



Smart Management for
Small Water Systems

Energy Management Planning for Small Water Systems - Workshop

Village of Fox Lake, Illinois
Wednesday, May 18, 2016

David R. Tucker
Project Director
UNC EFC



This program is made possible under a
cooperative agreement with EPA.



CEU Certificates

If you need a CEU certificate, you will need to confirm the following on the roster today before you leave:

- Is your name spelled correctly?
- Did you provide an email address UNIQUE TO YOU? A unique email address is required to access your certificate on the AWWA website.
- Did you mark the checkbox that you need a certificate?

Within 30 days of the training, you will receive an email with instructions to print your certificate. Emails from AWWA may be blocked or go to your Junk mail. To avoid this issue, add educationservices@awwa.org to your email Contacts or check your Junk mail frequently.

AWWA will apply to the water operator state licensing agency for CEU preapproval when applicable. You may be awarded CEUs by your agency. It is your responsibility to confirm with the agency that training meets relevancy criteria established for your license type as some agencies may not apply CEUs to your license if the training topic is not relevant to your position.

AWWA follows the IACET Standard of CEU calculation.

0.1 CEU = 1 Contact Hour or 1 Professional Development Hour

Questions? Please contact educationservices@awwa.org



About the Environmental Finance Center Network (EFCN)

The Environmental Finance Center Network (EFCN) is a university-based organization creating innovative solutions to the difficult how-to-pay issues of environmental protection and improvement. The EFCN works with the public and private sectors to promote sustainable environmental solutions while bolstering efforts to manage costs.

The Smart Management for Small Water Systems Program

This program is offered free of charge to all who are interested. The Project Team will conduct activities in every state, territory, and the Navajo Nation. All small drinking water systems are eligible to receive free training and technical assistance.

What We Offer

Individualized technical assistance, workshops, small group support, webinars, eLearning, online tools & resources, blogs



The EFCN Project Team

- Environmental Finance Center at The University of North Carolina at Chapel Hill
- EFC West
- Environmental Finance Center at Wichita State University
- New England Environmental Finance Center at University of Southern Maine
- Southwest Environmental Finance Center
- Syracuse University Environmental Finance Center





Areas of Expertise

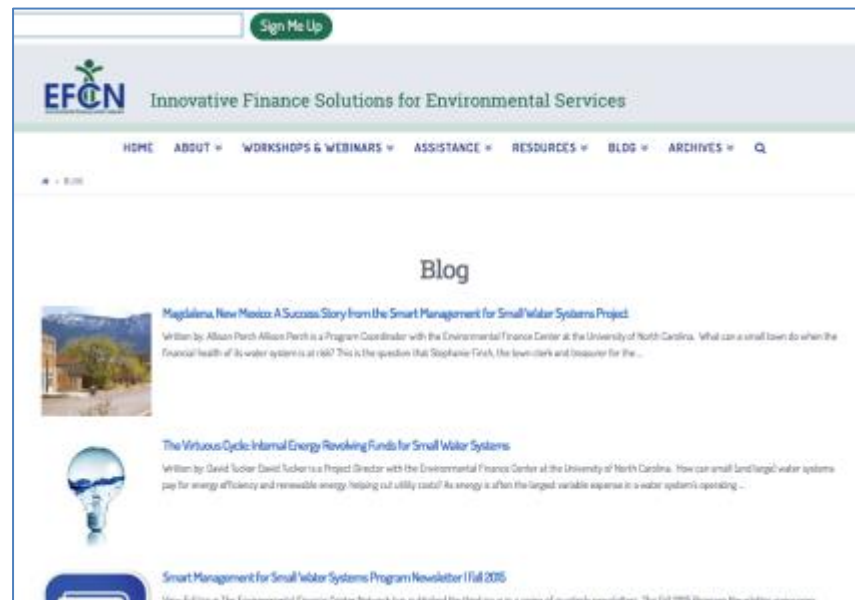
- Asset Management
- Energy Management Planning
- Financial Management
- Leadership Through Decision-making and Communication
- Managing Drought
- Water Loss Reduction
- Collaborating with Neighboring Communities
- Multi-funding
- Water Conservation
- Management and Finance 101
- Climate Resiliency
- Workforce Development

Small Systems Blog

Learn more about water finance and management through our Small Systems Blog! Blog posts feature lessons learned from our training and technical assistance, descriptions of available tools, and small systems “success stories.”

