

Getting the Price Right

Presented to
Illinois Pollution Control Board
Brown Bag Series
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UNIVERSITY OF ILLINOIS
EXTENSION

Sea Grant
ILLINOIS - INDIANA

CMAP

Regional water framework

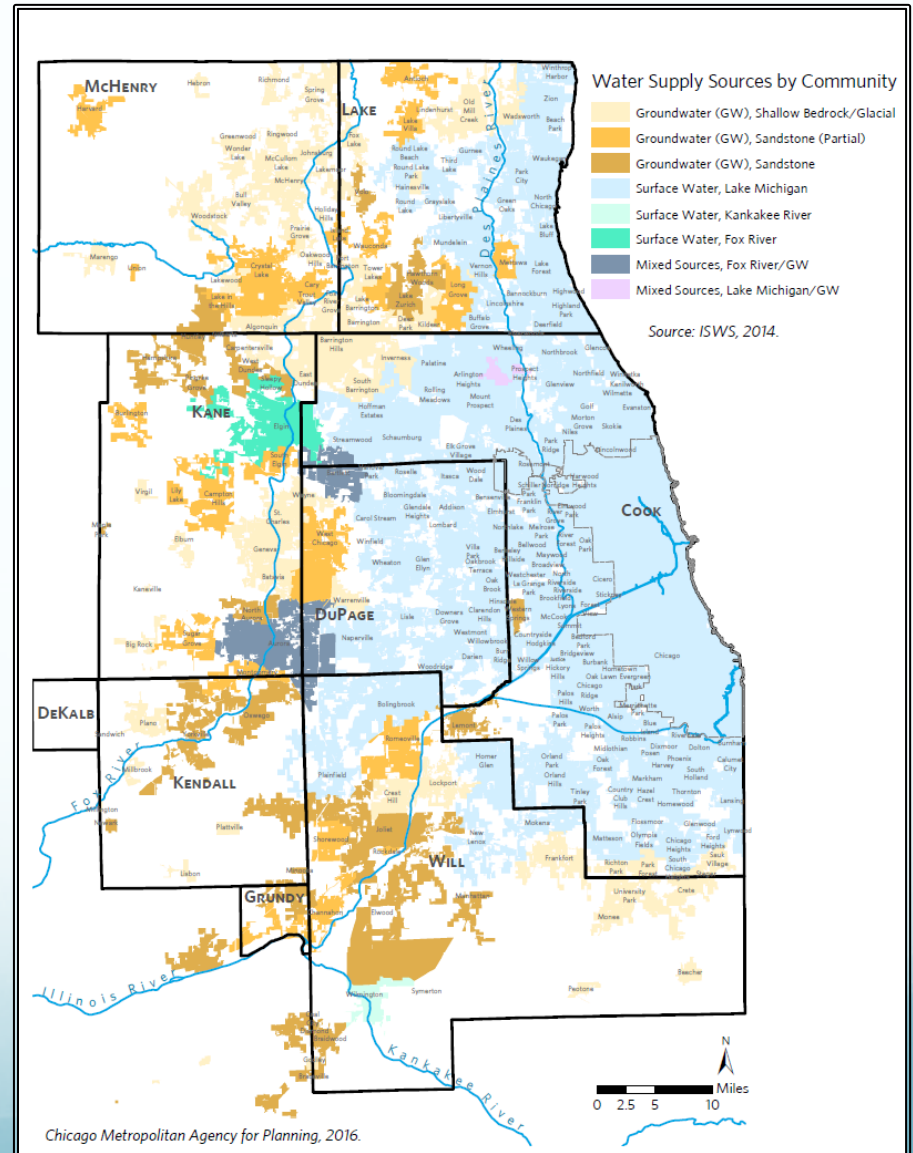
Water 2050

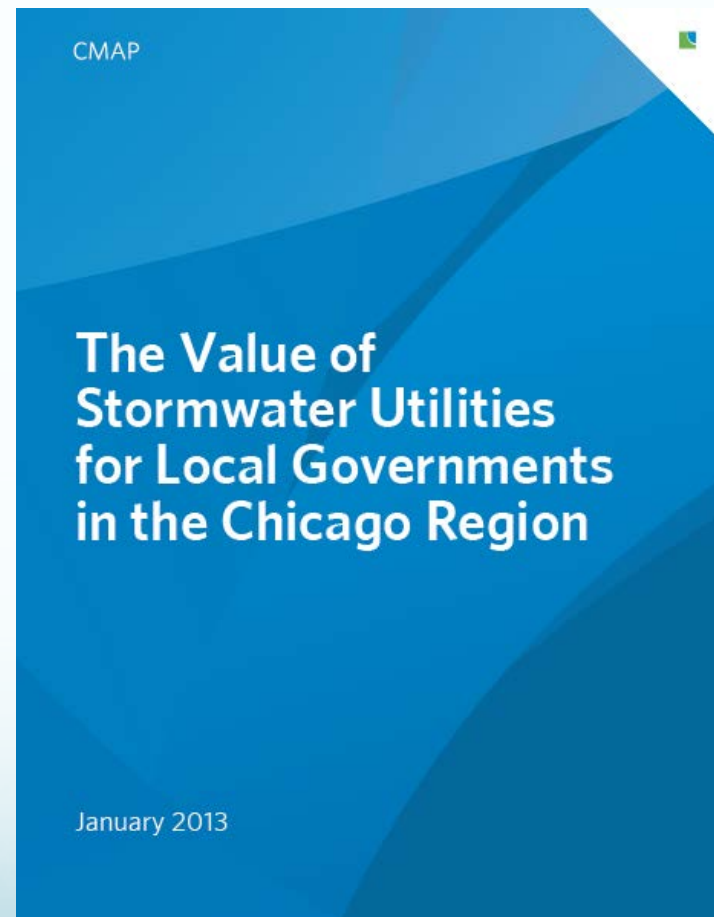
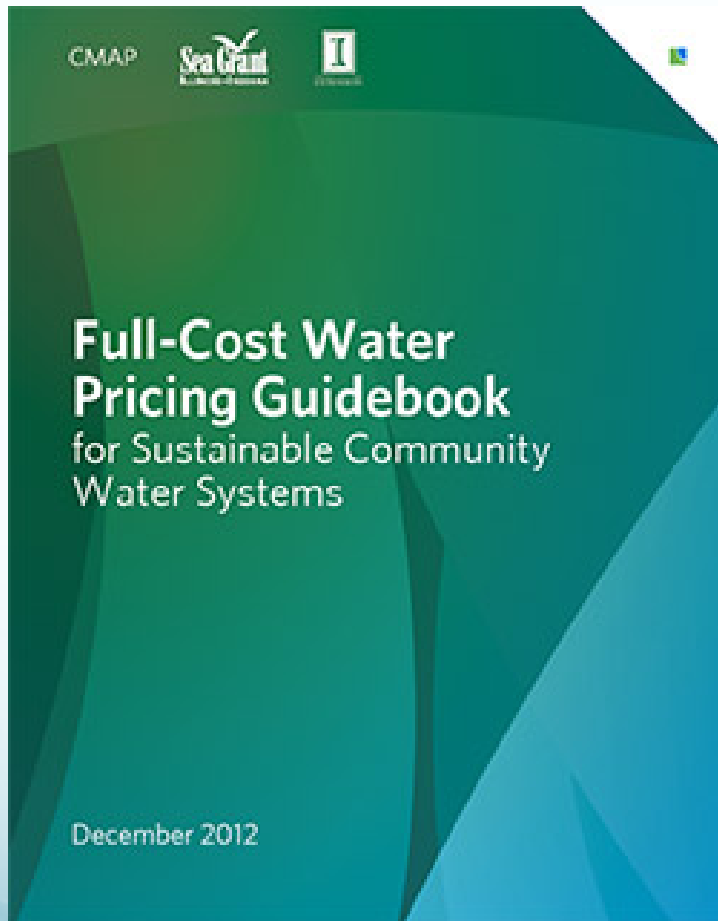
- RWSPG (2006)
- Water 2050 (2010)

