Smart Management for Small Water Systems

Developing an Implementation Plan, Tracking Progress, and Communicating Results

EFCN environmental finance center network

American Water Works Association

UNC ENVIRONMENTAL FINANCE CENTER

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Energy Management Program - Basic Steps

- Step 1. Establish Organizational Commitment
- Step 2. Develop a Baseline of Energy Use
- Step 3. Evaluate the System and Collect Data
- Step 4. Identify Energy Efficiency Opportunities
- Step 5. Prioritize Opportunities for Implementation
- **Step 6. Develop an Implementation Plan**
- **Step 7. Provide for Progress Tracking and Reporting**

Source: NYSERDA

Developing an Implementation Plan

"A goal without a plan is just a wish."

- Antoine de Saint-Exupéry

Developing an Implementation Plan

- Step 1: Defining your project objective(s) and target(s)
- Step 2: Identify the tasks necessary to meet your project objectives
- Step 3: Identify changes to your Standard Operating Procedures and to your Process Control
- Step 4: Determine project timeframe and resource allocation

Step 1: Define Your Project Objective and Target

- Identifying your project objective is the first step in creating your implementation plan
- Identifying your project target will help you determine the success of your project implementation

Potential energy objectives

- Reduce energy cost
- Reduce petroleum consumption
- Reduce peak energy demand
- Reduce greenhouse gas emissions
- Improve reliability
- Increase use of renewable fuels

Factors to consider in setting objectives and targets

- Ability to control
- Ability to track/measure
- Cost to track/measure
- Progress reporting; and
- Linkages to your energy policy

Example: Let there be light!

Facility XYZ has prioritized replacing their existing high-pressure sodium lights with LEDs.

- What are some possible objectives of this improvement?
- Using those objectives, what would some targets be?

Step 2: Identify the Tasks Necessary to Meet Your Project Objective

- Tasks are the individual steps that it will take to implement your project
- These tasks can act as mini-goals or achievements as you work to complete your overall objective

Step 3a: Identify Changes to Your Standard Operating Procedure

- With any change to your facility, there will be a change in your day-to-day operations (a.k.a. your standard operating procedure)
- Changes may affect:
  - Operator duties
  - Equipment maintenance
  - Treatment process
  - Emergency response

Step 3b: Identify Changes to Your Process Control

- With any change to your facility, there will be a change in how you respond to unexpected problems
- Things to consider:
  - Does your facility use automation? If so, will it require reprogramming as a result of your improvement?
  - Are your operators sufficiently trained to address problems with any new equipment?

Example: When the Lights Go Out In the City

- How will changing the lights change how your facility regularly operates?
- How will changing the lights change how you respond to problems?

Step 4: Determine Project Timeframe and Resource Allocation

- How long will it take for a task to be completed?
- Who is responsible for completing the task?
- How much time will that person spend working on the task?
- How much will it cost to implement the task?

Example: An Energy Improvement Plan for Replacing Those Lights

Let's look at the task of purchasing new LED lamps:

- **Staff** – Who is responsible for completing that task?
- **Timeline** – How long until the task is completed?
- **Estimated Time** – How many hours will the responsible staff member spend on the task?
- **Estimated Costs** – If the task requires equipment purchase, how much will it cost?

Case Study: City of Hutchinson, KS, Water and Wastewater Utilities

Tasks	Staff	Timeline	Estimated Time (Person Hours or FTEs)	Estimated Costs (e.g., equipment)
Replace existing large capacity vertical turbine pump and motor at Well #21 with lower capacity submersible pu				
Task: Develop project scope **Deliverable:** Document	WTC	By June 1, 2012	1 hour	
Task: Obtain approval from Public Works Director for project concept **Deliverable:** Document/Email	WTC Public Works	By June 8, 2012	2 hours	
Task: Issue RFP for equipment and installation **Deliverable:** Contractor Proposal	WTC	By June 18, 2012	3 hours	
Task: Review RFP response **Deliverable:** Document	WTC Public Works	By July 10, 2012	3 hours	
Task: Obtain approval from Public Works Director for project to proceed **Deliverable:** Document	WTC Public Works	By July 12, 2012	2 hours	
Task: Obtain PO Number **Deliverable:** Document	WTC Purchasing	By July 19, 2012	2 hours	
Task: Enlist contractor **Deliverable:** Signed contract with vendor	WTC Contractor	By July 29, 2012	2 hours	
Task: Install equipment **Deliverable:** Pump/motor removal and replacement followed by pump test and SCADA modifications	WTC Contractor	By October 1, 2012	72 hours	$15,000 (estimated)

Developing a Plan for Your Prioritized Project

- Now is the time for you to develop an implementation plan for your prioritized project(s)

Progress Tracking and Reporting

What Do You Track?

