

Developing an Implementation Plan and Tracking Progress

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UNC
ENVIRONMENTAL
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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



A Few General Tips

- If possible, don't go it alone: Form an energy management team, a "green team."
- Have a good baseline to start from.
- Be persistent: This may be a long (but quite rewarding!) process. Never give up!
- Ask for free help: energy audits; contractor visits for project estimates; today's speakers
- Use Energy Star's Portfolio Manager! It's free!



PROJECT PRIORITIZATION

NYSERDA Step 5:
Prioritizing Energy
Opportunities for
Implementation



Step 5: Prioritize Opportunities for Implementation

- The final product of this step is a short list of energy efficiency opportunities that have been selected and carefully evaluated out of the list of opportunities generated in the previous step
- *Identify a consistent method to compare and rank opportunities (consider both the monetary and non-monetary)*



Process Review

- There are many processes you could use to prioritize energy management projects for your water or wastewater utility.
- One resource for process review is the *Energy Project Decision Matrix*, developed as part of *A.M. Kan Work!* – an interactive guide to asset management and energy efficiency from the New Mexico Environmental Finance Center and Kansas Department of Environmental Health.



Energy Project Decision Matrix

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
Energy Cost Savings: Current energy cost less future energy cost; high energy savings = 5 points, low energy savings = 1 point									
Cost of Implementation: Total cost of the project; low cost = 5 points, high cost = 1 point									
Payback Period: Number of years required to pay for the project with energy cost savings; low number of years = 5 points, high number of years = 1 point									
Necessary to Meet Regulatory Requirements: If needed to meet current regulatory requirement = 5 points, anticipated requirement = 3 points, no requirement = 1 point									
Necessary to Meet Level of Service Goals: If needed to meet a level of service goal, such as energy reduction or greenhouse gas emissions goals = 5 points, no LOS = 1 point									
Availability of Advantageous Funding: If the project can be funded with existing internal sources or there is a good external source, such as a tax rebate or grant = 5 points, No advantageous funding = 1 point									
Operational Feasibility: If the project can be operated within the capabilities of the existing staff = 5 points, if considerable operational change is required = 1 point									
Part of a Larger Project: If the energy efficiency project is part of a larger project = 5 points, stand alone project = 1 point									
Total Score: The energy efficiency projects with the highest scores are the most advantageous to the utility									

Scoring in the Decision Matrix

- Score each category from 1 to 5. Bigger numbers are better! 😊
- In other words, higher scores are more attractive projects for energy savings, ease of implementation, and so on.



Energy Cost and Implementation Cost

- Energy Cost Savings: Current energy cost less future energy cost.
 - High energy savings = 5 points
 - Low energy savings = 1 point
 - Could also boost score to reflect use of renewable energy, if that has value to your utility.
- Cost of Implementation: Total project cost.
 - Low cost = 5 points
 - High cost = 1 point



Payback Period and Regulation

- Payback Period: Number of years required to pay for the project with energy cost savings.
 - Low number of years = 5 points
 - High number of years = 1 point
- Necessary to Meet Regulatory Requirements:
 - 5 points if needed to meet a current regulatory requirement
 - 3 points for an anticipated requirement
 - 1 point for no regulatory requirement



Service Goals and Funding Options

- Necessary to Meet Level of Service Goals:
 - 5 points if needed to meet a level of service goal, e.g. energy reduction or GHG emissions goals
 - 1 point if no Level of Service Goal
- Availability of Advantageous Funding:
 - 5 points if the project can be funded with existing internal sources or there is a good external source, such as a tax rebate or grant.
 - 1 point if no advantageous funding.



Feasibility and Larger Projects

- Operational Feasibility:
 - 5 points if the project can be operated within the capabilities of the existing staff (e.g. easy training)
 - 1 point if considerable operational change required
- Part of a Larger Project:
 - 5 points if the energy efficiency project is part of a larger project
 - 1 point if it is a stand-alone energy project



Energy Project Decision Matrix

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



Observations about the Matrix

- Total Score: allows you to compare / rank potential energy management projects.
- Higher Scores: indicate E.M. projects that may be most advantageous to the utility.
- Caution: As all columns are weighted equally in this matrix, you may want to consider some columns as more important than others.
- And don't forget: Watch out for Agent Smith!



Tips for Using the Decision Matrix in Your Utility

- Involve your energy team and discuss evaluation criteria (You can use the matrix provided as a starting point.)
 - What's missing? In addition to the matrix, other commonly used criteria include:
 - Ease of implementation
 - Time until solution is fully implemented
 - Cost to maintain
 - Support or opposition to the solution
 - Enthusiasm by team members
 - Potential effects on customers
 - Potential problems during implementation
 - Set weights based on the level-of-importance to your system



Tips for Using the Decision Matrix in Your Utility

- If individuals on the team assign different ratings to the same criterion, discuss this so people can learn from each other's views and arrive at a consensus. Do not average the ratings or vote for the most popular one.



