

# Financing Urban Water Infrastructure

Jeff Hughes Director,  
Environmental Finance Center  
University of North Carolina at Chapel Hill

[jhughes@unc.edu](mailto:jhughes@unc.edu)

[www.efc.unc.edu](http://www.efc.unc.edu)



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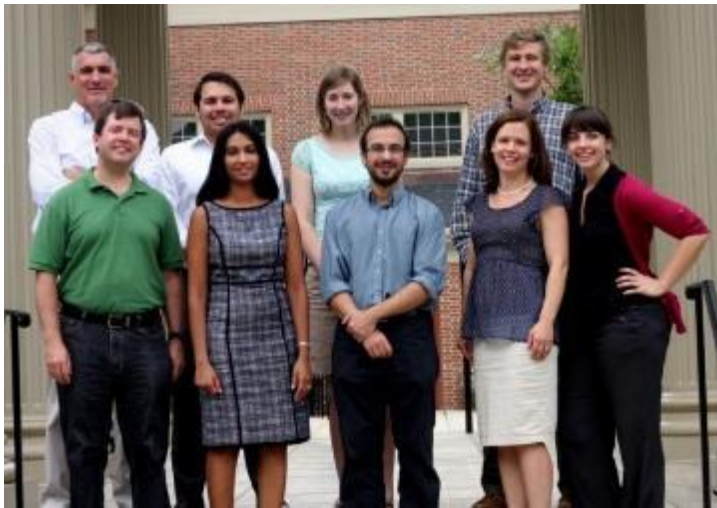
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Enhancing the ability of governments and other organizations to provide environmental programs in fair, effective, and financially sustainable ways through:

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



UNC SCHOOL of GOVERNMENT



*How you pay for it matters.*



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# Crafting a Finance Strategy

- Capital providers
- Revenue tools and mechanisms
- Aggregation and pooling
- Financial incentives

# Capital Providers and Representative Terms

- Municipal Bond Investors (4%, 30 years)
- “Green” Bond Investors (?,30 years)
- Subsidized Government Funding Agencies (limited grants and/or 0-3%, 20 years)
- Private Investment Equity (8%,20 years)
- US Treasury Investors/China (2.5%,20 years)
- Property Owners
- Developers

# The Goliath of Capital Providers: Municipal Bond Investors

- Green vs. Grey pricing
- Extended terms
- Impacts of tax exemption
- Reducing risk by pooling
- Alternative revenue streams
  - Stormwater fees
  - Existing SRF debt service (“leveraging”)
  - Statewide fees (Maryland, Delaware?)
  - Assessments

# Subsidized Loan Benefit Calculator

## Loan Term

20

## Total Funding

\$8,000,000

## Principal Forgiven

Absolute Amount

Percent of Funding

\$0

0%

Subsidized Rate

2.40%

Likely Market Rate

4.15%

0%

8%

Flat Principal

Flat Payment

Save/Load Scenario

Print

Instructions

Fiscal

Economic

Present Value of Funding ?

Interest Rate Comparison ?

PV of Interest

\$1,182,328

Savings

Grant

\$-

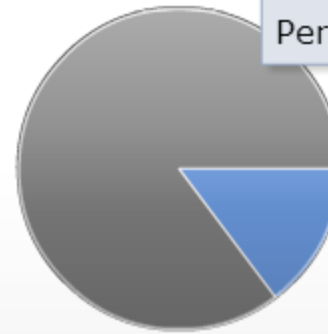
**Total**

\$1,182,328

Equivalent Market Rate Financed

\$6,817,672

Percent: 85.22%



4.50%

4.00%

3.50%

1.50%

Likely Market Rate

4.2%

Subsidized Rate

2.4%

Total Funding Rate

2.4%

The funding package that you have specified is economically the equivalent of being given \$1182328 and then financing the remaining

The funding package that you have specified is the equivalent of receiving a loan from a bank at an interest rate of 2.4%. This interest rate is lower



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# Common Revenue Tools

- Water and wastewater charges
- Sales tax (Atlanta)
- Property tax (Chicago)
- Water quality or water resource fees (Maryland, Delaware)
- Stormwater fees (Philadelphia)