GO TO 2040 & Update

- GO TO 2040 (2010)
- Update (2014)

ON TO 2050 (2018)





Water industry challenges

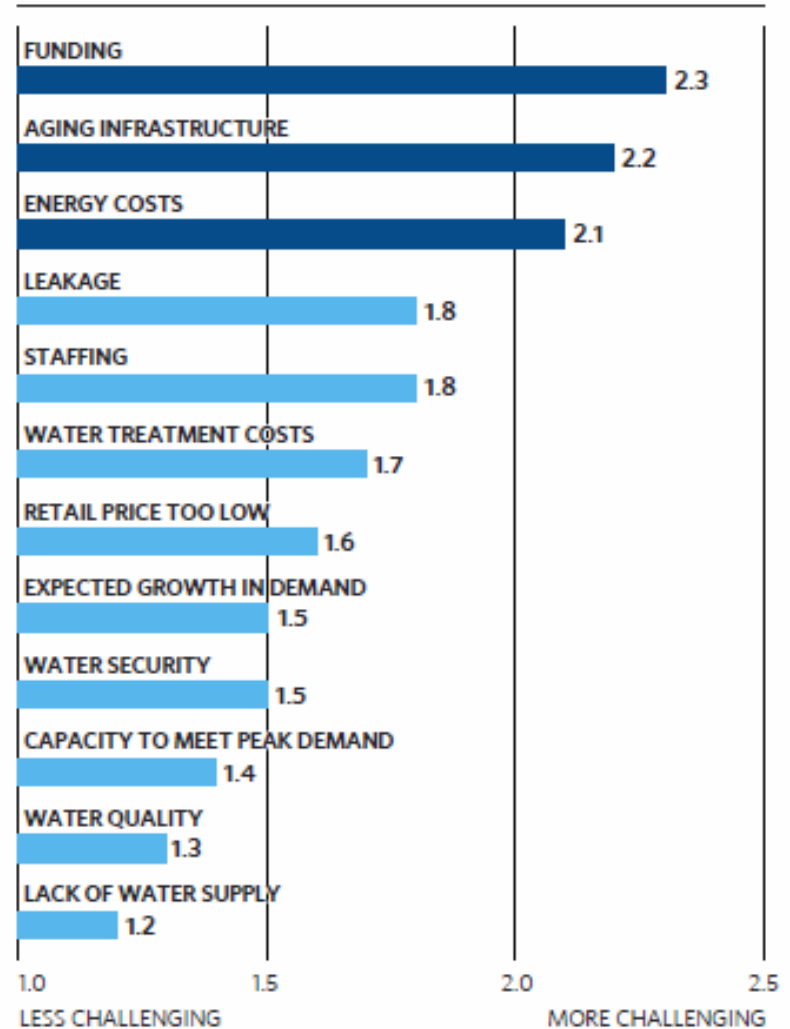
1. Aging infrastructure
2. Financing for capital improvements
3. Long term water supply availability

Source: 2015 AWWA State of the Water Industry Report

- Chicago region municipalities had a stormwater funding backlog of \$233 per household.

Calculated from the municipalities that provided stormwater needs estimates in the 2008 Clean Watershed Needs Survey, inflated to 2012 dollars.
<http://water.epa.gov/scitech/datait/databases/cwns/2008reportdata.cfm>

Figure 1. Northeastern Illinois utility challenge ratings



Source: CMAP utility survey, 2008.

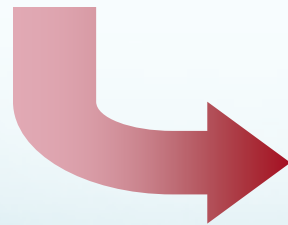


Communities
have a choice to
make about how
to manage water
assets

Avoid the issue and risk...

- emergency repairs
- business interruption
- public health impacts
- regulatory problems
- higher long-term costs

OR...



Invest proactively in management of water infrastructure assets to continue providing high-quality, reliable service. (at a lower long-term cost)

Paying for water service I

The public can best be provided water service by self-sustained enterprises adequately financed with rates and charges based on sound accounting, engineering, financial, and economic principles.

American Water Works Association (AWWA)

Providing stormwater services through a user fee rather than taxation.

What is a stormwater utility? (CMAP)

Much of water infrastructure is not funded on a pay-as-you-go basis, many communities turn to debt and loan funds to finance their infrastructure

Paying for water service II

Figure 8. Financing and funding sources

FINANCING SOURCES	PROVIDES FUNDS	REPAYMENT	ADVANTAGES	DISADVANTAGES
Revenue bonds (“rate-supported”)	Immediately	By rate payers over 10-30 years	Makes funds available immediately; ties payments to benefits recieved	Increases rates; high interest costs
Revolving loans	Immediately	By rate payers over 10-20 years	Makes funds available immediately; ties payments to benefits recieved; potentially lower interest costs	Increases rates; competition with other local agencies for funds
General obligation bonds (“tax-supported”)	Immediately	By tax payers over 10-30 years	Makes funds available immediately; ties payments to benefits recieved; potentially lower interest costs	Increases taxes; compete with other local services for limited bond funds; separate payment from benefit
Assessment-supported bonds	Immediately	By assessed customer over 10-30 years	Makes funds available immediately; matches payments to benefit	Requires legislative approval; not practical for projects that serve all or most customers; assessments can become burdensome to customers
Assessments (unbounded)	Immediately	By assessed customer at time of construction	Makes funds available immediately; matches payments to benefit	Requires legislative approval; may have serious impact on assessed customers
FUNDING SOURCE	PROVIDES FUNDS	REPAYMENT	ADVANTAGES	DISADVANTAGES
Capital fees (hook-ups, taps, system development of impact fees)	Immediately	By new customers immediately	Requires new customers to pay for impacts they place on system	Political issues (viewed as ‘antidevelopment’); ineffective where there is little or no growth
Reserves	In future	By rate payers each year until reserve is adequate	Eliminates need for borrowing; improves financial stability of system	Can be politically difficult; difficult to ‘protect’ reserves for intended use; impractical for large projects
User charges	Immediately	By rate payers immediately	Eliminates need for borrowing or reserves	Impractical for large projects; may make rates erratic from year to year