Common Blog Topic Areas

- Asset Management
- Energy Management
- Enhancing Regulatory Compliance
- Fiscal Planning & Rate Setting
- Funding Coordination
- Managerial & Financial Leadership
- Water Loss Reduction
- Water System Collaboration



efcnetwork.org/small_systems_blog/



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Dedicated to enhancing the ability of governments and other organizations to provide environmental programs and services in fair, effective, and financially sustainable ways through:

- Applied Research
- Teaching and Outreach
- Program Design and Evaluation



How you pay for it matters



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@EFCatUNC



Acknowledgments

- Village of Fox Lake, Illinois
- Illinois Section of the AWWA
- All of *you* for being here!



Workshop Objectives

- Understand your water system's current energy usage.
- Learn how to create and implement an energy management plan for your water system.
- Provide forum for sharing energy management perspectives, ideas, and experiences.



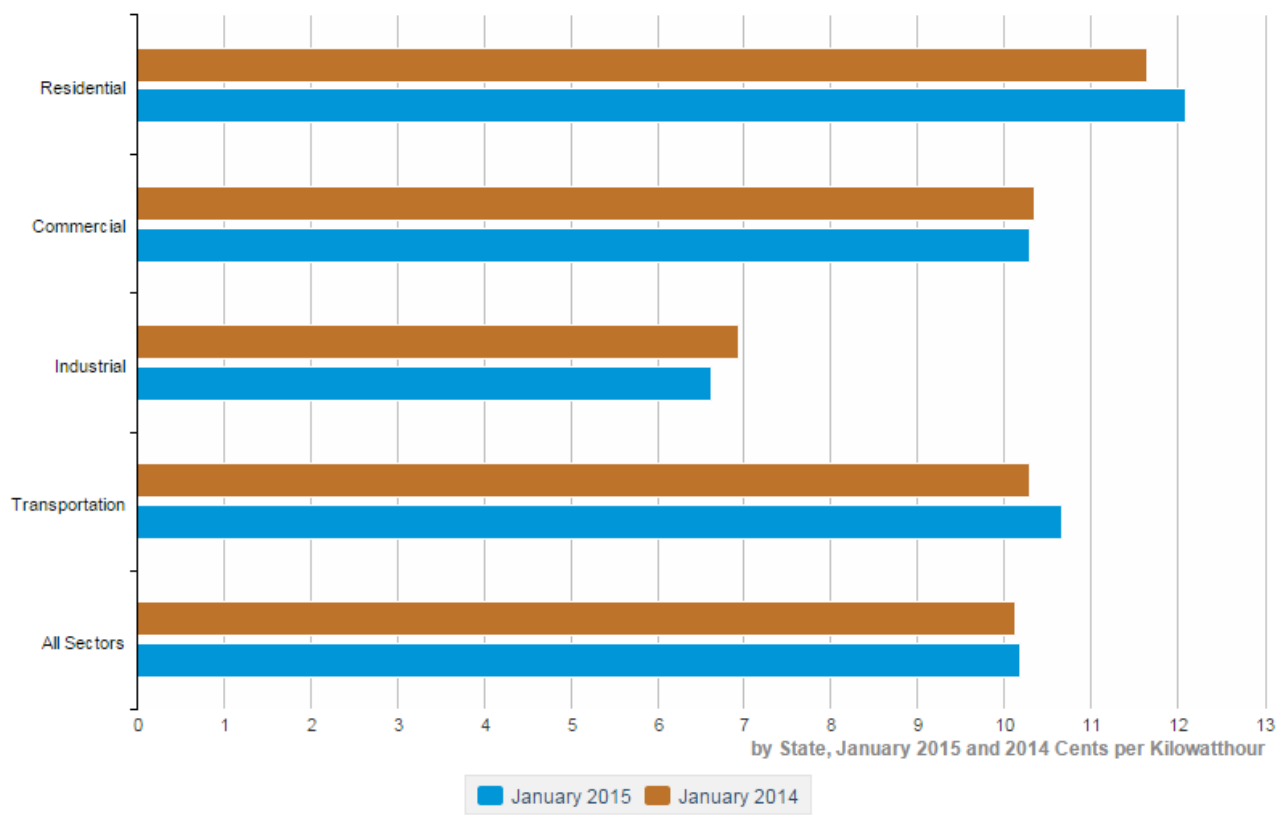
Why are we here today?