Some Keys to Success

- Convert all energy efficiency opportunities characteristics to monetary terms whenever possible.
- Evaluate all energy management, including ancillary benefits when possible.
- Test the sensitivity of results to determine the impact of important assumptions (e.g. time horizons)
- Make sure that the final results make sense in terms of the utility's capabilities.



DEVELOP AN IMPLEMENTATION PLAN

NYSERDA Step 6



Developing an Implementation Plan

“A goal without a plan is just a wish.”

- Antoine de Saint-Exupéry



Step 6: Develop an Implementation Plan

- How to Do It – Business Plan
- Actions required in this step include the following:
 - List the projects chosen for implementation and describe the goals and objectives of the program
 - Explain the resources needed, including a budget and financing plan
 - Develop any specifications needed, including design criteria and procurement related documents
 - Provide any changes in standard operating procedures, and/or process control strategies
 - Set the schedule for implementation, including milestones and gaining the necessary regulatory approvals (if applicable)
 - Set realistic expectations for the project in terms of resources required, schedule, procurement time frame, and expected results



Step 1: Defining 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



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: Identifying 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?



Back to Our 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?



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

Project Objective:

To reduce the amount of energy used at its water and wastewater facilities

Project:

To replace existing large capacity vertical turbine pump and motor at well with lower capacity submersible



Case Study: City of Hutchinson, KS

Water and Wastewater Utilities

Tasks	Staff	Timeline	Estimated Time (Person Hours or FTEs)	Estimated Costs (e.g., equipment)
<i>Replace existing large capacity vertical turbine pump and motor at Well #21 with lower capacity submersible pu</i>				
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)



An Example: An Energy Improvement Plan for Replacing 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?



PROVIDE FOR PROGRESS TRACKING AND REPORTING

NYSERDA Step 7



Progress Tracking and Reporting

“Never discourage anyone...who continually makes progress, no matter how slow.”

- Plato



Step 7: Provide for Progress Tracking and Reporting

- The success of a project should be measured as it is being implemented
- The specific actions required in this step include the following:
 - Assign the responsibility for tracking the progress of a project and reporting on that progress. Allocate the resources necessary to fulfill the responsibilities.
 - Set the performance metrics that will be used.
 - Create a communication plan. Identify who needs to be included in progress reports (examples: elected officials, public, etc.), when reports should be made, and any actions that need to occur in response to reports.



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

- Your implementation plan outlined the tasks, timeline, and costs associated with your various projects
- From that, you can develop a program for tracking your successes as you achieve your energy objectives through deliverables



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




Case Study: City of Hutchinson, KS

Water and Wastewater Utilities

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Using Portfolio Manager to Track Project Success

 **PORTFOLIO MANAGER**

ACCOUNT INFORMATION CONTACTS FAQ FREQUENTLY ASKED QUESTIONS CONTACT US HELP LOGOUT

[Home](#) > [My Portfolio](#) > [EFC_Example](#)

Facility Summary: EFC_Example
[How do I use this page?](#)

Building ID: 3491616
 Level of Access: Building Administrator

Electric Distribution Utility: Victory Electric Coop Association Inc ([change](#))
 Regional Power Grid: [SPP North](#)
[Select my Power Generation Plant](#) to calculate my electric emissions rate
 Electric Emissions Rate (kgCO₂e/MBtu): 240.4 ([what is this?](#))

[Generate a Statement of Energy Performance](#) for uses other than applying for the ENERGY STAR.

General Information	
Address: 123 Main , Dodge City, KS 67801	
Year Built: 1977	
Property Type: Water Utility/Wastewater Plant	
Baseline Rating: N/A	Current Rating: N/A
View Period Ending Dates	
Water Period Ending Dates Current: N/A Baseline: N/A	Energy Period Ending Dates Current: December 2012 Baseline: December 2011
Eligibility for the ENERGY STAR	
Not Eligible: Water Management Facilities are not eligible to apply for the Energy Star	

Facility Performance [Set Baseline Periods](#) | [Set Energy Performance Target](#)

Select View: Performance: Water/Wastewater Treatment Facilities [Create View](#) | [Edit View](#)

12 Months Ending	Current Rating (1-100)	Average Flow (MGD)	Current Weather Normalized Source Energy per Flow (kBtu/gpd)	National Median Source EUI (kBtu/gpd)	Current Site Electric Use (kWh)	Annual Energy Cost (US Dollars (\$))	Current Total GHG Emissions (MtCO ₂ e)
December 2012	N/A	0.6	0.8382	7.0	44,461.0	N/A	36.47



Communication

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

- George Bernard Shaw



Elements of Communication

- Understanding Audience
- Best practices
- Media Relations



Communication by the Numbers

A study based in state government found that 60-80% of employees cited communication as the main reason for workplace conflict Barbara J. Kreisman, *Insights into Employee Motivation, Commitment and Retention* (2002)



Understanding Audience, cont.