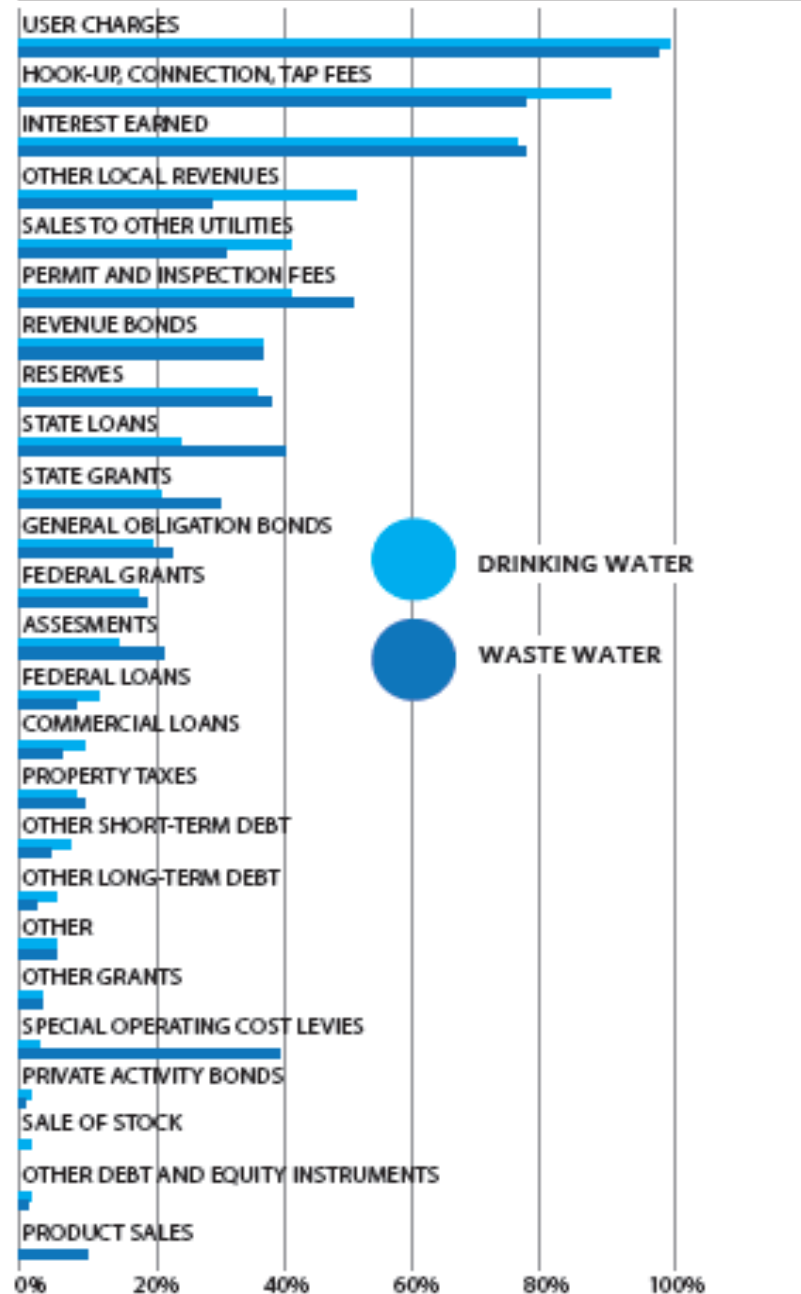
Source: U.S. EPA.

Paying for water service III

Source of Funding	Percent of Respondents
Water rate revenue	89%
General obligation bonds	37%
State revolving fund loan	23%
Other	9%

Planning Water Loss Survey, 2013. More than one answer could be selected. n = 79.

Figure 1. Estimated percentage of utilities using source of funding



Source: U.S. General Accounting Office Water Infrastructure: Information on Financing, Capital Planning and Privatization, August 2002.

Full cost pricing definition

“implies that **all private and social costs** associated with a product or activity (and determined using full cost accounting) are included in the price of an activity”

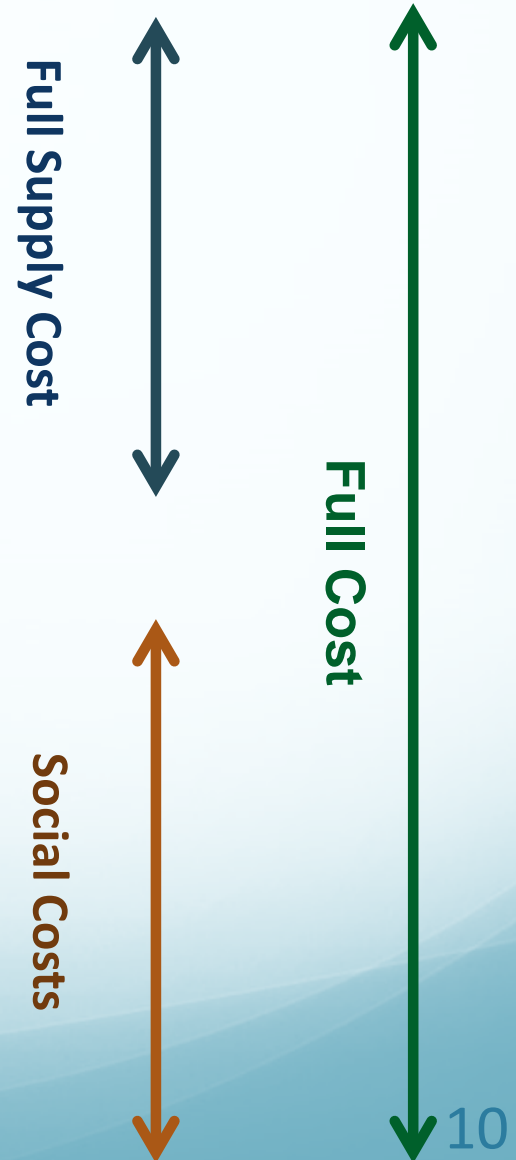
See Conway-Schempf, PhD. *Full Cost Accounting* http://qdi.ce.cmu.edu/qd/education/FCA_Module_98.pdf

Analogy: what is the full cost of driving?