- Rising energy costs
 - EPA estimates that the cost of energy as a percent of operating costs for drinking water system can reach as high as 40 percent and is expected to increase 20 percent in the next 15 years.
- Energy management plans reduce costs.
- Energy is often the most significant variable cost a water system can affect.



Electricity Prices in the U.S.

Table 5.6.A. Average Retail Price of Electricity to Ultimate Customers by End-Use Sector,, U.S.
Total

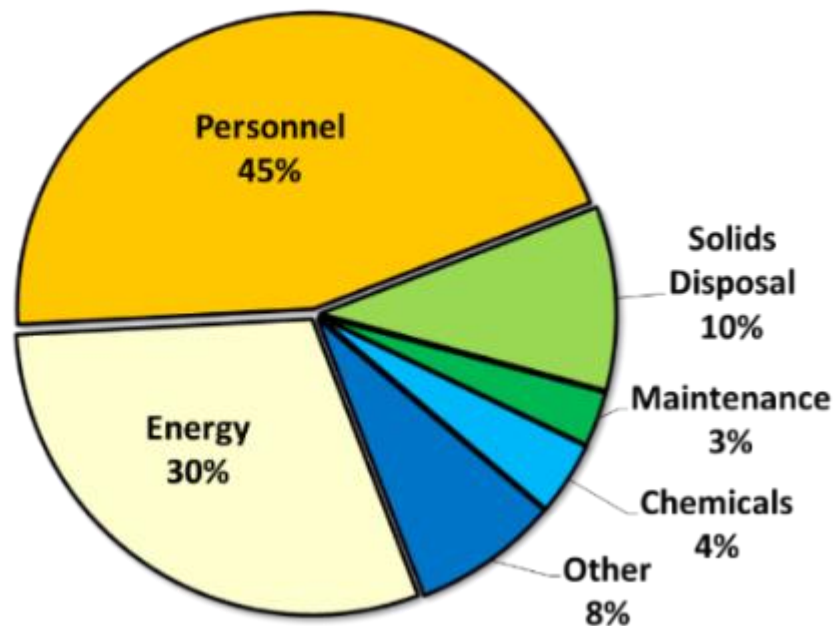


Source: US Energy Information Administration, http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a



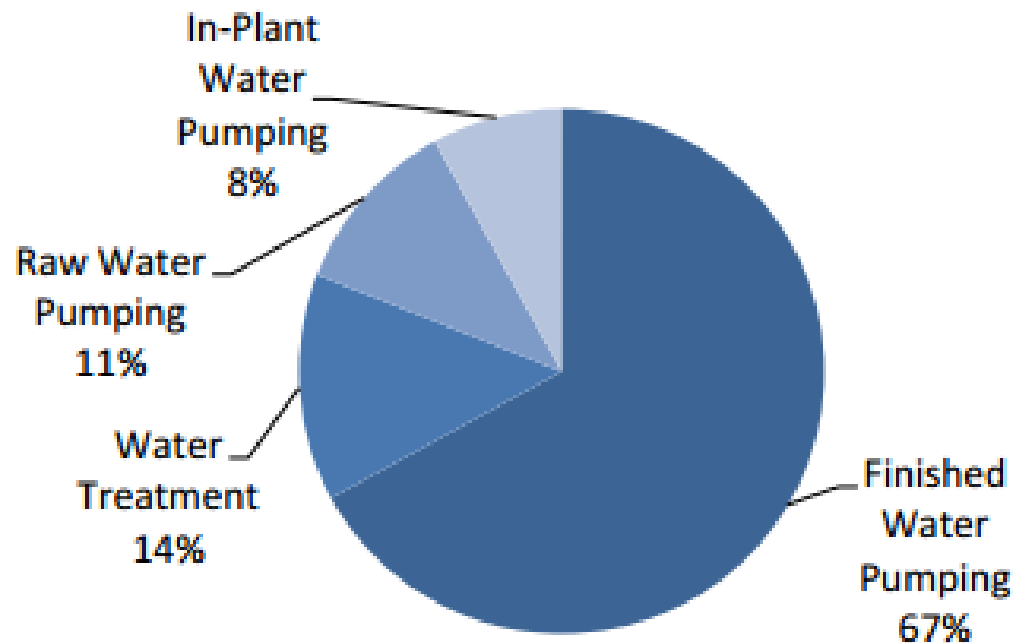
Why should a small water utility care about energy?

