Concrete</b>	★	In development	In development	
<b>Commercial Baking</b> • Cookies & Crackers • Breads & Baked Goods	★	Draft being reviewed	Released In development	✓
<b>Corn Refining</b>	★	Published	Released 2 <sup>nd</sup> Version – Spring 2012	✓
<b>Dairy Processing</b> • Fluid dairies • Cheesemaking • Ice Cream	★	Published	Draft Released	
<b>Food Processing</b> • Juice • Potato Products • Tomato Products	★	Published	Released Released Draft	✓
<b>Glass Manufacturing</b> • Fiberglass • Flat glass • Container glass	★	Published	Fall 2010 Released Released	✓

# ENERGY STAR Industrial focus – cont'd



Focus	Peer Exchange Network	Industrial Energy Guide	Energy Performance Indicator	
<b>Motor Vehicle Manufacturing</b> <ul style="list-style-type: none"> <li>• Automobile Assembly Plants</li> <li>• Power train Plants</li> </ul>	★	Published	2 <sup>nd</sup> Version Released In development	✓
<b>Metal Casting</b>	★	In processes	Exploring Options	
<b>Petrochemical Manufacturing</b>	★	Published	Draft	
<b>Petroleum Refining</b>	★	Published	Private system recognized by EPA	✓
<b>Pharmaceuticals</b>	★	Published	Released	✓
<b>Printing</b>	★	In processes	Exploring Options	
<b>Pulp &amp; Paper</b> <ul style="list-style-type: none"> <li>• Integrated Mills</li> <li>• Pulp Mills</li> </ul>	★	Published	Spring 2012 Released	✓
<b>Steel</b> <ul style="list-style-type: none"> <li>• Primary Steel</li> <li>• Mini Mills</li> </ul>	★	In processes	In development	



# SMM Energy Resources



## Small and Medium Sized Manufacturers' Guide to Energy Management

U.S. ENVIRONMENTAL PROTECTION AGENCY

[Home](#) > [Buildings & Plants](#) > [Industry](#) > [Small and Medium Sized Manufacturers' Guide to Energy Management](#)

## Small and Medium Sized Manufacturers' Guide to Energy Management

Finding energy savings starts by making energy management a priority.

Sustaining those savings and driving further reductions requires building energy management into your company's culture.

ENERGY STAR can help you get started regardless of the size of your company.



Understand the Basics of Successful Energy Management

Scale Energy Management to your Company

Begin Finding Energy Savings

Locate Resources and Assistance Programs to Offset Costs

Communicate to Employees and Customers

Understand the Basics of Successful Energy Management

Scale Energy Management to Your Company

Begin Finding Energy Savings

Locate Resources & Assistance Programs to Offset Costs

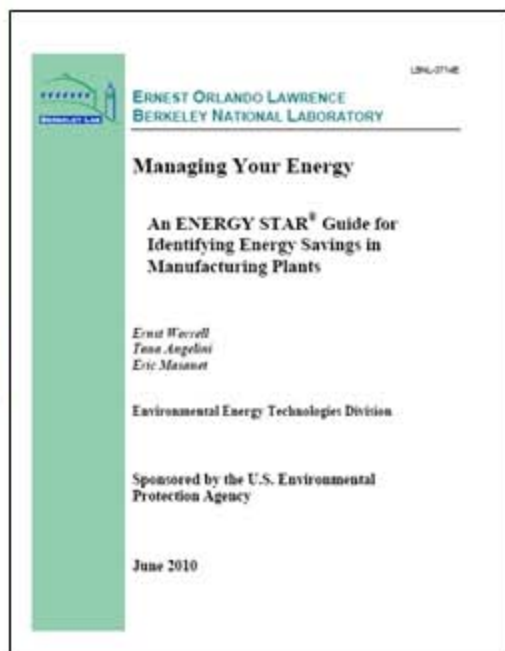
Communicate to Employees and Customers

Join ENERGY STAR

# Begin Finding Energy Savings

Is capital tight? Better operating practices and equipment tune-ups help many manufacturers achieve significant energy savings – at little cost.

Start saving now. Read our easy-to-use guide to identify energy saving opportunities that can be made in your plant.



[Managing Your Energy: An ENERGY STAR Guide for Identifying Energy Savings in Manufacturing Plants](#)  (407KB)

Need some quick tips? Use our animated tour of energy savings in a manufacturing plant. Share the with your employees to get them thinking about energy savings, too!




Tour a manufacturing plant and find ways to save energy by clicking on the icon above!

Get started on finding savings. Use the checklists below to begin to identify energy savings in your plant.

## Lighting

Lighting is a significant energy use and cost for most manufacturers, and an area with many opportunities for savings.

	Lighting Focus Area	Action Items
✓	Are unoccupied areas lit?	See Section 4.1 in <a href="#">Managing Your Energy: An ENERGY STAR Guide for Identifying Energy Savings in Manufacturing Plants</a> 
✓	Are lights left on during non-work hours?	
✓	Are parts of the facility over-lit?	
✓	Is older, inefficient technology in use?	

