

# Controlling Costs

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# Large Capital Fixed Costs

- We have already discussed ways that you can control the cost of your large fixed assets (pipes, wells, pumps, storage, etc.)
- Asset management will extend the life of your equipment, and capital planning will allow you to replace it when it is most economical



# What about other costs?

- Large, non-capital fixed costs
  - Staffing, billing, vehicles, machinery
- Variable costs
  - Energy, chemicals



# Session Objectives

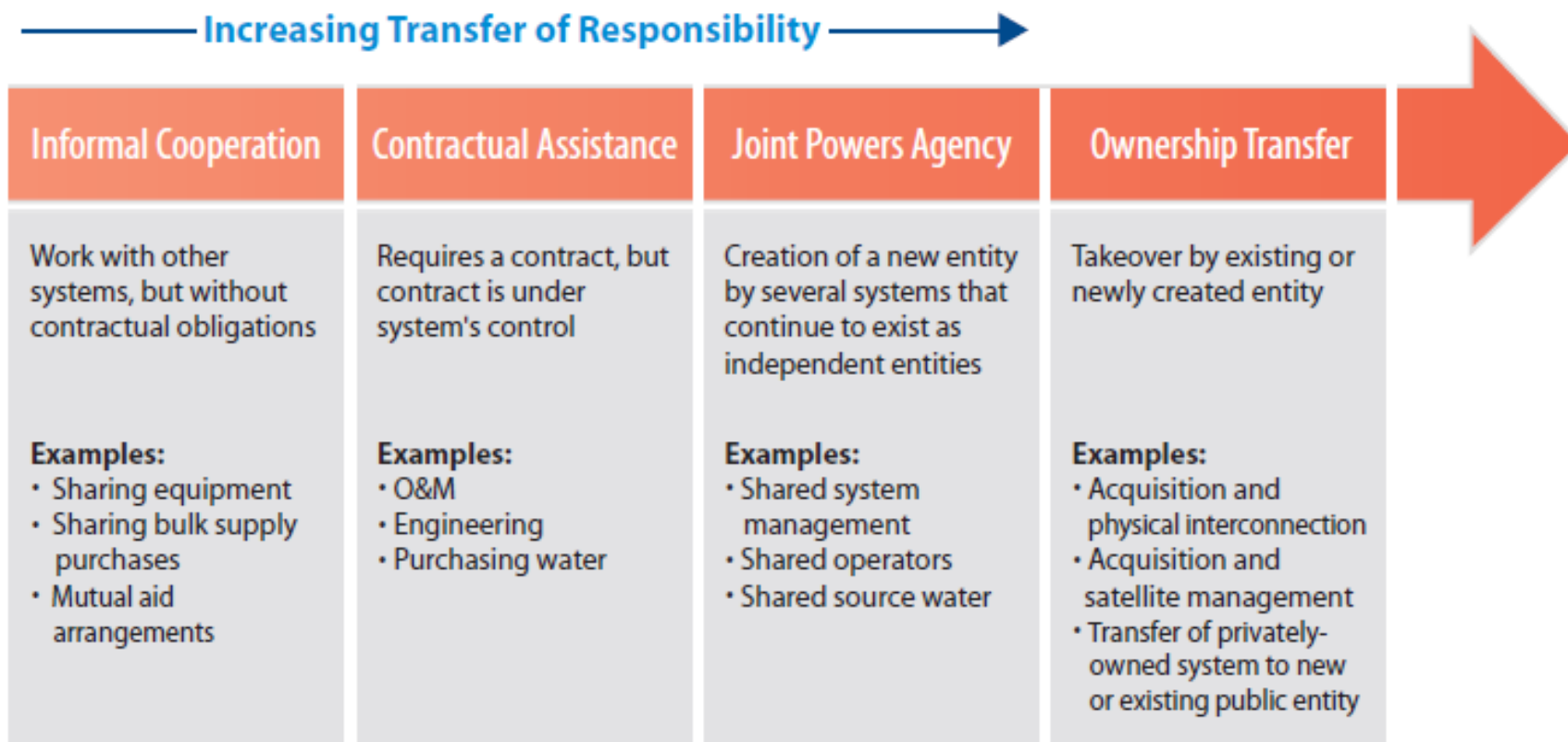
- Explore partnership and regionalization options
- Discuss energy management



# **Option 1: Partnering with Other Systems to Reduce Costs**



# System Partnership Spectrum



Any kind of collaboration can be helpful



# Benefits of Partnerships

- Reduce capital and operating costs and prices (per gallon of finished water produced) through increased economies of scale
- Help raise capital needed to replace and improve aging water-delivery infrastructure



# Benefits of Partnerships

- Improve operational performance through wider use of trained operators and advanced treatment technologies
- Enhance environmental protection, resource conservation, and contingency planning for conditions of scarcity, through increased coordination and integrated planning.