Typical Water Utility O&M Costs





Typical Energy End-Uses in Public Surface Water System



Source: Keith Carns, EPRI Solutions, "Bringing Energy Efficiency to the Water & Wastewater Industry: How Do We Get There?," presented at WEFTEC 2005, Washington DC, November 2, 2005.



Energy-Water Nexus

- 2 trillion gallons of H₂O: estimated amount pumped each year by small systems.
- \$1 billion: estimated electric power costs per year for these small systems.
- \$10 million: annual electric bill savings from a 1% reduction in electric costs.
- \$100 million: annual electric bill savings from a 10% reduction in electric costs.

Source: Regnier and Winters, "Reducing electric power costs in small water systems," Journal AWWA, April 2013, 67-72.



Introductions

- Your Name
- Organization and role at organization
- Water system size (# of people served)
- Who provides your water utility's power
- Share a bit about how you got into the water business



Who I Am and How to Reach Me

- David R. Tucker
- Project Director
- Environmental Finance Center
- School of Government, UNC-Chapel Hill
- drtucker@sog.unc.edu
- (919) 966-4199
- <http://efc.unc.edu>



Morning Agenda

Start Time	Topic
9:00	Welcome, Introductions, and Why We're Here
9:45	Energy Management Planning: NYSERDA's Energy Management Program
10:30	<i>Break</i>
10:45	Understanding Your Electric Bill + Establishing a Baseline
11:30	Tool Demo: The Electricity Usage Baseline Builder for Water Systems <i>Exercise: Putting Your Electricity Bill into the Electricity Baseline Tool</i>
12:00	<i>Lunch</i> Tool Demo: The Northeastern Illinois Water and Wastewater Rates Dashboard



Afternoon Agenda

Start Time	Topic
1:00	Project Economics and Financing for Energy Management Projects <i>Video: Financial Key Performance Indicators</i>
2:00	Prioritizing Energy Management Projects <i>Exercise: Prioritizing Your Energy Management Projects</i>
2:45	<i>Break</i>
3:00	Developing an Implementation Plan, Tracking Progress, Communicating Results
3:45	How Do We Pay For It? Special Financing Mechanisms for Energy Management Tool Demo: The Internal Energy Revolving Fund Wizard
4:45	Wrap-Up Session (hand out funding matrices, evaluation forms, and CEU certificates)
5:00	Adjourn



Energy Management Post-Workshop Opportunities

- Contact the EFC Network (<http://efcnetwork.org>) to request free technical assistance under the Small Systems grant in developing your utility's new energy management plan.
- Attend our energy management webinars.
- Read our very active blog.
- Get an energy audit.



Find Money in the Water System Budget: Energy Management Webinar 2016 Series

#1: Paying for Energy Improvements: Internal
Energy Revolving Funds (04/12/2016)

#2: Where Am I Starting From? Understanding
Your Water Utility's Electric Bill + the New
Energy Usage Baseline Tool (06/08/2016)



Find Money in the Water System Budget: Energy Management Webinar 2015 Series

- #1: E.M. Planning for Small Water Systems and the NYSERDA Model (12/02/2014)
- #2: E.M. Teams, Baselines, and Data Collection (03/03/2015)
- #3: E.M. Project Ideas, Prioritization Methods, and Implementation Planning (06/09/2015)
- #4: Paying for Energy Improvements (09/16/2015)



<http://efc.web.unc.edu/2015/08/13/energy-savings-performance-contracting/#more-4153>

Blog



Ten-horsepower variable speed motors, controlled by variable frequency drives (VFDs), Villa Magna condos, Florida

Finding Money in the Water System Budget: Energy Savings Performance Contracting (ESPC)

AUGUST 13, 2015 / DAVID TUCKER / 0 COMMENTS

Print PDF

The way that drinking water and wastewater systems pay for energy improvements in the United States is changing – including for small drinking water systems (serving 10,000 or fewer people). As has often been mentioned on the EFC’s blog, the days of huge federal grants for construction of water and wastewater systems are **long past**. Since an energy improvement is a kind of

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Webinar: Energy Savings Performance Contracts



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WEBINAR: Find Money in the Water System Budget: Paying for Energy Improvements

Event(s): WEBINAR: Find Money in the Water System Budget: Paying for Energy Improvements

Subject: **Management**
Author(s): **David Tucker**
Program: **Drinking Water and Wastewater**
Presentation type: **Powerpoint**
Date: **03/03/2015**
Host Organization(s): **Environmental Finance Center at UNC**