- Gas
- Maintenance
- Operation
- Financing

- Road Maintenance & Construction

- Traffic Congestion
- Emissions Impacts

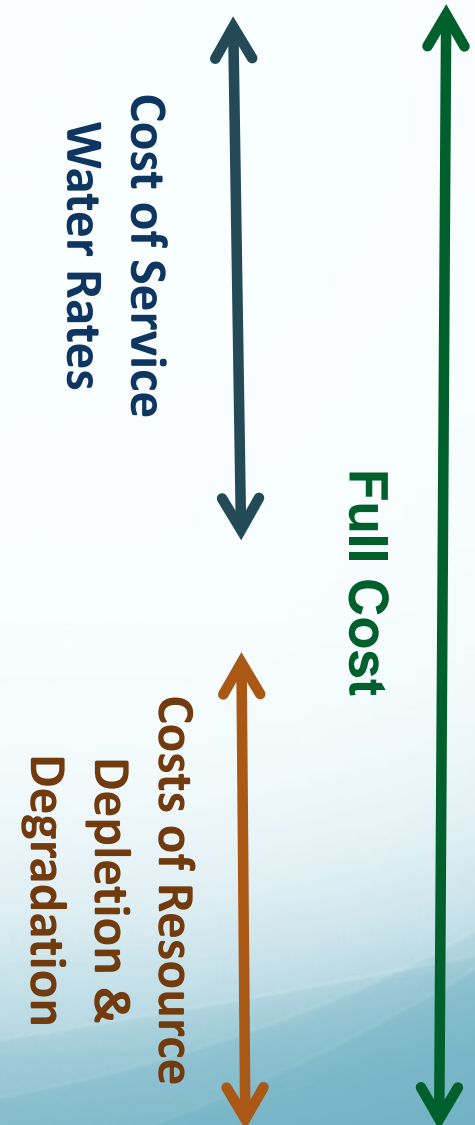


Full cost water pricing

- Operations, Maintenance, Administration
- Debt Service
- Reserves
- Infrastructure Renewal and Repair

- Infrastructure Replacement

- Planning & Programming
- Water Source Protection



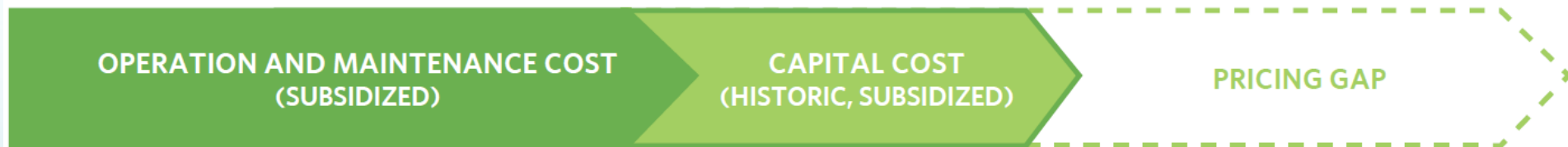
Cost of service rates: the pricing gap

Adjusting price towards full supply cost.

FULL SUPPLY COST PRICING



TRADITIONAL PRICING



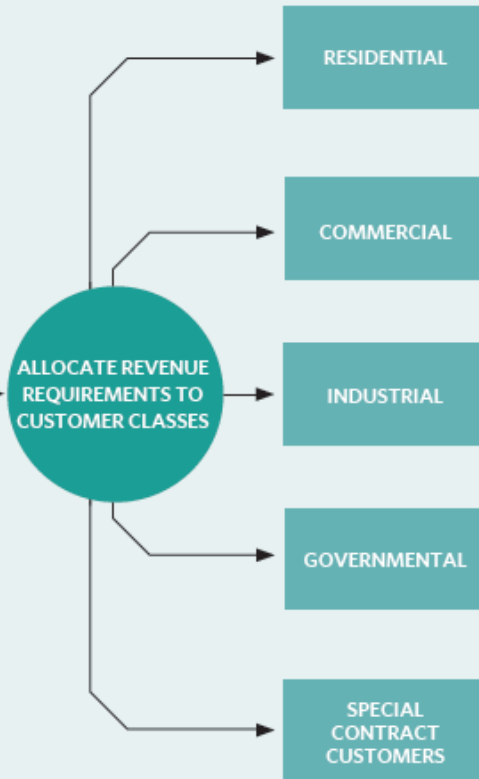
Source: Figure adapted from Rogers, P., R. Bhatia, and A. Huber. 1997. Water as a social and economic good: how to put the principle into practice. Paper prepared for the meeting of the Technical Advisory Committee of the Global Water Partnership in Namibia and Marbek Resource Consultants Analysis of Economic Instruments for Water Conservation Final Report to the Canadian Council of Ministers of the Environment: Water Conservation and Economics Risk Group.

**STEP 1:
IDENTIFY REVENUE
REQUIREMENTS**

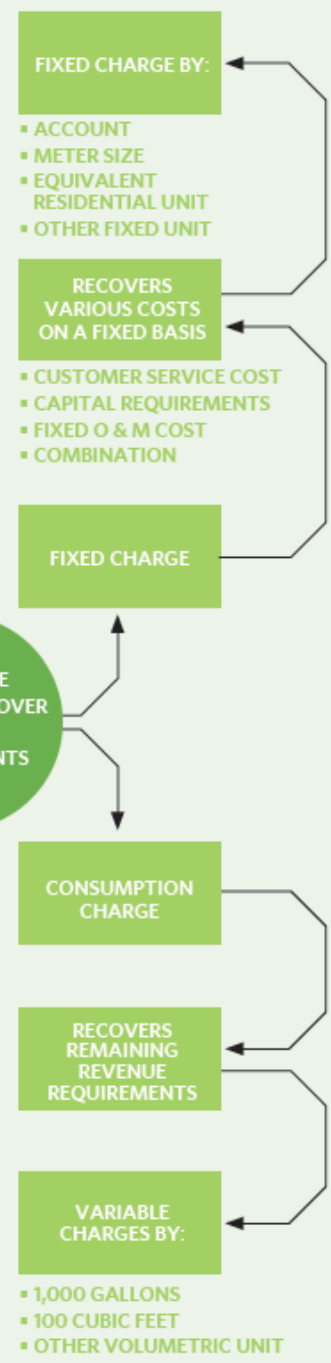


- OPERATING COSTS
- CAPITAL REQUIREMENTS

**STEP 2:
DETERMINE COST OF SERVICE**



**STEP 3:
DESIGN RATE
STRUCTURE**



Source: George A. Raftellis, *Water and Wastewater Finance and Pricing*.