# Common Concerns with Partnerships

- Desire for Autonomy
- Mistrust of Other Systems
- Lack of Knowledge of Other Systems
- Lack of Knowledge of the Options
- No Outside Independent Force to Get Collaboration Started



# Bulk Sales Agreements



# What Can You Buy In Bulk?

- Chemicals
- Testing supplies
- Office equipment
- What else?



# Bulk Purchase of Chemicals

- Northeast/Merrimack Valley Consortium of Water & Wastewater Facilities
  - 35 community water systems
  - Purchase laboratory supplies and treatment chemicals together
  - Systems agree not to seek out vendors independently



# Bulk Purchase of Chemicals

- Tremonton, UT
  - Serves 3,500 customers but is largest system for 30 miles
  - Serves as “chlorine clearinghouse”—buys chemicals in bulk and re-sells them at their cost to small neighboring systems



# Bulk Laboratory Services

- 100 systems in Ohio
  - Organized by a for-profit full-service company
  - Consortium purchases lab services in bulk on behalf of 100 systems
  - Volume discounts of 10 to 50 percent at labs



# Sharing Staff

- Panora and Des Moines, IA
  - Panora is a small system serving 1,175 customers
  - Had difficulty retaining operators
  - Signed an MOU with Des Moines to allow Des Moines to monitor the treatment plant remotely and limiting need for on-site operator to 2.5 hours per day



# Sharing Staff

- Program of Shared Operation & Management (POSOM), MT
  - Provides operational and management assistance to very small community systems
  - Most important assistance is how to stay in compliance with SDWA
  - Individualized to a particular system's needs





# Sharing Billing



## Milan Public Utilities

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### ABOUT MILAN PUBLIC UTILITIES

[Customer Service](#)[Electric](#)[Water / Sewer](#)[Tree Trimming](#)[Links](#)

Milan Public Utilities (MPU) is located in Milan, Tennessee and is owned by the City of Milan. The Department manages the Electric and Water/Wastewater Systems and operates under the Mayor and Board of Aldermen. The Electric and Water/Wastewater Systems share top management, customer services, billing, meter reading and accounting. Each system pays its share of these expenses and has its own financial reports.

Due to our goal of outstanding customer service and cost savings MPU also works with the City of Milan Public Works Department to bill sanitation charges on the utilities bill. By sharing in this billing we all save on postage, paper, payroll,



# Sharing Billing



## Milan Public Utilities

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The Electric and Water/Wastewater Systems share top management, customer services, billing, meter reading and accounting... By sharing in this billing we all save on postage, paper, payroll, benefits and computers while giving the customer the convenience of one stop service and a single monthly bill.

in Milan, Tennessee  
 e Department manages  
 systems and operates  
 en. The Electric and  
 management  
 ing and accounting.  
 expenses and has its

[New Training](#)
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Due to our goal of outstanding customer service and cost savings MPU also works with the City of Milan Public Works Department to bill sanitation charges on the utilities bill. By sharing in this billing we all save on postage, paper, payroll,



**Does anyone in the room  
have these types of  
arrangements?**



# System Inter-Connections

- Tripp County Water User District, SD
  - 8 independent systems serving 2,700 customers
  - Systems are self-operated; no transfer of ownership
  - Shared source water and testing
  - Testing costs down \$3,000 per year per system
  - Better access to SRF funds



# System Inter-Connections

- Logan-Todd Regional Water Commission, KY
  - 12 systems partnered together to share water source and treatment
  - Created to help drive economic development by serving a new poultry plant
  - State and federal funding agencies supported partnership by funding above normal levels



**How is your system  
connected to other systems,  
if at all?**



# Resources on Water System Partnerships

[efc.unc.edu/projects/partnerships.htm](http://efc.unc.edu/projects/partnerships.htm)