File: [Find Money in the Water System Budget - Paying for Energy Improvements - Webinar - 2015-09-16 FINAL.pdf](#) ()

Project page: [Smart Management for Small Water Systems](#)

Environmental Finance Center
Knapp-Sanders Building
Campus Box 3330
UNC-Chapel Hill, Chapel Hill, NC 27599-3330
T: 919.843.3528 | F: 919.843.2528

<http://www.efc.sog.unc.edu/event/webinar-find-money-water-system-budget-paying-energy-improvements>



<http://efc.web.unc.edu/2015/12/01/internal-energy-revolving-funds/>

Blog



Source: <http://pacinst.org/wp-content/uploads/sites/21/2012/10/water-energy-nexus-featured.jpg>

The Virtuous Cycle: Internal Energy Revolving Funds for Small Water Systems

DECEMBER 1, 2015 / DAVID TUCKER / 0 COMMENTS

 Print  PDF

How can small (and large) water systems pay for energy efficiency and renewable energy, helping cut energy costs? As energy is often the largest variable expense in a water system's operating budget, this is a recurring

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Webinar: Internal Energy Revolving Funds



The screenshot shows the website for the UNC Environmental Finance Center. The header includes the UNC logo and a search bar. The main content area features a large blue banner for the event. To the left, there are sections for the Mission Statement, Upcoming Events, and Latest News. The event details include the date, time, and a description of the webinar's focus on Internal Energy Revolving Funds (IERF). Presenters are listed as David Tucker and Glenn Barnes. A video player for the webinar recording is shown at the bottom right of the event section.

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Mission Statement

We work to enhance the ability of governments and other organizations to provide environmental programs and services in fair, effective and financially sustainable ways.

Upcoming Events

- New Hampshire | Energy Management for Community Water Systems (Serving 10,000 people or less)
Wednesday, June 1, 2016
- West Virginia | Rates and Finance Workshop for Small Water Systems
Wednesday, June 1, 2016
- Webinar: Navigating Funding Options for Water Infrastructure
Wednesday, June 1, 2016

1 of 3 next >
View all events

Latest News

- EPA to Provide EFC \$500K to Help 10 Communities with Water Infrastructure Development
The U.S. Environmental Protection Agency (EPA) has provided \$500,000 in funding to The University of North Carolina at Chapel Hill's Environmental Finance Center (EFC) to assist communities addressing water infrastructure challenges.
- Z. Smith Reynolds Foundation awards \$90,000 to Environmental Finance Center
Trustees of the Z. Smith Reynolds Foundation have awarded a grant to the Environmental Finance Center to work in partnership with the North Carolina On-Bill Working Group to provide education, support and other resources to rural

EVENT

WEBINAR: FIND MONEY IN THE WATER SYSTEM BUDGET: INTERNAL ENERGY REVOLVING FUNDS

Hosted by: Environmental Finance Center Network

Webinar
Tuesday, April 12, 2016 2:00PM - 3:00PM EDT

How can water systems find ways to pay for projects to reduce their energy costs? This webinar focused on one approach, the Internal Energy Revolving Fund (IERF) concept, also known as an "Energy Bank" or "Green Revolving Fund." In this model, an organization uses the fund to pay for energy improvements to its internal operations (e.g. pumps and motors, lighting, HVAC equipment, solar panels, etc.) and then uses the avoided energy costs from one project to help pay for the next project—thus the fund "revolves." This webinar looked at sources of money to seed the fund initially and ways to structure it for long-term success.

Presenters:
David Tucker®, Project Director, and **Glenn Barnes**®, Senior Project Director - Environmental Finance Center at The University of North Carolina at Chapel Hill

Webinar Recording:

Find Money in the Water System Budget: Internal Energy

Internal Revolving Energy Fund

Diagram illustrating the Internal Revolving Energy Fund (IERF) concept. The fund is a central blue circle. Arrows point from various sources (e.g., Grants, Loans, Donations, etc.) into the fund. Arrows point from the fund to various projects (e.g., Pumps, Motors, Lighting, etc.). The diagram shows how the fund is used to pay for energy improvements, which then generates avoided energy costs that are used to pay for the next project, thus revolving the fund.

<http://www.efc.sog.unc.edu/event/webinar-find-money-water-system-budget-internal-energy-revolving-funds>



Thank You!

And please let us know if you have any questions.

David R. Tucker

Project Director

Environmental Finance Center

School of Government, UNC-Chapel Hill

drtucker@sog.unc.edu

(919) 966-4199

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