- For your energy management projects, what sorts of things do you already track?
- If you've not done energy management yet, what kinds of measurements of progress would you like to track and why?
- For non-energy projects, what sorts of metrics do you track?

Why Track Your Progress?

- Ideally, whatever objective you chose to implement should be one whose tasks:
  - Can be completed in their entirety and within your predetermined timeframe
  - Can be completed with no negative impact on daily operations or treatment performance, and with minimal negative impact on staff activity
- Tracking the progress of these tasks as the objective is being completed can be the difference between project success and failure

What to Track:

- Task completion
- Actual costs versus projected costs
- Actual savings versus projected savings
- Outcomes

A Matrix Format for Decision-Making

Energy Project Decision Matrix									
Proposed Energy Efficiency Project	Energy Cost Savings (1 to 5)	Cost of Implementation (1 to 5)	Payback Period (1 to 5)	Necessary to Meet Regulatory Requirements (1 to 5)	Necessary to Meet Level of Service Goals (1 to 5)	Availability of Advantageous Funding (1 to 5)	Operational Feasibility (1 to 5)	Part of a Larger Project (1 to 5)	Total Score

What to Track:

- Consider your project prioritization process
- You can track progress toward what you prioritized:
  - Cost savings / Energy savings
  - Progress towards regulatory compliance goals
  - Progress towards level of service goals
  - Implementation cost
  - Time elapsed
  - Progress towards a larger project

What's Important to Your Funder?

- This is a key question as to what you might track in your progress tracking.
- Does your funder care about GHG's? Energy savings? Labor used (e.g. Davis-Bacon reporting under ARRA)? Other factors?
- Also, what is important to your Board?

NYSERDA's Keys to Success

- Performance metrics need to be focused so that only those benefits that can be directly attributed to a project are measured.
- Reporting should generate some follow-up activities to demonstrate a commitment to the project.

The Virtuous Cycle of Energy Management

Question:

- How can we make the deliverables that we track appropriate for good, easy, effective measurement and reporting?

Be S.M.A.R.T. About Deliverables

S = Specific

Is it clear and focused to avoid misinterpretation?

Be S.M.A.R.T. About Deliverables

M = Measurable

Can it be quantified and compared to other data?

Be S.M.A.R.T. About Deliverables

A = Attainable

Is it achievable and reasonable under normal conditions?

Be S.M.A.R.T. About Deliverables

R = Realistic

Is it cost-effective and can it be done by the facility?

Be S.M.A.R.T. About Deliverables

T = Timely

Is it doable within your given timeframe?

Let's Play: Good or Not Good
~ The Deliverables Edition ~

"I want our plant to be better than the plant in the next town."

GOOD

NOT GOOD

Let's Play: Good or Not Good
~ The Deliverables Edition ~

"We will decrease energy consumption by 50% within the next 5 years."

GOOD

NOT GOOD

Let's Play: Good or Not Good
~ The Deliverables Edition ~

"We will be the most energy efficient treatment plant in the state."

GOOD

NOT GOOD

Let's Play: Good or Not Good
~ The Deliverables Edition ~

"I want to install VFDs on all of our pumps, one every quarter."

GOOD

NOT GOOD

Let's Play: Good or Not Good
~ The Deliverables Edition ~

"My subordinate will monitor and log energy usage 24 hours a day, 7 days a week."

GOOD

NOT GOOD

Another Reason to Track:

- Another reason why to track your progress is: Are your projects delivering the cost savings, energy savings, or other goals that you set out?
- For example, if a piece of equipment or a process are not being run correctly, performance may be poorer than planned.
- Track progress frequently enough to catch these kinds of things.

Communication

"The single biggest problem with communication is the illusion that it has taken place."

- George Bernard Shaw

Why communication is important

- Consistency
- Securing resources
- Clarify the benefits
- Maintain momentum

Elements of Utility Communication

- Who are you communicating with?
- How are you communicating?
- What are you communicating?