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Search x Water System Partnerships, Interconnections and Interlocal Agreements

Part of the Water System Capacity Development Support [View all pages](#)

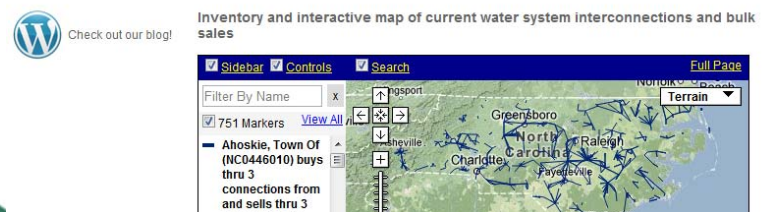
What forms of partnerships exist between water systems in North Carolina? How many water systems are physically interconnected and what are their characteristics? What are the geographically feasible interconnection options for water systems that are currently not connected? What should a utility consider while creating a new inter-local water agreement?

After extensively reviewing and creating databases, examining hundreds of interlocal agreements, and working very closely with certain communities across NC that are attempting to create new regional partnerships, we produced the following tools, documents and trainings to answer these questions and to assist water system managers in their capacity to partner with their neighboring systems.

- Inventory and interactive map of current water system interconnections and bulk sales
- Tips and guidelines for establishing water partnership agreements
- Assessment of current and potential water system interconnections in NC
- Presentations and training materials on water system partnerships in NC
- Direct assistance to several communities in NC considering new regional partnerships
- Background: Why focus on inter-system partnerships?

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Tips and Guidelines for Crafting Inter-local Agreements



Check out our blog!

Inventory and interactive map of current water system interconnections and bulk sales

Full Page

Filter By Name x

751 Markers [View All](#)

Ahoskie, Town Of (NC0446010) buys thru 3 connections from and sells thru 3

Thanks to Public Water Supply Section (NC DENR) and local governments



EFC Contacts: Shadi Eskaf, Jeff Hughes



[www.efcnetwork.org](http://www.efcnetwork.org)



# Crafting Successful Inter-local Agreements

Available at

[efc.unc.edu/projects/partnerships.htm](http://efc.unc.edu/projects/partnerships.htm)

## Format

- Questions to consider, descriptions, example text
- Advice for getting inter-local agreements right, avoid pitfalls
- NOT draft contract
- NOT every issue that will come up in every document

Crafting Inter-local Water Agreements	
<i>Tips relating to issues you may not have thought of or that you were hoping to avoid....</i>	
Prepared by:	
UNC Environmental Finance Center	
For	
Public Water Supply Section Division of Environmental Health North Carolina Department of Environment and Natural Resources	
6/24/09	
 <i>Note: Example text is provided in these guidelines to illustrate different concepts. These excerpts are designed to generate discussion and inspire development of agreement clauses appropriate to local conditions. These excerpts are <b>NOT</b> presented as, nor should they be considered as, model contract clauses that can be copied into agreements.</i>	
<b>Table of Contents</b>	
Background .....	2
Topics of Consideration: .....	3
✓ What does the agreement say about each partner's current and future service area? .....	3
✓ What does the agreement say about the relationship between water service, annexation and growth? .....	4
✓ How precisely does the agreement define key usage thresholds and limits? .....	5
✓ Does the agreement clearly outline meter maintenance and ownership responsibilities? .....	6
✓ How does the agreement address water quality problems? .....	7
✓ How does the agreement assure that water suppliers receive adequate payment for use of their capital? .....	9
✓ What does the agreement say about how commodity charges are calculated and modified over time? .....	12
✓ What does the agreement say about reselling water or capacity? .....	14
✓ What does the agreement say about water pressure? .....	15
✓ How does the agreement address communicating and handling supply interruptions or shortages? .....	16
✓ What does the agreement say about the transferability of conservation status/measures? .....	17





# **Option 2: Asset Transfer and System Consolidation**



# When is it time to transfer a water system?

- Is it possible?
  - Current compliance status with regulatory agencies
  - Potential interconnection
  - Another organization with interest
  - State of system's assets
  - State of system's finances