Revenue sufficiency

The screenshot shows the American Water Works Association (AWWA) website. The header includes the AWWA logo and tagline "Dedicated to the World's Most Important Resource™". Navigation links for "About Us" and "Contact Us" are present. A main menu bar contains "MEMBERSHIP", "CONFERENCES & EDUCATION", "RESOURCES & TOOLS", "PUBLICATIONS", and "LEGISLATION & REGULATION". A search bar is also visible. The page content is titled "Financing, Accounting, and Rates" and includes a breadcrumb trail: "Home > About Us > Policy Statements > Policy Statement". The text explains that AWWA believes the public should be provided water and wastewater services by self-sustaining enterprises adequately financed with rates and charges based on sound utility accounting, management, and financial principles. It outlines that utilities should not implement policies that compromise long-term financial integrity and should follow generally accepted national accounting principles. It also states that revenues from water and wastewater service charges, user rates, and capital charges should be sufficient to pay for annual operation and maintenance expenses, financing of capital costs, maintenance of working capital, and required reserves. Finally, it notes that rates should be designed to distribute the cost of service equitably among each type and class of service.

ABOUT US

TOTAL WATER SOLUTIONS

HISTORY

LEADERSHIP

STRATEGIC PLAN

FIND US

GOVERNANCE

WORK WITH US

POLICY STATEMENTS

REQUESTS FOR PROPOSALS

CONTACT US

Home > About Us > Policy Statements > Policy Statement

Financing, Accounting, and Rates

The American Water Works Association (AWWA) believes that the public can best be provided water and wastewater services by self-sustaining enterprises adequately financed with rates and charges based on sound utility accounting, management and financial principles.

Utilities should not implement any policy or practice that compromise the long-term financial integrity of the utility or its ability to provide quality service to customers.

Utilities should follow the generally accepted national accounting principles of their country and adopt a standard uniform system of accounts, modified as necessary to meet the requirements of legislative, judicial, or regulatory bodies. Internal controls should be adequate to ensure that the financial statements present fairly, in all material respects, the financial position, results of operations and cash flows of the utility.

Revenues from water and wastewater service charges, user rates, and capital charges should be sufficient to pay for annual operation and maintenance expenses, financing of capital costs, maintenance of working capital and required reserves, and achievement of defined financial performance metrics. Maintenance and capital costs should include the support of an asset management program that preserves utility assets at desired service levels.

Rates should be designed to distribute the cost of service equitably among each type and class of service. Non-cost of service rate-setting practices that achieve public policy goals and utility objectives may be appropriate in some situations.

Utilities should provide information annually to customers, the financial community, and the general public about the financial condition of the utility and the revenues necessary to provide service and to maintain utility assets on a sustained basis.

Utilities should account for and maintain their funds in separate accounts from other governmental or owning entity operations. Water and wastewater utility funds should not be diverted to uses unrelated to water or wastewater utility services. Reasonable taxes, payments in lieu of taxes, and payments for services rendered to the utility by a local government or other divisions of the owning entity may be included in the utility's revenue requirements after taking into account the contribution for fire protection and other services furnished by the utility to the local government or to other divisions of the owning entity.

Adopted by the Board of Directors Jan. 25, 1965, revised Jan. 31, 1982, reaffirmed Jan. 25, 1987, revised Jan. 26, 1992, June 21, 1998, Jan. 16, 2005 and revised Jan. 17, 2010. Revised June 7, 2015.

- annual operation and maintenance expenses
- financing of capital costs
- maintenance of working capital and required reserves
- achievement of defined financial performance metrics
- support of an asset management program

Step 1: Revenue requirements

Investor-owned - Rate based,
rate of return method

- O&M, depreciation, taxes,
rate of return on rate base

Municipal - Cash flow method

- O&M, debt service,
reserves, capital additions

Revenue Requirements							
Fixed Costs				Variable Costs			
Capital Recovery			O & M				
Cost of Capital							
Return on Equity	Interest on Debt	Depreciation	Taxes, Other Fixed	Other	Customer Accounting	Energy	Labor
					Chemicals		

Step 2: Cost of service rate setting

Cost allocation by function

- Water
- Wastewater
- Stormwater

Price differentiation by customer classes

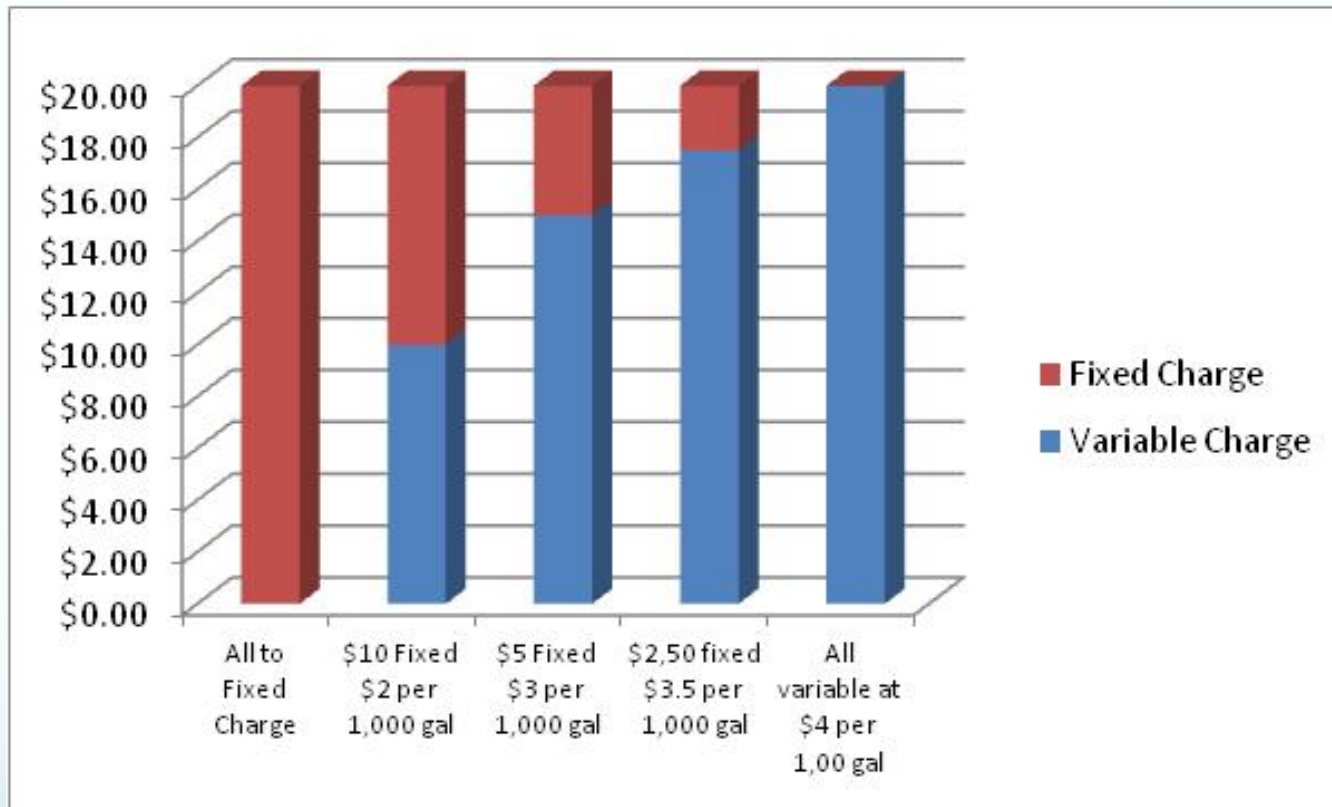
- Price according to user costs imposed on the system

