

**EASTMAN**



# Leveraging Energy Management to Address Water Conservation

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- Fortune 500 specialty materials company with 2017 revenue of ~\$9.5B
- Global manufacturer and marketer of advanced materials and specialty additives
- Four business segments
- Global team of ~14,500
- Serving customers in >100 countries

A global, industry **leader**

**EASTMAN**



## Additives & Functional Products

- 2017 sales revenue: \$3.3 B
- 35% of total Eastman sales



## Advanced Materials

- 2017 sales revenue: \$2.6 B
- 27% of total Eastman sales



## Chemical Intermediates

- 2017 sales revenue: \$2.7 B
- 29% of total Eastman sales



## Fibers

- 2017 sales revenue: \$852 M
- 9% of total Eastman sales

A diverse and attractive **portfolio** of businesses

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# Drivers to address water issues

- Water has become a global macro trend
- Future supply (quantity and quality) concerns
- Customer inquiries
- Sustainability scores (i.e. CDP)
- Closing the gap in our sustainability story
- Public expectations of a large chemical company

# Challenges

- Lack of data
- Low interest in manufacturing, particularly at sites with readily available water
- Need water treatment experience to evaluate water reuse opportunities
- Permit limits

# Initial Objective

Develop an understanding of water issues and properly identify and manage water risks and opportunities so that Eastman is positioned to respond to manufacturing and customer needs and escalating issues.



# Preliminary work to understand the problem and the potential

- Identify sites in water stressed areas
  - World Resources Institute's Aqueduct Water Risk Atlas
  - World Business Council for Sustainable Development's Global Water Tool
- Conduct site specific pilot
  - Selected because of cost of purchased water
  - Relied heavily on water treatment vendors for analytical information
  - Used as a training opportunity
  - Identified projects (examples):
    - Create closed loop systems rather than once-through cooling
    - Repair leaks
    - Study to determine optimum time to wash product
    - Eliminate cooling water to a building that is mostly empty

# **Building on the energy management program**

# Strategy

## Employee awareness

- Energy program was originally only project-focused
- Program expanded to include employee engagement and awareness
- Energy fairs
  - Local utilities and retail stores manned booths showcasing energy efficiency products
- Green Teams
  - Geared toward sharing information with employees that have personal interests in preserving the environment



# Strategy - Water

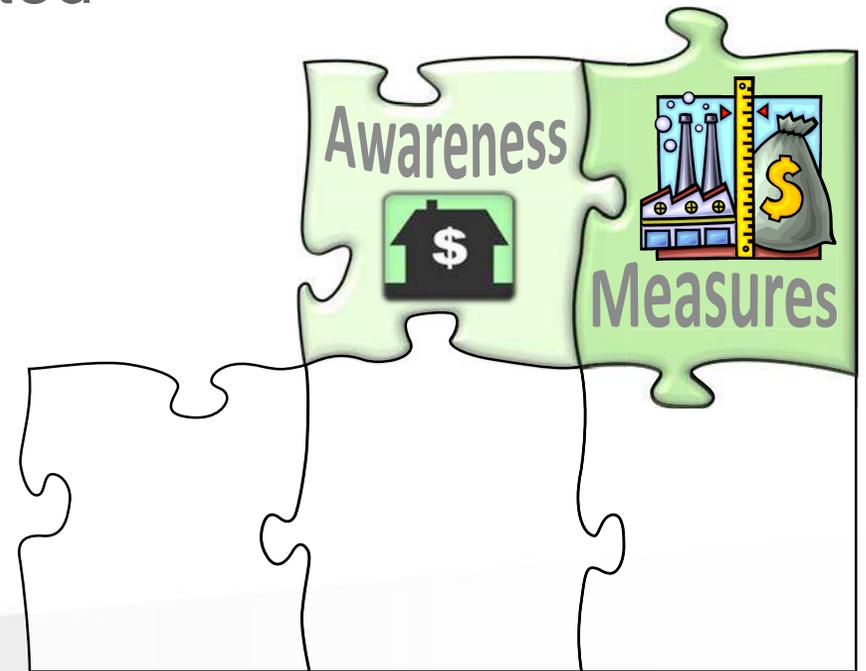
- Some may have to be convinced that it really is an issue
  - Water is plentiful and cheap in some parts of the world
- Some of the same methods of communication can be used
- Employees can be asked to relate issues at home to issues at work
- The same employees who are interested in conserving energy will likely be interested in saving water
- External surveys may enhance discussion and raise awareness



# Strategy

## Measures

- Critical to have a well-defined, auditable measure with meaningful goals
- **Water** measures could be based on amount withdrawn, consumed, or intensity or limited to specific sites
- Measures may establish targets (quantitative) or goals (qualitative)
- Measures may be more important for individual sites rather than the entire company