Jersey City

Rates Comparison

Characteristics

Links

Select residential monthly consumption amount



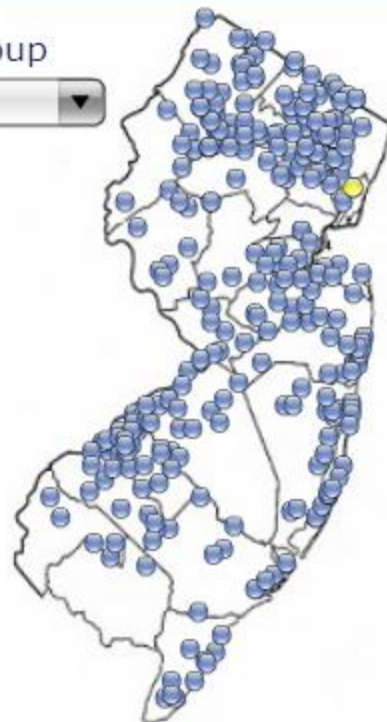
**5,000 gallons**  
**668 cubic feet**

**Monthly Water Bill: \$30.87**

Select your comparison group

All Utilities

Comparing to all utilities in the survey



**295 rate structures compared**

### Bill Comparison

Water Bill at 5,000 gallons



### Conservation Signal

Water Price/1,000 Gallons after 10,000 Gallons



### Affordability

Annual Water Bills as % MHI in 2011



Observe the effects of raising rates by:





# Stormwater Fees

- \$3 to \$20 per month single family residence
- \$500 to \$10,000 per month for commercial properties
- Legality
- Credits
- An under-utilized source for backing debt?

# Common Financial Incentives

- Reducing volume of use saves money
- Reducing run-off through on-site improvements
- Development/density benefits
- Off-set programs