Rates differentiated by

- Type of Customer
- Meter Size
- Meter Type
- Location
- Structural Attributes
- Water Source
- Real Estate Tax Status
- Senior Citizen Status

Step 3: Design rate structure

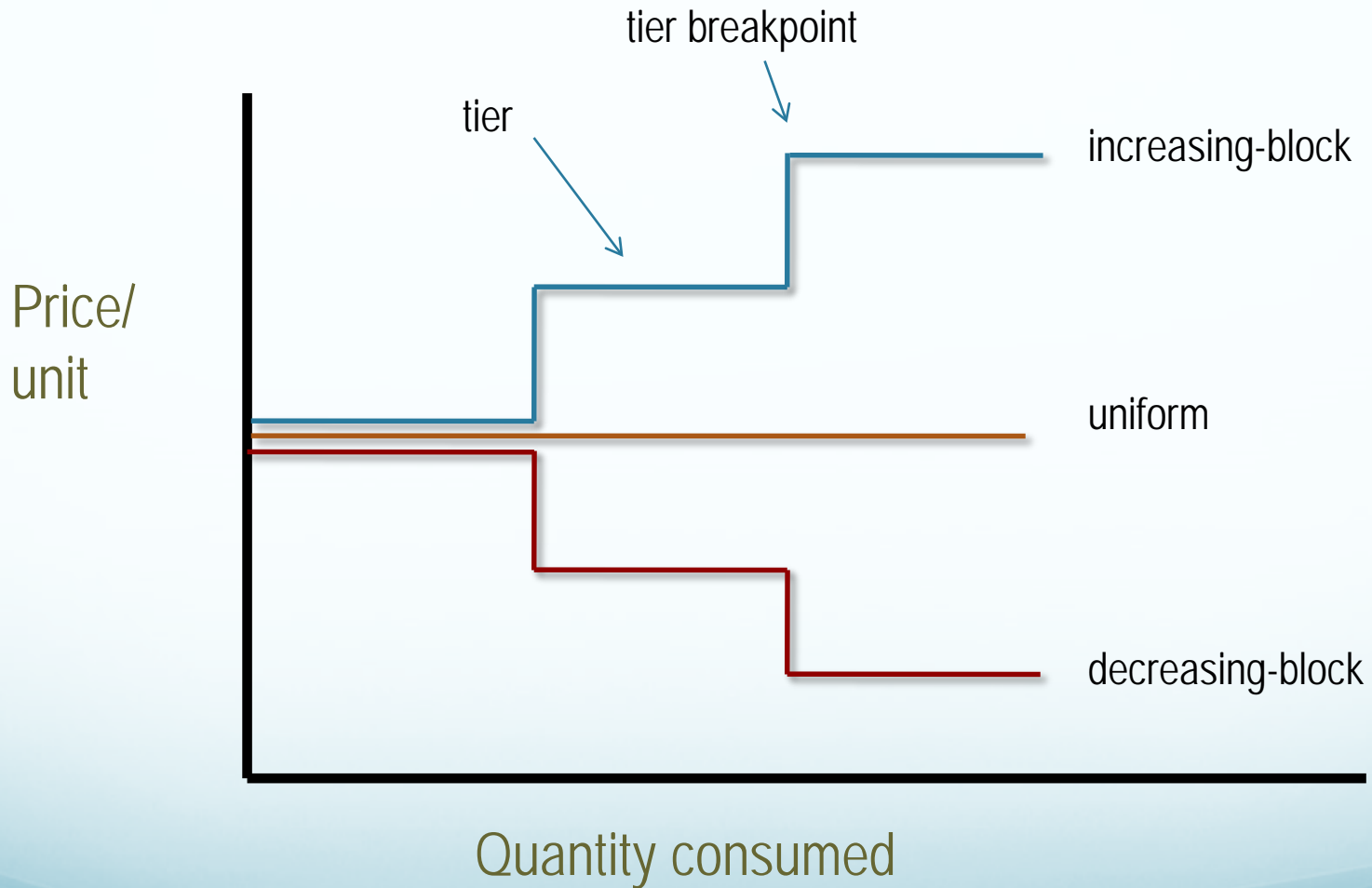
Rate-design options for \$20 revenue recovery



	All to Fixed Charge	\$10 Fixed \$2 per 1,000 gal	\$5 Fixed \$3 per 1,000 gal	\$2,50 fixed \$3.5 per 1,000 gal	All variable at \$4 per 1,00 gal
Variable Charge	\$0.00	\$10.00	\$15.00	\$17.50	\$20.00
Fixed Charge	\$20.00	\$10.00	\$5.00	\$2.50	\$0.00

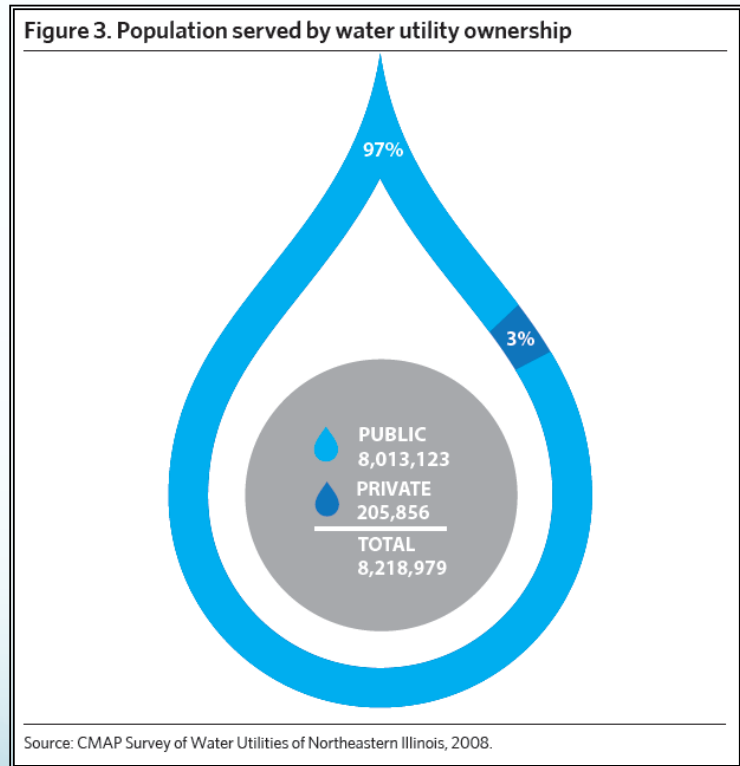
Source: Adopted from Beecher (2009)