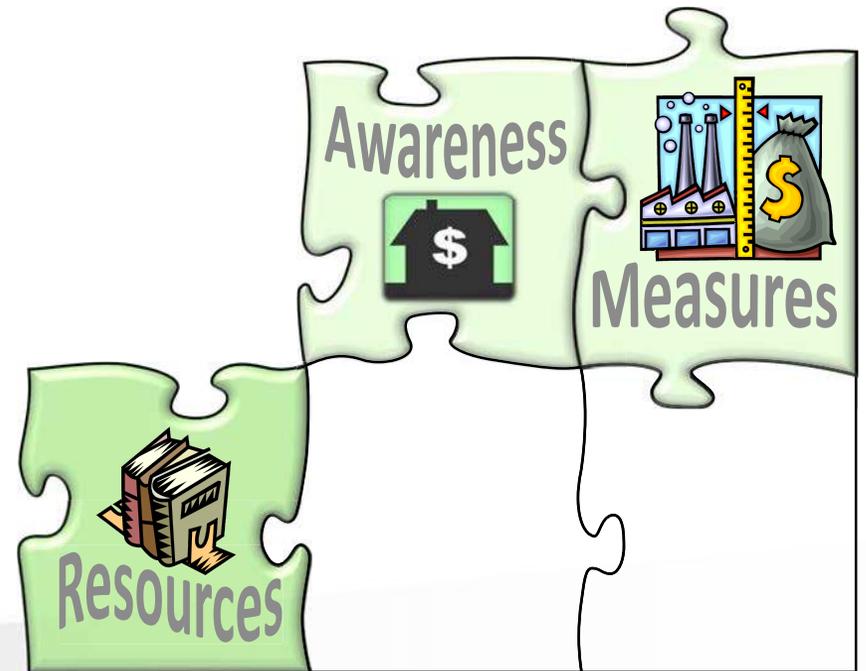


# Strategy

## External resources

- ENERGY STAR®
  - ENERGY STAR Guidelines for Energy Management used to identify gaps in the existing program
  - Review of the existing corporate energy program by knowledgeable, outside individuals
  - Available **WaterSense** resources
- DOE
  - On-site training
  - On-site assessments of utility systems
  - DOE **Water** Profiler

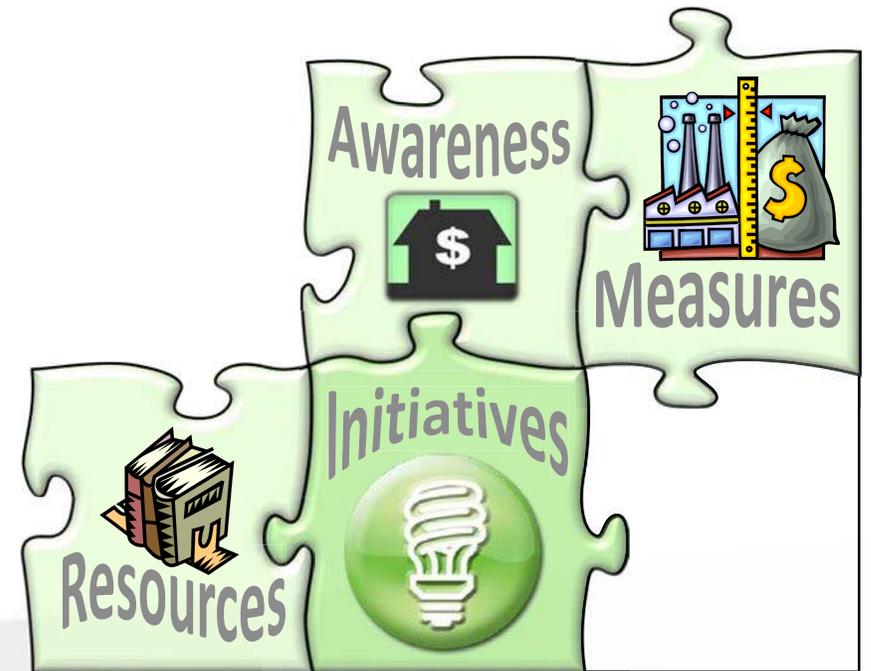
Both ENERGY STAR and the DOE hold meetings where partner companies share information both through formal presentations and networking opportunities