# Asset Transfer

- Ellsworth Estates Water Company, CT
  - Small private HOA system serving 82 homes sold to Connecticut Water Company, a large private system serving 41 communities
  - Sale after elderly co-operator died; other elderly co-operator could not handle system on his own
  - Now has access to 30 operators and could spread capital costs over entire CWC system



# Asset Transfer

- Mountain Regional Water Special Service District, UT
  - Consolidation of 12 public and private community systems into one new entity
  - Much greater access to paid, professional operators



# System Consolidation

- Region 18 School District, CT
  - 3 non-transient, non-community water systems, each serving one school, consolidated when they ran into water storage issues and defective wells
  - New well and storage system serves all three schools



**How many of you would like  
to get out of the water  
business?**

**Has anyone here tried?**



# Option 3: Energy Management



# Energy Use and Water Utilities

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





# Energy Use at Water Systems

- Pumping water is the largest consumer of energy
- Energy use is expected to increase
  - increases in demand
  - new energy intensive technologies (ozone, membranes, UV)



# Water Systems are Energy Users

- In 2010 water systems used 12.6% of the nation's total annual energy consumption

= annual consumption of  
~40 million Americans



# Energy Management Techniques

- Equipment changes
- Process changes
- Time of operation changes
- Billing rates changes
- Electricity generation
- Reducing water loss



# Possible Changes

- Raw and Finished Water Pumping
- Chemical Mixing
- Backwashing
- Well Systems
- Ozonation
- Load Shifting
- Distribution
- Supervisory Control and Data Acquisition (SCADA)
- Energy Efficient Motors



# Equipment Changes

- Madera Valley, CA
  - Serves 1,600 customers

Energy Efficiency Improvement	Annual Baseline Energy Cost	Annual Post-Implementation Energy Cost	Annual Estimated Savings
Install variable-frequency drives and programmable logic controls at wells 1 and 10	\$68,000	\$51,000	\$17,000
Install energy-efficiency motor instead of standard motor in new well (no. 10)	\$40,000	\$39,000	\$1,000
Replace standard efficiency motor with energy efficient motors (wells 1, 2, and 3)	\$76,000	\$75,000	\$1,000
<b>Estimated Total Annual Savings</b>			<b>\$19,000</b>



# Equipment Changes

- Valparaiso, IN
  - Serves 35,000 customers (not small system)

The Valparaiso Water Department has reduced electrical energy use by implementing numerous strategies.

Process Targeted / Goal	Improvement and estimated saving	Estimated annual energy saving, kWh	Implementation cost, \$	Annual cost saving,	Simple pay-back, years
Lighting	Reduced number of lighting hrs by 40%	7488	No cost. Turn lights off	\$749	0
Lighting	Will replace T12 with T8 bulbs and fixtures	1,098		\$110	No estimate
High service pumps	Replacing high service pumps with premium efficiency ones at both plants	34,640	\$52,400	\$3,464	15.1
HVAC <sup>1</sup>	Purchased portable HI-E dehumidifiers to replace the gas burning dehumidifier.	36,000	\$500	\$13,600	1



# Process Changes

- Run your existing equipment differently
- Key is to stay in compliance with your permit but reduce unnecessary energy expenditures



# Time of Operation Changes

- On-peak vs. off-peak consumption affects rates
- Understanding the electric utility's pricing policies (rate structures) is critically important





# Billing Rate Changes

- Valparaiso, IN
  - Serves 35,000 customers (not small system)
  - Did a full rate analysis and realized they were not being charged lowest possible rate at one plant
  - Switch to different rate structure saved them \$12,000 annually without any changes to energy use



# Energy Generation

- Keene, NH
  - Serves 5,100 customers
  - Water supply is at a higher elevation than the treatment plant, resulting in head pressure
  - Harnesses excess pressure through a turbine to generate more electricity than is needed to run the entire plant each year
  - Cost savings \$18,500 annually



# Water Loss

- Newmarket, NH
  - Serves 5,000 residents
  - Had 33.6 percent of water unaccounted for in billing
  - Switched to new automated meters, went from quarterly to monthly billing, and encouraged conservation
  - Saved water and gasoline