Step 3: Design rate structure

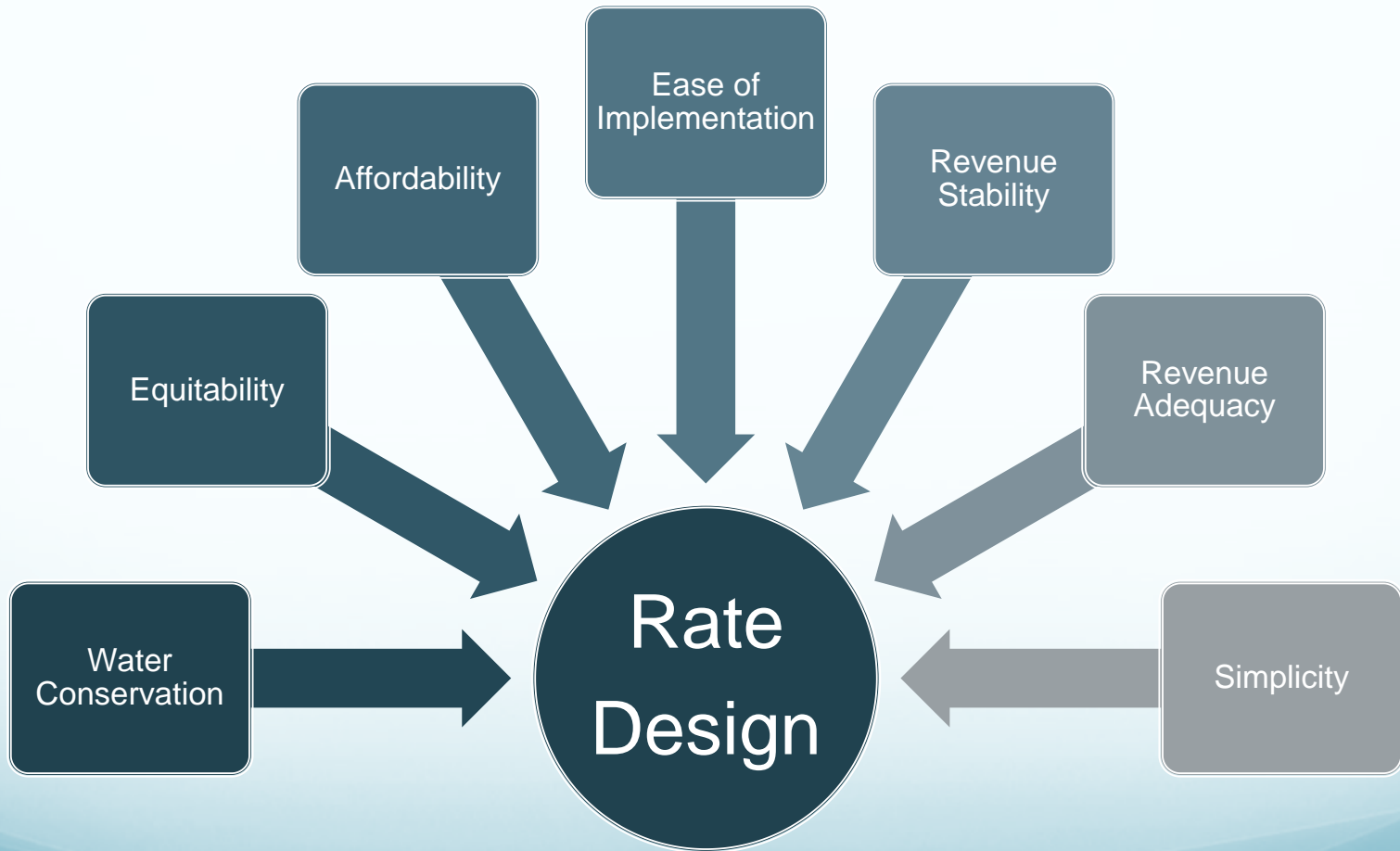


Illinois guidelines and regulations

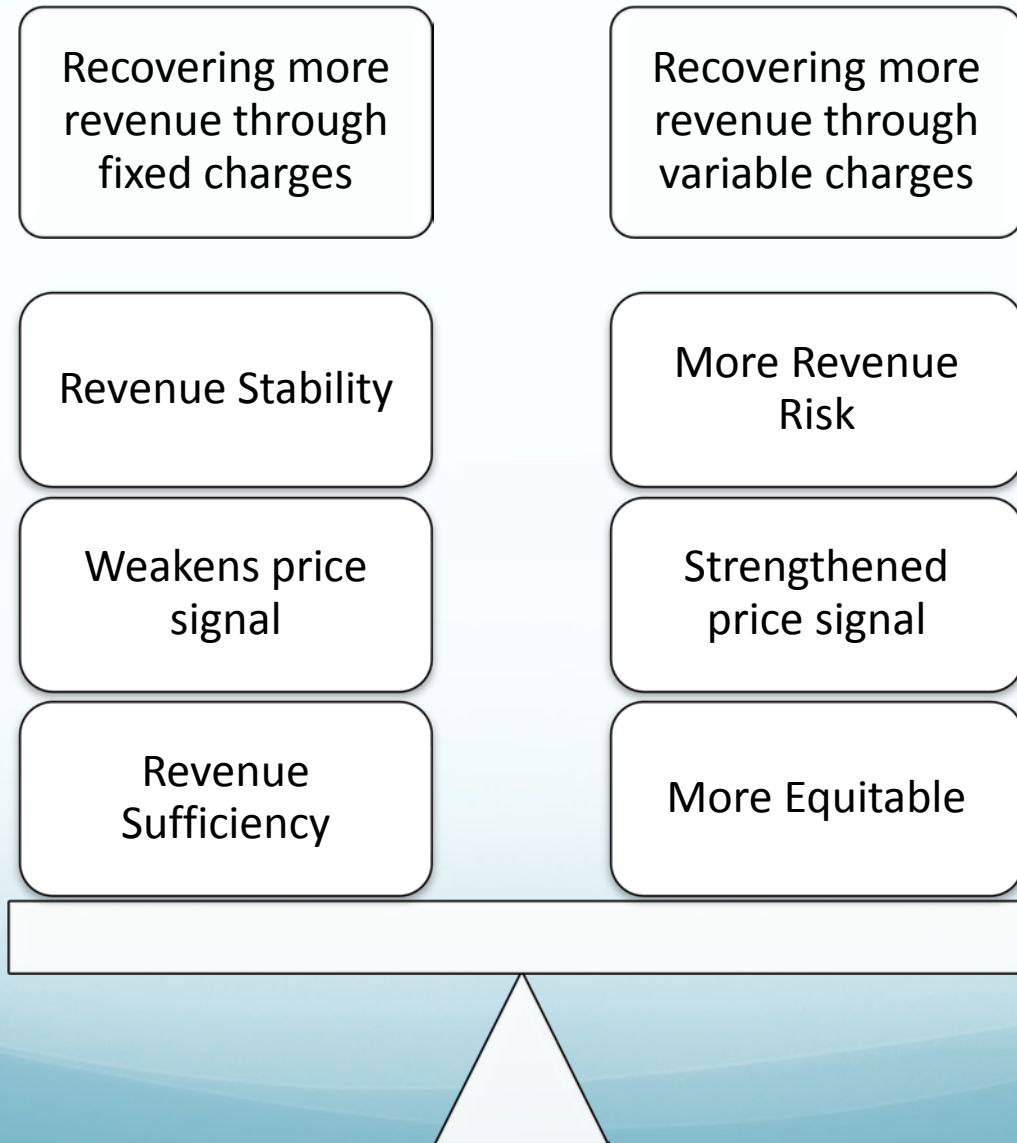
- Illinois Commerce Commission (ICC)
 - Illinois Public Utilities Act (220 ILCS 5/)
 - Electric Supplier Act [220 ILCS 30/]
 - Title 83: Public Utilities
 - Others...
- Citizens Utility Board Act (220 ILCS 10/)
- Local Records Act (50 ILCS 205/)
- Stormwater fee
 - Church of Peace v. City of Rock Island, 828 N.E.2d 1282, 1284 (Ill. App. Ct. 2005))
 - Illinois Municipal Code 65 ILCS 5/Art. 11 Div. 139 and 141