# Strategy

## Energy initiatives

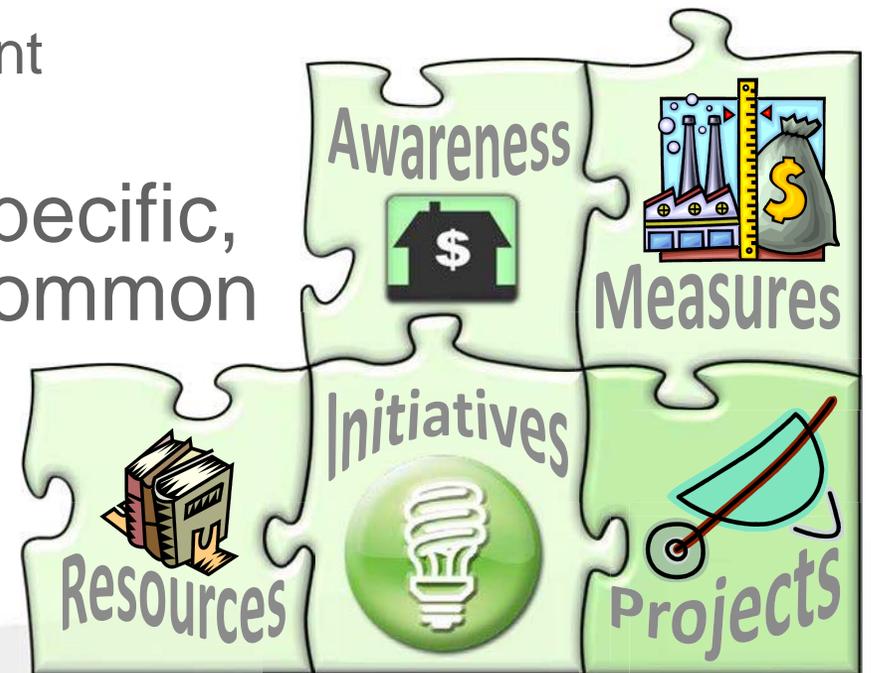
- Potential identified for a centralized, standardized approach for other initiatives
  - Steam traps
  - Motors
  - HVAC
  - **Condensate Return**
- Evaluation
  - Questionnaire to assess the progress of each site in each area
  - Results serve to identify common areas of concern, needs for improvements, and best practices at individual sites for sharing



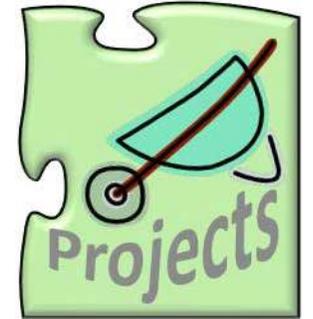
# Strategy

## Energy efficiency projects

- Database of potential projects is continually updated
- Best projects are identified
- Typical projects
  - Upgrades to more energy-efficient equipment
  - Heat recovery opportunities
- Project ideas are usually process-specific, but there is some potential to find common opportunity across the company
- \$8M annual budget



# Strategy - Water



- Add water conservation to the energy surveys
  - Check meter accuracy and location
  - Capture project ideas in the energy project database for future consideration
- Consider water conservation in design
- Look for opportunities for water reuse (much like heat integration)

**Challenge:** Energy projects often have good returns,  
water projects mostly do not

## American Chemistry Council Energy Efficiency Awards – Example Projects

- Hot Water Recycle Project – Cooling water which was previously being sent to the sewer is now being recycled for use as feed to the washing process.
- RB Condensate Coil Heat Recovery – A reduction in dryer steam consumption was achieved by installing a new heat recovery system designed to re-use waste condensate which was previously being sent to the sewer.
- Installation of a flash system that utilized 600 psig condensate from columns eliminated sending 600 psig steam through valves to produce 300 psig steam.

# Roles and responsibilities

## Environmental Affairs

- Regulatory liaison
- Water measures
- Water risk tools

## Energy Program

- Increase awareness
- Water reuse of appropriate source
- Infrastructure
- Water conservation
- Establish goals

## Involve other organizations

- Sustainability
- Public and Community Affairs
- Corporate Communications
- LCA Team

# Next Steps

- Complete second water conservation survey
- Working with Procurement to get more water cost data to direct efforts
- Developing a water measure and targets
- Adding water conservation to energy surveys and the engineering design checklist

# Summary

- Many elements of an energy management program can be applied to natural resources other than energy
- Eastman is leveraging its energy management program to address water conservation
- Several internal and external drivers are escalating the importance of water
- Eastman is currently focused on:
  - Identifying water conservation projects
  - Identifying water risks
  - Increasing employee awareness
  - Establishing water-related goals, targets and strategies

# Questions?



Energy efficiency.  
**It's only natural.**

Eastman is proud to be an **ENERGY STAR® Partner of the Year** for the seventh year in a row for our commitment to **natural resource** management.

 **ENERGY STAR**  
AWARD 2018  
**PARTNER OF THE YEAR**  
Sustained Excellence

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