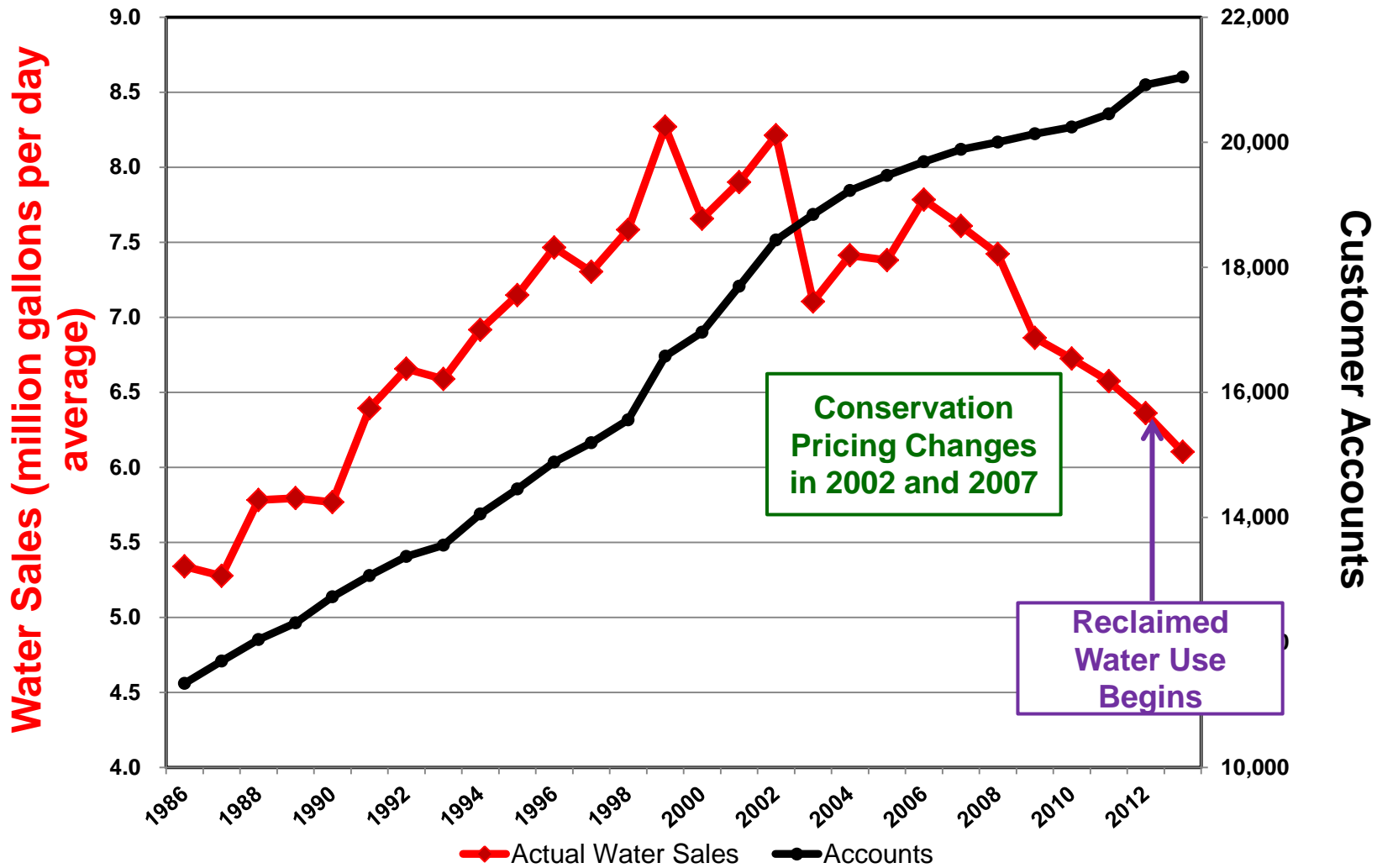
# Pooling Mechanisms

- Green Bonds/Social Impact Bonds
- Stormwater utilities
- Water and wastewater utilities
- State/regional restoration/water funds (Bay Restoration Fund)
- Green banks (Connecticut)
- Pooled loan programs
- Off sets and trading programs