Rate design: art, politics, science



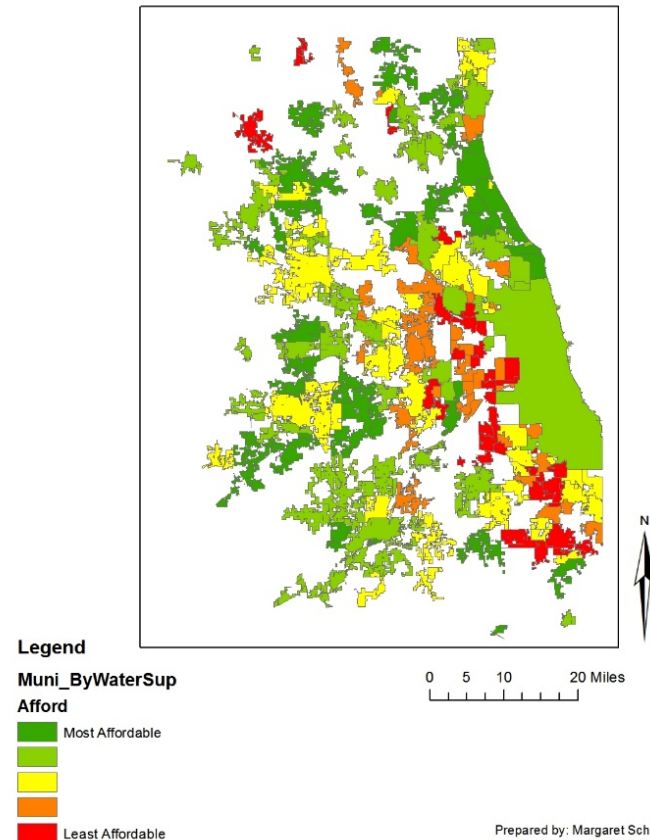
Balancing fixed and variable charges



Why Benchmarking?

- **Benchmarking rates to multiple objectives (cost recovery, affordability, conservation, can help communities make better water pricing decisions**
- **Benchmarking can also help build internal and external support for water rate policies.**
- **Provide regional snapshot.**
- *Performance Indicators (PI)*
 - *How are we performing?*
 - *How do we compare?*
 - *How can we improve?*

Affordability of Water in Northeastern Illinois



Metrics for Benchmarking

Description of Metric	Calculation	Benchmark
Operating Ratio	$\frac{\text{Operating Revenues}}{\text{Operating Expenses}}$	1.0
Debt Service Coverage Ratio	$\frac{\text{Operating Revenues} - \text{Operating Expenditures}}{\text{Debt Service}}$	1.0
Active Debt per Customer	$\frac{\text{Total Active Debt}}{\text{Number of Customers}}$	Average
Percent of Annual Operating Expenditures in Cash Reserves	$\frac{\text{Cash Reserves}}{\text{Annual Operating Expenditures}}$	One month

Source: Adapted from UNC School of Government Environment Finance Center *The State of Full Cost Pricing: Full Cost Pricing Among Public Water & Sewer Utilities in the Southeast 2008*

IISG Northeastern Illinois Water/Wastewater/Stormwater Rate Survey

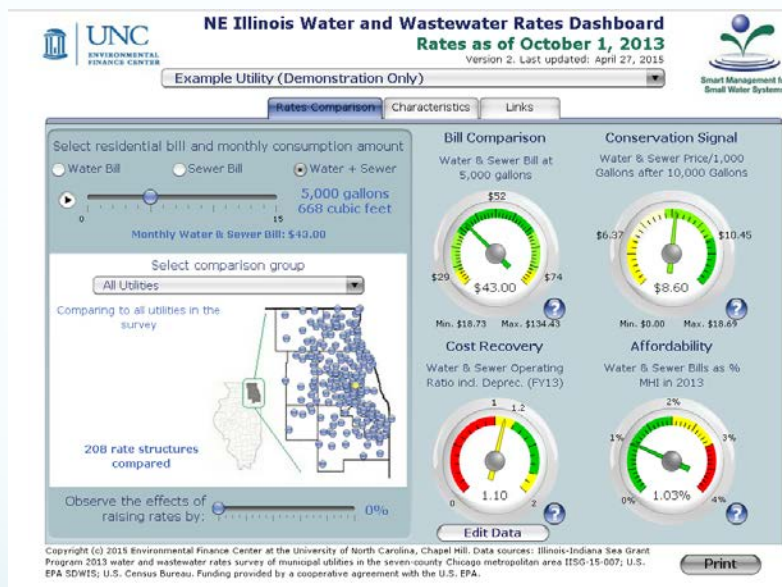
- Covers NE Illinois region planning area.
- Rates collected from local ordinances, and telephone contacts.
- Result is a sample of 238 water supply systems. (FY2017)
- Municipal level data Includes:
 - Billing frequency, water source, water unit, base rate, volumetric rate, rate structure, block rates and size.
 - Allows for calculation of representative monthly water/wastewater bills for benchmarking.

State of your rates? Benchmarking Tool

State of your rates?

<http://www.efc.sog.unc.edu/reslib/item/northeast-illinois-water-and-wastewater-rates-dashboard#>

Created: David Tucker,
Environmental Finance Center
at University of North Carolina
at Chapel Hill
(<http://efc.sog.unc.edu>) & funder
(U.S. EPA)



Getting the Price Right

Questions?

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