# Recognition is a tool!



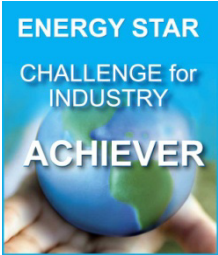


- **Creates a “prize” for good energy management**
- **Helps to engage and motivate people**
- **Raises awareness about energy efficiency opportunities & responsibilities**
- **Builds support for energy initiatives**



# ENERGY STAR Recognition

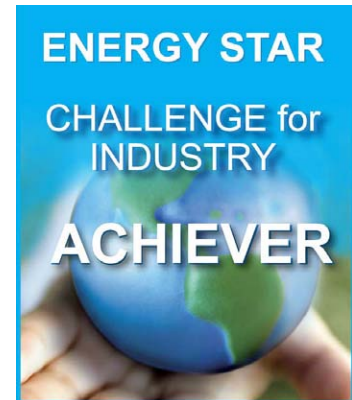
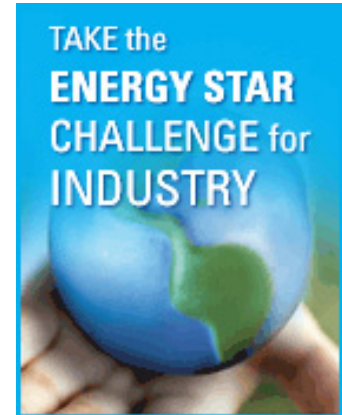


Category	Recognizes	Who can participate
	<p>World-class corporate energy management programs.</p>	<p>Companies that are ENERGY STAR Partners.</p>
	<p>Best-in-class energy performance .</p>	<p>Only plants / sectors where an ENERGY STAR energy performance rating has been created.</p>
	<p>Plants that reduce their energy intensity by 10% within 5 years or less</p>	<p>Any manufacturing plant.</p>

# Challenge for Industry

Challenges industry to:

- Achieve a 10% reduction in annual energy intensity achieved in 5 years or less.
- Based on an intensity metric selected by the site.
- Calculated against an internal baseline at an industrial site.



# How It Works



Sites participate by:

- Selecting an **energy intensity metric**.
- Establishing a **baseline**.
- Creating an **Energy Tracking Plan** *if* site does not have existing data management procedures.
- Setting a **10% improvement goal**.
- **Signing-up** for the Challenge for Industry
- **Verify** savings if goal is achieved.

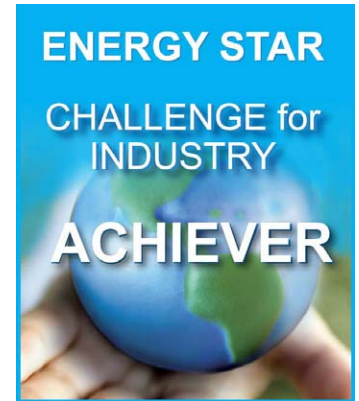




# Results to date



- Over 530 Sites have taken the Challenge for Industry
- 172 Sites have achieved the Challenge
- Over 33 Trillion BTUs saved!
  - = Enough energy to power @ 750,000 homes for 1 yr.
- Over 1.8 Million MTCO<sub>2</sub>e avoided!
- 20% average reduction in 1.5 years
- Multiple groups promoting the Challenge



The Challenge for Industry was formally launched in May 2010.  
Estimates current as of October 2012.

# ENERGY STAR Partnership

Join at the company level.

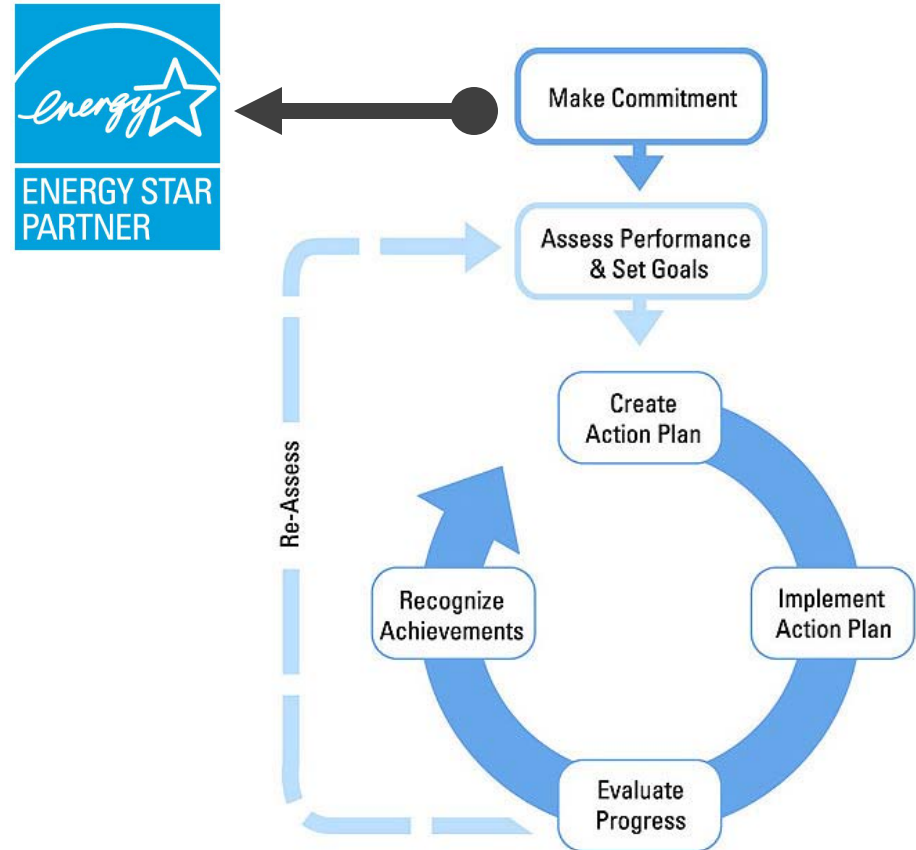
Partnership is not a legally binding commitment or contract with EPA.