# TRENDS AND DEVELOPMENTS

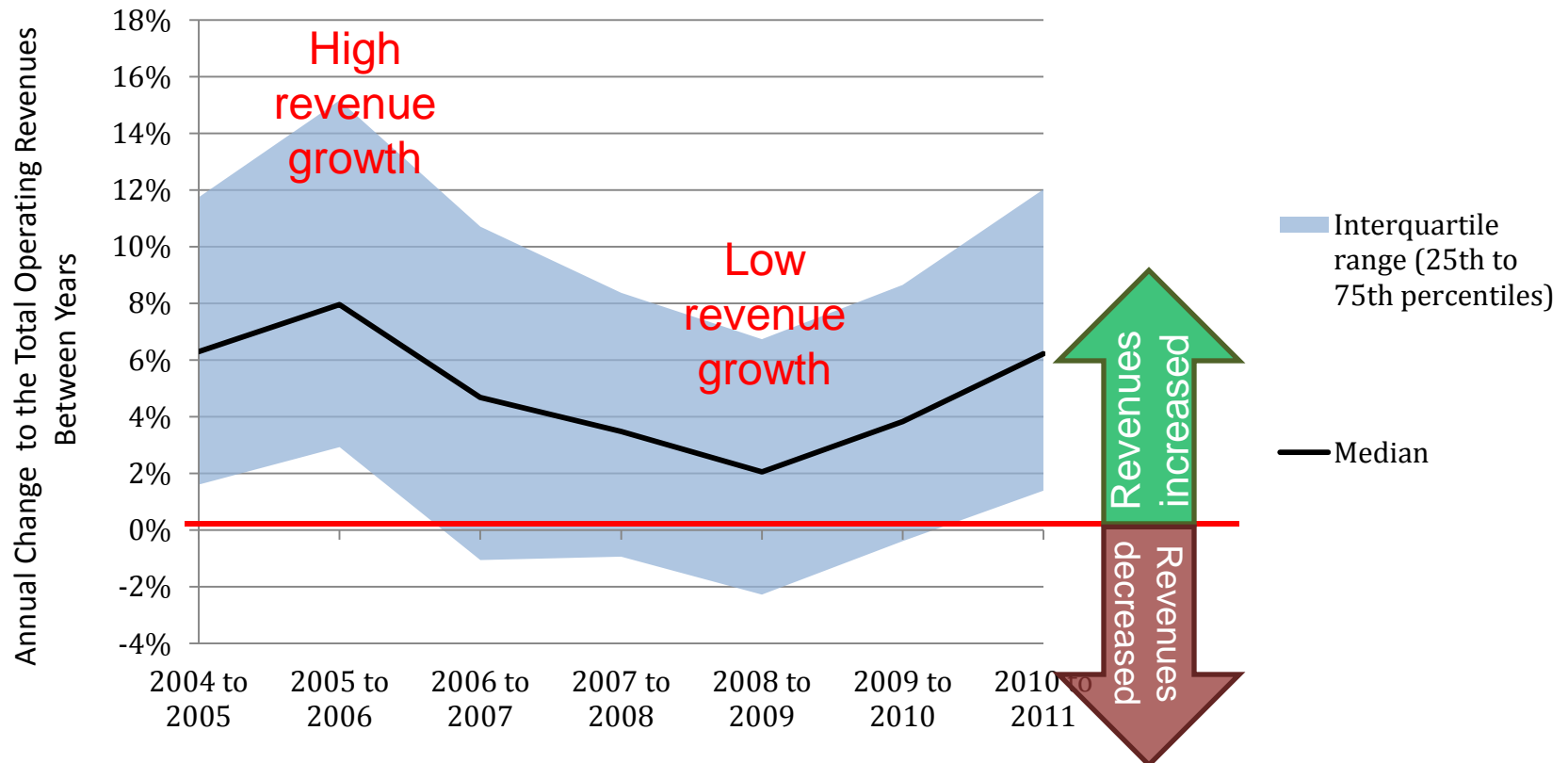


# Falling Sales



Source: Orange Water and Sewer Authority

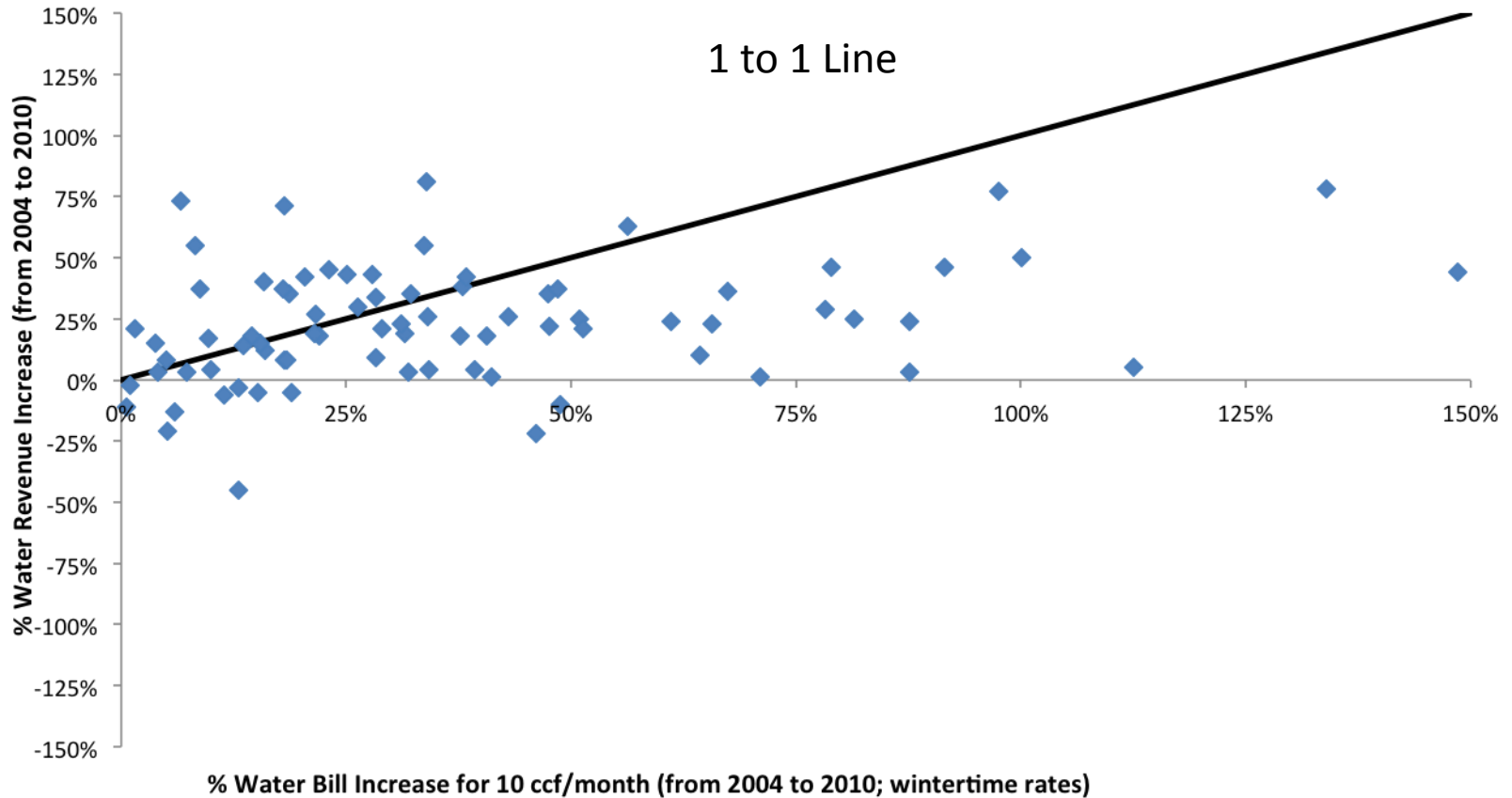
# Industry Revenue Growth Roller Coaster



Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill and Raftelis Financial Consultants, Inc. Data Source: Moody's Water and Sewer Municipal Financial Ratio Analysis. The cohort of 485 utilities is consistent across all years.

**Annual change in total operating revenues among the same 485 utilities nationwide**

# Revenue vs. rate adjustments (2004 to 2010)



Data analysis by the Environmental Finance Center at the University of North Carolina. Data sources: 2010 and 2004 RFC/AWWA Water and Wastewater Rates Survey Data for 82 Utilities

MAY  
**15**

## Committee Releases Water Resources Reform and Development Act Conference Report



The Conference Report to H.R. 3080, the Water Resources Reform and Development Act (WRRDA), was filed in the House of Representatives today. WRRDA was introduced in the House by Committee Chairman Bill Shuster (R-PA), Committee Ranking Member Nick J. Rahall, II (D-WV), Water Resources and Environment Subcommittee Chairman Bob Gibbs (R-OH), and Subcommittee Ranking Member Tim Bishop (D-NY).

H.R. 3080 passed the House by a vote of 417 to 3 on October 23, 2013. House and Senate conferees reached agreement on a final measure last week, and now both Houses of Congress must approve the Conference Report in





# Where Can You Find More?

<http://efc.unc.edu>

Or subscribe to the  
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The screenshot shows the homepage of the Environmental Finance Center at UNC. At the top, there is a navigation menu with categories like 'GENERAL WATER', 'DRINKING WATER & WASTEWATER', 'FINANCIAL OPERATIONS', 'WATER USE, HOLDINGS & STORAGE', and 'WATER MANAGEMENT'. Below the menu, there is a search bar and a 'SUBSCRIBE' section with input fields for 'First name', 'Last name', and 'Email'. There are also checkboxes for 'All', 'Water Use, Wastewater & Stormwater', 'Energy', and 'Drinking & Wastewater'. A 'Subscribe' button is present. To the right, there is a featured article titled 'Designing Water Rate Structures for Conservation and Revenue Stability' by Mary Tigler, dated February 29th, 2014. The article includes a graphic of water droplets and a map of North Carolina. On the far right, there is an 'Upcoming Events' section listing a 'Public Policy Forum' on May 29th, 2014, and an 'Authors' section with a dropdown menu for 'Select Author' and a 'Topics' section with a dropdown menu for 'Select Category'.