

US EPA ARCHIVE DOCUMENT

Energy Management Workshop



October 5, 2010

Las Vegas, NV



Sponsors



U.S. EPA, Region 9

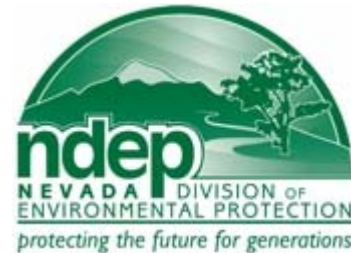
WaterSmart 2010

Nevada Energy

Southern NV Water Authority

NV Water Environment Association

NV Dept of Environmental Protection



Agenda

- Introductions
- Overview
- Four Sessions
 - Session 1: Is Something Broke? (PLAN)
 - Session 2: Finding Opportunities (PLAN)
 - Session 3: How to Fund Opportunities (DO)
 - Session 4: Ready to Use Energy Technologies
 - (CHECK and ACT)
- Lunch : Minden-Gardnerville, Millbrae, and SNWA Renewable Energy Experiences

**How much energy do we
use and where do we
use it?**





Energy Use and Water Utilities

Water and Wastewater treatment represents ~3% of the nation's energy consumption

- \$4 billion spent annually for energy
- Equivalent to ~56 billion kilowatt hours (kWh)
- Equates to adding ~45 million tons of greenhouse gases

Energy represents the largest controllable cost of providing water or wastewater services to the public

- 16,583 municipal treatment plants in the US
- Energy represents 25-30% of total plant O&M
 - Raw sewage pumping (12%)
 - Aeration (25%)
 - Solids handling (30%)
 - Lighting, heating, AC and other (6%)
- As energy costs rise, operating costs rise



Energy Reduction at Water Utilities

Water and Energy Efficiency at Utilities =

- Reduced energy usage
- Reduced operating costs
- Reduced climate impacts / carbon footprint
- Sustainability of water infrastructure
- Water savings



Why Focus on Energy Management?

- Energy issues are here to stay and will only get more serious—no quick fixes!
- Individual projects are fine, but something is needed to pull it all together (a system)
- Systematic management will ensure continuing focus on energy efficiency
- The Plan-Do-Check-Act approach has worked in many different sectors
- Enables consistent, organized, and integrated management of utility operations

What Energy Challenges Do You Face Today?

- What have you done already?
- What is missing?





Managing to Maximize Energy Efficiency

Designed to help utilities:

- Systematically assess current energy costs and practices
- Set measurable performance improvement goals
- Monitor and measure progress over time

Uses a management system approach for energy conservation, based on the successful Plan-Do-Check- Act process [based on Environmental Management Systems (EMS)]

Ensuring a Sustainable Future: An Energy Management Guidebook for Wastewater and Water Utilities



JANUARY 2008



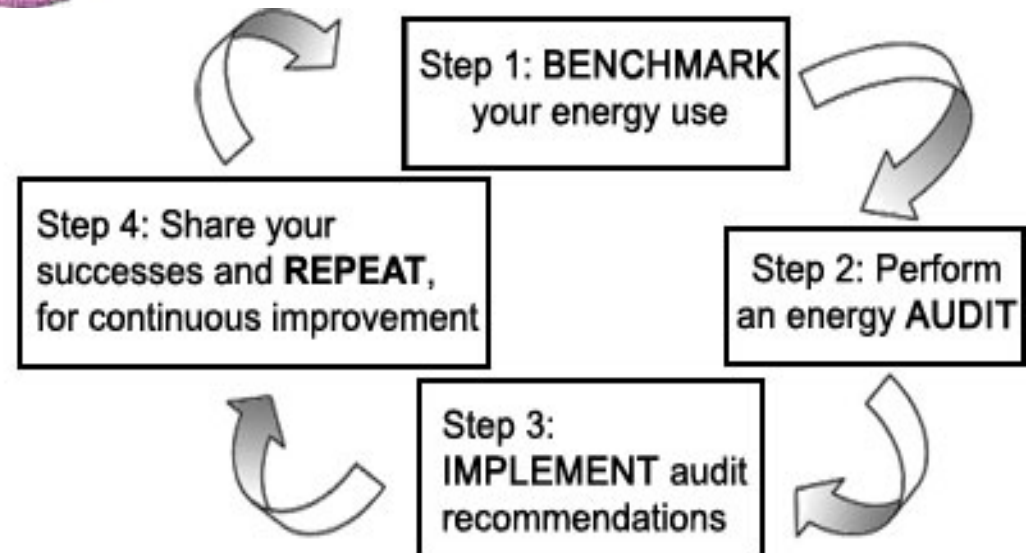
Plan Do Check Act



The PLAN-DO-CHECK-ACT Framework



**CONTINUOUS
IMPROVEMENT**





Plan

- 1: Getting Ready
- 2: Assessing Current Energy Baseline
- 3: Establishing Energy Vision & Priorities
- 4: Identify Objectives and Targets



Do

- 5: Implement Energy Improvement Programs (and a Management System to Support Them)



Check & Act

- 6: Monitor & Measure Energy Improvement Management Programs
- 7: Maintain, Improve & Communicate

- **PLAN:**

Say what you do.

- **DO:**

Do what you say.