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?*



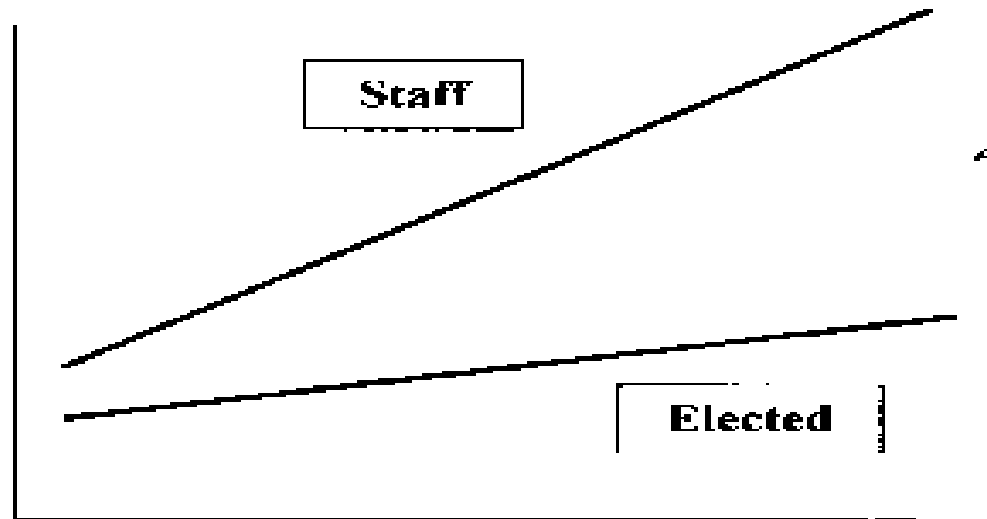
Gap between Professional and Political Learning*

Learning

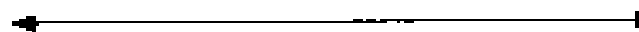
Hi



Low



Then



Now

Time

*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	<p>“What do you hear?”</p> <ul style="list-style-type: none"> ■ Passion ■ Dreams ■ Stories 	<p>“What do you know?”</p> <ul style="list-style-type: none"> ■ 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



Communication Techniques

1. Connect to the Bigger Picture: Purpose
2. Start Where They Are: Understanding Audience
3. Repetition, Repetition, Repetition
4. Reasoning...Because Why; “The 5 Why’s”
5. The 3 C’s...consistent, concise, clear



Communication Techniques, cont'd

6. Not in this Alone/Story Telling
7. Problem and Solution
8. Future Implications
9. Listen...Reflect...Listen
10. Circle Back/Create Trust



Working with the Media

1. Tell the truth
2. Stick with the facts
3. Be responsive
4. Nothing is “off the record”
5. Don't take it personally



Working with the Media, cont'd

6. Build relationships with the media
7. Find out how you can help
8. Feed the information
9. Practice
10. Know your message



Constraints on Implementing an Energy Program

- Organizational constraints
- Capital costs
- Process reliability
- Regulatory requirements and limits
- O&M capabilities, and non-energy O&M costs
- Engineering constraints
- Space availability



Taking Energy Improvement to the Next Level

“Do or do not. There is no try.”

- Yoda



Workshop Summary

Once you have your projects prioritized:

- Develop an Implementation Plan
 - Project Objective
 - Requisite Tasks
 - Changes to Standard Operating Procedure and Process Control
 - Determine project and task timeline, staff requirements, cost, and work time



Workshop Summary

- Determine how you will quantify and track project progress
 - Assign deliverables to each task
- Determine how you will communicate your progress with your clients
- Find out whether utilizing an Energy Service Company (ESCO) could be right for your community



Some Final Thoughts

- Determine how you will quantify and track project progress
 - Assign deliverables to each task
- Determine how you will communicate your progress with your clients



Fleets: Greening Your Vehicles

- If your utility operates vehicles, and if they (most likely) run on gasoline or diesel fuel, considering contacting one of NC's Clean Cities Coalitions to “green” your fleet and potentially save big on fuel costs:
 - Asheville Area: <http://www.cleanvehiclescoalition.org/news.php>
 - Bill Eaker, Land-of-Sky Clean Vehicles Coalition
 - Charlotte Area: <http://www.4cleanfuels.com/>
 - Jason Wager, Centralina Clean Fuels Coalition
 - Triangle Area: <http://www.trianglecleancities.org/>
 - Lacey Jane Wolfe, Triangle Clean Cities Coalition
 - Rest of North Carolina: <http://ncsc.ncsu.edu/index.php/clean-transportation/>
 - Anne Tazewell, Clean Transportation Division, N.C. Solar Center



Energy Management Post-Workshop Opportunities

- Contact the EFC to request direct technical assistance under the Small Systems grant in developing your utility's new energy management plan.
- Contact our expert speakers / their organizations for help.
- Get an energy audit.
- We'll contact you in a month to follow up!



Charge!

- Now go do some great energy management projects, save some energy, and save some money!
- Seriously, you can do it! 😊
- And go see today's slides and other useful materials here:
- http://efc.unc.edu/training/2013/smallsystems/nc/energy_mgmt.htm



Thank You

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