



Step 6: Develop an Implementation Plan

Energy Management for Small Water Systems





The previous two steps helped to identify what to do. This step focuses on how to do it. The purpose of this step is similar to a business plan in that it should communicate to potential stakeholders exactly what you expect to do, what resources are needed, and what outcomes will result from the project.



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?



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?



Back to Our 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)
<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)



How Do We Pay For Our Great Ideas?

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“This part of the plan will be funded with all the unused money we must have laying around someplace.”



Are Energy Projects funded the same as other Water Projects?

- Yes
 - Larger Energy projects can be treated like a capital project
 - Financial Indicators and Rates should be reviewed
- No
 - Some are no/low cost
 - There are funds available for energy projects that aren't available otherwise



Energy Improvements and Capital Planning

- Energy improvements are a type of capital improvement not all that dissimilar from pipe replacements, tank painting, etc.
- How you choose to pay for energy improvements ties into your utility's philosophy of how to set rates and pay for capital



Where Capital Funding Comes From

- Rates / Monthly bills
- Impact fees to new customers
- Special assessments to current customers
- Transfers from the general fund (tax revenue)
- Debt market, including State Revolving Funds
- Private partnerships
- Grants



Ways to Pay

- Fund balance (save in advance and pay)
- Pay as you go (current receipts)
- Pay later (someone loans you money)
- Grants (let someone else pay)



What is Performance Contracting?

- An ESCO proposes and designs a package of energy cost reduction measures, installs or implements those cost reduction measures, and guarantees the savings of the cost reductions.
- Typically, the ESCO puts up all of the capital for the energy projects.
- The ESCO pays itself back for the package over time using the stream of revenue provided by the energy reduction measures.
- Third party verifies ESCO reconciliation report.

Slide courtesy of Len Hoey, N.C. State Energy Office.