- **CHECK & ACT:**

Verify, Maintain and Continue



Ensuring a sustainable future requires a commitment to continuous improvement



Plan

- Get Management Support
- Develop Cross-Agency Team
- Conduct Energy Audit
- Prioritize Projects from Audit Results
- Consult Other Agencies
- Set Objectives and Targets
- Define Performance Measures (so you can “Check” success later)



Do

- Create Action Plan/Initiate Projects
- Locate Sources of Funding
- Apply for Funding
- Design Project (if applicable, conduct energy audit)
- Develop Energy Management SOPs after Construction

Plan

- Get Management Support
- Develop Cross-Agency Team
- **Conduct Energy Audit**
 - Typically identifies capital and operational opportunities and calculates payback period
 - Keep in mind, audit can be conducted on designs – very effective
 - Many operational improvements can be made with little-to-no upfront capital costs
 - Time of operation, load demand contracts, unnecessary equipment, etc.

Plan - Where Do You Start?

- **Prioritize Projects from Audit Results**

Low hanging fruit?

Projects with rebates?

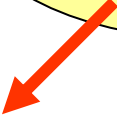
Low cost projects?

What the GM wants?



Select Ranking Criteria

You determine these criteria



ACTIVITY	Reg	Impact	Toxic	Easy	ROI	Cost	Total	Sig?

Key: 5 = high 3 = moderate 1 = low 0 = N/A

[illegible]



Worksheet Exercise

How do we move into action?



Definitions: Objectives and Targets

- **Objectives**: goals that are consistent with the organization's policy
- **Targets**: performance measures related to and supporting a specific objective.
 - Targets should be **quantitative, realistic, measurable**

**What are you going to do,
by how much, by when?**

Turning objectives into action

Energy Objectives

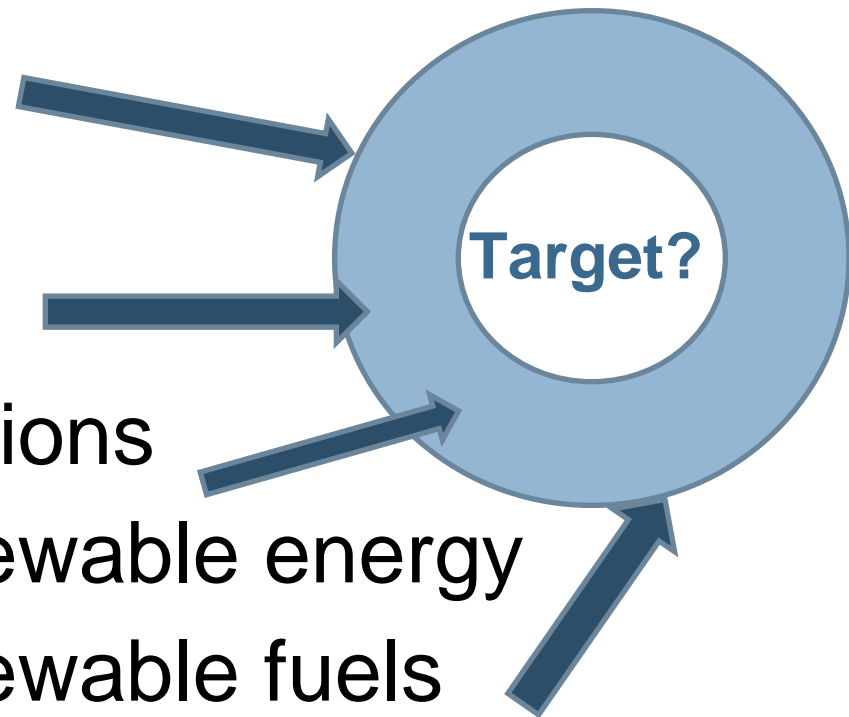
Reduce energy cost

Reduce fuel use

Reduce GHG emissions

Increase use of renewable energy

Increase use of renewable fuels



Examples of Objectives & Targets

- Reduce overall energy cost by 10% by January 2011
- Increase energy purchased or generated from renewable sources of energy by 10% by 2012
- Reduce GHG emissions 20% by 2015

OBJECTIVE	TARGET	PERF. INDICATOR
Reduce Energy use	Reduce overall energy use by 10% by Jan 2011	kWh

Why Performance Measures Matter

- How well are you doing?
- How do you know how well you are doing?
- How can you demonstrate to others how well you are doing?

**What gets measured gets managed;
...and...**

What gets managed gets DONE.

Moving to Action with Energy Improvement Management Programs

- What to do to reach the target
- Who will do it
- When to do it by
- What resources or level of effort are needed

Good Project Management!
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Are We There Yet?



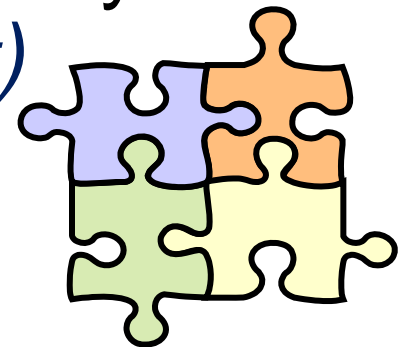


Plan (Revisiting)

- Get Management Support
- Develop Cross-Agency Team
- Conduct Energy Audit
- Prioritize Projects from Audit Results
- Consult Other Agencies
- Set Objectives and Targets
- Define Performance Measures (so you can “Check” success later)

Putting it all together....

- Congratulations! Your utility just got a large energy grant, the \$\$ to be spent over the next 2 yrs to develop a sustainable energy management effort that can produce energy improvements now and on into the future. You have to write a **program plan** for how you will move forward. *(handout)*





- Workbook and more information is available at:

<http://www.epa.gov/region09/waterinfrastructure/index.html>

Eric Byous

EPA Region 9

Sustainable Infrastructure Office

415-972-3531 byous.eric@epa.gov