# Comprehensive Approach

	Anticipated Expenditures for Energy Upgrades	Expected Annual Energy Savings*	Energy Efficiency Savings**	Total kW Savings	Est. CO <sup>2</sup> Reductions (tons)	Green Power Generation (kW)
Ashland Howe Street Water Treatment	\$486,353	\$75,428 (62%)	\$67,328 (55%)	194,464	229	Up to 45 kW (solar)
Easton Water Division	\$350,000.00	\$9,000 (6%)	\$0	60,000	46	Up to 50 kW (solar)
Falmouth Long Pond Water Treatment	\$228,062†	\$52,352 (36%)	\$49,652 (34%)	278,200	213	Up to 15 kW (solar)
Lee Water Treatment	\$801,000	\$34,177 (106%)	\$7,926 (25%)	200,940	153	Up to 105 kW (solar & hydroelectric)
New Bedford— Quittacus Water Treatment	\$2,590,000	\$49,840 (9%)	\$25,000 (4%)	165,000 / 1,783 MMBTU	165	Up to 138 kW (solar)
Townsend Water Treatment	\$325,000	\$13,658 (40%)	\$5,000 (15%)	73,844	56	Up to 40 kW (solar)
Worcester Water Treatment	\$1,434,000	\$75,724 (25%)	\$28,492 (9%)	553,152	423	Up to 160 kW (solar & hydroelectric)
<b>Totals</b>	<b>\$6,091,353</b>	<b>\$310,179</b>	<b>\$183,398 (59%)</b>	<b>1,525,600</b>	<b>1,285</b>	<b>553</b>



**Has anyone here done energy  
management for your  
system?**

**Had an energy audit?**



# Develop Baseline of Energy Use

- Collect and organize equipment, energy use, and hydraulic data
- Develop an understanding of where, why, and when energy is used
- Understand energy bills and the rate structure that is used to set energy costs



# Portfolio Manager

- <https://www.energystar.gov/istar/pmpam/>
- Portfolio Manager is an interactive energy management tool that allows you to track and assess energy consumption online



# Portfolio Manager

- Track multiple energy and water meters for each facility
- Customize meter names and key information
- Benchmark your facilities relative to their past performance
- View percent improvement in weather-normalized source energy
- Monitor energy and water costs
- Share your building data with others inside or outside of your organization
- Enter operating characteristics, tailored to each space use category within your building.





Portfolio Manager Upgrade

www.energystar.gov/index.cfm?c=evaluate\_performance.bus\_portfoliomanager\_upgrade

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Home > Buildings & Plants > Portfolio Manager Overview > Portfolio Manager Upgrade

## Portfolio Manager Upgrade

In July 2013, EPA will release a complete upgrade for its popular Portfolio Manager tool. This tool, currently in use by more than 40,000 individual accounts to measure, track, assess, and report on the energy and water performance of more than 250,000 commercial buildings, will get the full treatment: a new interface, streamlined functionality, and improved usability.

**\*\*Note: The Portfolio Manager Upgrade will launch on July 10, 2013. Portfolio Manager will be unavailable from June 26 through July 9, 2013 to allow for the migration of data to the new, upgraded Portfolio Manager.**

### Project Timeline

2010	2011	2012	2013
Conduct user interviews	Specify requirements	Design and development	Migrate data   Rollout

### What Will Be Upgraded?

1. Database architecture

### What Will NOT Change?

1. Your Data — all of your data will be transferred to the new system

19:15



# Key Resource: DSIRE Database

- <http://www.dsireusa.org/>

**DSIRE™**  
Database of State Incentives for Renewables & Efficiency

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy  
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solar policy information

DSIRE is a comprehensive source of information on state, local, utility and federal incentives and policies that promote renewable energy and energy efficiency. Established in 1995 and funded by the U.S. Department of Energy, DSIRE is an ongoing project of the N.C. Solar Center and the Interstate Renewable Energy Council.

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Federal Incentives

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What's New?

Map of the United States showing state abbreviations: WA, OR, ID, MT, ND, MN, WI, MI, NY, VT, NH, ME, MA, RI, CT, NJ, DE, MD, DC, PA, WV, VA, NC, KS, MO, IL, IN, OH, KY, WV, VA, NC, CO, UT, NV, CA.



# Special Energy Finance Techniques

- Internal Revolving Energy Funds
- Guaranteed Energy Savings Contracts (Performance Contracts)
- Third Party Ownership and Power Purchase Agreements
- Qualified Energy Conservation Bonds
  - - \$54M allocation in MN, \$38M remaining