Standard components of an education and communication plan

- Identify the goals and objectives of each specific communication
- Review guiding principles
- Know thy audience
- Identify project impacts
- Develop messages/create communication products
- Evaluate the message

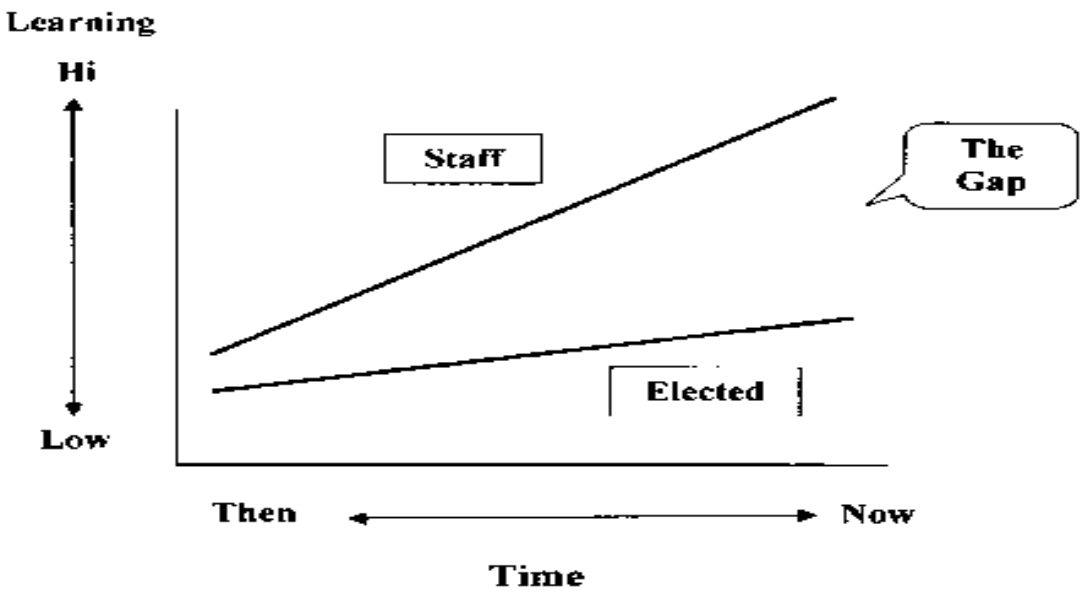
Who is your audience?

- Customers/ratepayers
- Special interest groups
- Policymakers
- Regulators
- Internal audiences
- Industry
- Funders

Understanding your audience

1. What information or knowledge do they have?
2. What is important to them?
3. How do they get information?
4. What will the information mean to them? What is their reference?

Gap between Professional and Political Learning*



*Credit to John Arnold, CAO, Topeka, KS

Audience Characteristics

Characteristics	Elected Officials	Administration
Responsibilities	Allocation of values/resources	Problem Solving
Roles	Representatives	Experts
Influencing Factors	"What do you hear?" ▪ Passion ▪ Dreams ▪ Stories	"What do you know?" ▪ Data ▪ Plans ▪ Reports
Connection	Intangible: Interests and symbols	Tangible: Information; money, people, equipment
Significance	Stories	Knowledge
Dynamics	Conflict, compromise, change	Predictability, cooperation, continuity

John Nalbandian, www.goodlocalgovernment.org

Principles of Authentic Communication

- Timely
- Relevant
- Truthful
- Fundamental
- Comprehensive
- Clear
- Accessible
- Responsive
- Compassionate
- Consistent

Bishop, Bojinka. 2003. Water utility communication practices – What contributes to success? Journal AWWA 95:1. January 2003.

Silent Service….no more

Rate Approval Process Communication Strategy and Toolkit

- Water Research Foundation Project.
- While this is not about energy management per se, it is an example of studying the value of communication for water systems – esp. for water rates.

Survey Objective

Identify the:

- Most important factors and information shared regarding the most recent rate increase request
- Most effective methods of communicating the need for the rate increase

Analysis Conducted by UNC Environmental Finance Center

Methodology

	Chief Administrative Officers	Chief Elected Officials
Matched surveys sent	5,750 (4,439 cities; 1,311 counties)	5,750 (4,439 cities; 1,311 counties)
Surveys returned	2,110	781
…from local governments that manage and set rates for water utilities	1,408	329
Matched Sets from Same Local Government	202	

Analysis Conducted by UNC Environmental Finance Center

Chief Appointed Official Survey Responses

By population size

>250,000	43
25,000 – 249,999	450
25,000 – 2,499	717
<2,500	198

By region

South Atlantic	295
East North-Central	263
Pacific Coast	219
West North- Central	185
West South-Central	154
Mountain	137
Mid-Atlantic	65
New England	61
East South-Central	29