The ENERGY STAR Partnership letter is an energy management tool:

- Kick off energy initiative, or
- Take existing program to next level.

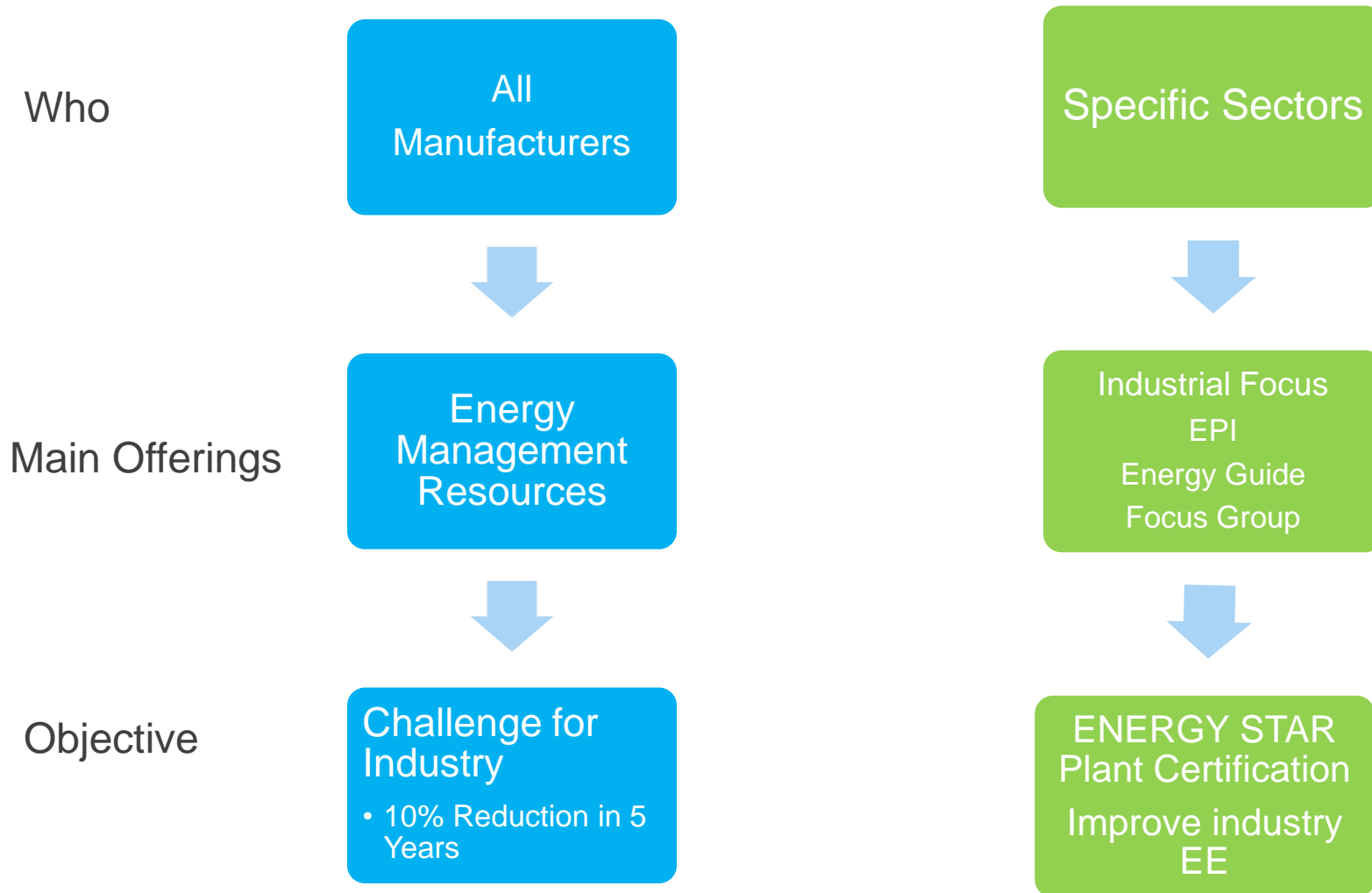
Partners commit to improve energy performance, but:

- ✓ No reporting.
- ✓ No mandatory goals.





# ENERGY STAR for Industry





# Questions / Comments

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## Contact Information:

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**202 – 343- 9965**