Analysis Conducted by UNC Environmental Finance Center

Chief Elected Official Survey Responses

By population size

>250,000	11
25,000 – 249,999	89
25,000 – 2,499	195
<2,500	51

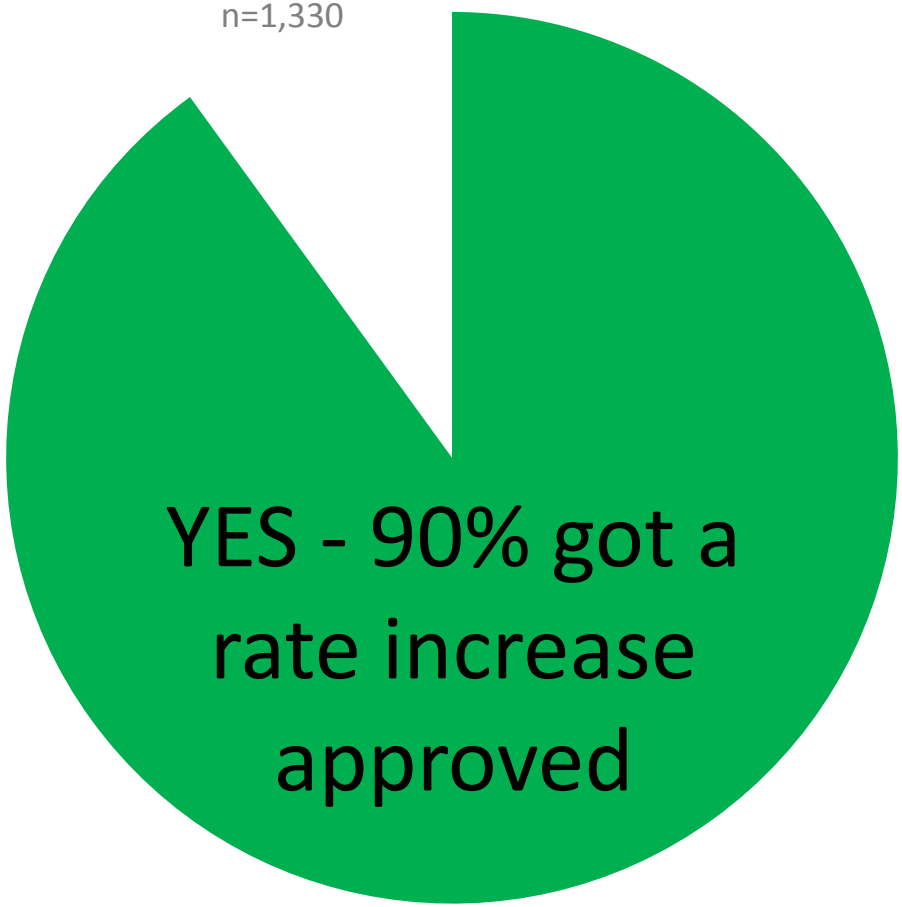
By region

East North-Central	72
South Atlantic	66
West North- Central	54
West South-Central	45
Pacific Coast	37
Mountain	30
Mid-Atlantic	23
East South-Central	10
New England	8

Analysis Conducted by UNC Environmental Finance Center

Are rates getting approved?

n=1,330



Analysis Conducted by UNC Environmental Finance Center

Why are these factors important?

Trust (Working Relationship)

According to administrative officers, the working relationship with the governing body is not related to:

- The size of the governing body
- Whether or not a rate adjustment was approved by the governing body

Analysis Conducted by UNC Environmental Finance Center

Trust (Working Relationship)

But...the administrative officers with better working relationships with the governing board were:

- More likely to request higher rate increases
- More likely to request full-cost-recovery rate increases

*Bi-variate analysis

Trust (Working Relationship)

According to elected officials,
effective communication and more frequent communication
is directly related to
a good working relationship.

Analysis Conducted by UNC Environmental Finance Center

*Bi-variate analysis

Conclusion

Water utilities are getting rate approvals, but effective and frequent communication about salient issues, along with public involvement, can make the difference in getting the rates utilities need to cover capital costs.

Analysis Conducted by UNC Environmental Finance Center

Building a Message Map

Three key goals of a message map

- To educate and inform the public (stakeholders)
- To build and maintain trust and credibility between the general public and decision-makers
- To create informed dialogue and decision-making among the public and figures of authority

Benefits of a message map

- One voice
- Focused voice
- Cover all details
- Useful planning tool

Start with your Central Point

- A “twitter-friendly” headline that ties back to objective
  - Examples:
    - Contamination suspected/found in tap water. Take action before drinking or cooking.
    - Water system launches an energy management program to reduce costs and improve reliability.

Three Tiers of Information

- Tier 1: Identifies the audience, as well as the questions or concerns that the message map is intended to address
- Tier 2: Three key messages pertaining to the situation
  - Serve as themes for a public presentation
- Tier 3: Supporting information underneath each key message

Questions?