Logistics

At the top right corner of your screen:

Show your control panel to submit questions and see answers

All phones/microphones are muted for the duration of the webinar.

Toggle between full screen/window screen view

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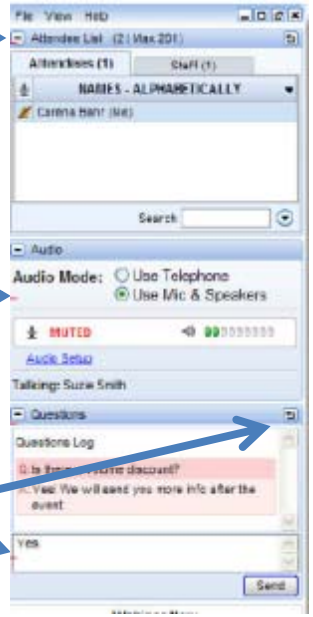
Attendee List

Audio: please choose between speakers and telephone. If you do not hear audio right now, please check your speaker volume or enter #[audio pin]# if using phone.

Submit questions in the Questions box at any time, and press [Send]. To undock and increase the size of the box, click on top right corner icon.



Smart Management for Small Water Systems

WEBINAR: Find Money in the Water System Budget: Internal Energy Revolving Funds

Tuesday, April 12, 2016
2:00 – 3:00 PM EDT

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

EFCN environmental finance center network

American Water Works Association

UNC ENVIRONMENTAL FINANCE CENTER

Environmental Finance Center Syracuse University

Registrants of this webinar

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

- **Environmental Finance Center at University of North Carolina at Chapel Hill**
- Southwest Environmental Finance Center
- **Syracuse University Environmental Finance Center**
- Environmental Finance Center at Wichita State University
- EFC West
- Environmental Finance Center at University of Louisville
- Great Lakes Environmental Finance Center at Cleveland State University
- New England Environmental Finance Center at University of Southern Maine
- American Water Works Association

Areas of Expertise

- Asset Management
- **Energy Management**
- Meeting Regulatory Compliance
- Fiscal Planning and Rate Setting
- Multi-funding Coordination
- Communications and Decision-making
- Water Loss Reduction
- Working with Other Water Systems
- Financing
- Funding Programs
- Managing Small Utilities in Drought

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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

Find Money in the Water System Budget: Energy Management (E.M.) Webinar Series

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

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

Speakers for Today's Webinar

- **Glenn Barnes**, Senior Project Director, UNC Environmental Finance Center
- **David Tucker**, Project Director, UNC Environmental Finance Center
- **Alex Clegg**, Research Specialist, UNC Environmental Finance Center

Agenda for Today's Webinar

Topic
Welcome and Logistics *David Tucker, Glenn Barnes, and Laura Flagg*
How to Pay for Energy Management Projects: Internal Energy Revolving Funds (IERF) *Glenn Barnes and David Tucker*
Demonstration of the EFC's new Internal Energy Revolving Fund Tool, an Excel-based tool to assist you in setting up and tracking the progress of your Fund *Alex Clegg*
Question & Answer Session and Wrap-Up *All*

Polling Question 1

What kind of drinking water utility do you represent? *(choose one)*

- For-Profit Water Utility
- Local Government (Municipal or County)
- Not-for-Profit / Cooperative / Association
- Other H2O Util. (Authority, District, School, Hotel, etc.)
- Not a Drinking Water Utility

Polling Question 2

What size drinking water system does your utility operate (by number of people served)? *(choose one)*

- Very Small (500 or fewer people served)
- Small (501 to 3,300 people served)
- Medium (3,301 to 10,000 people served)
- Large or Very Large (10,001 or more people served)
- Not a Drinking Water Utility

Polling Question 3

For Internal Energy Revolving Funds (IERF), used to finance energy projects at your water utility, have you? *(choose one)*

- Never heard of IERF before now.
- Have heard of IERF but have not used one yet.
- Our utility is currently running an IERF.
- Our utility has finished using an IERF. What do we do next?
- Not a Drinking Water Utility.

Energy Management for Small Water Systems

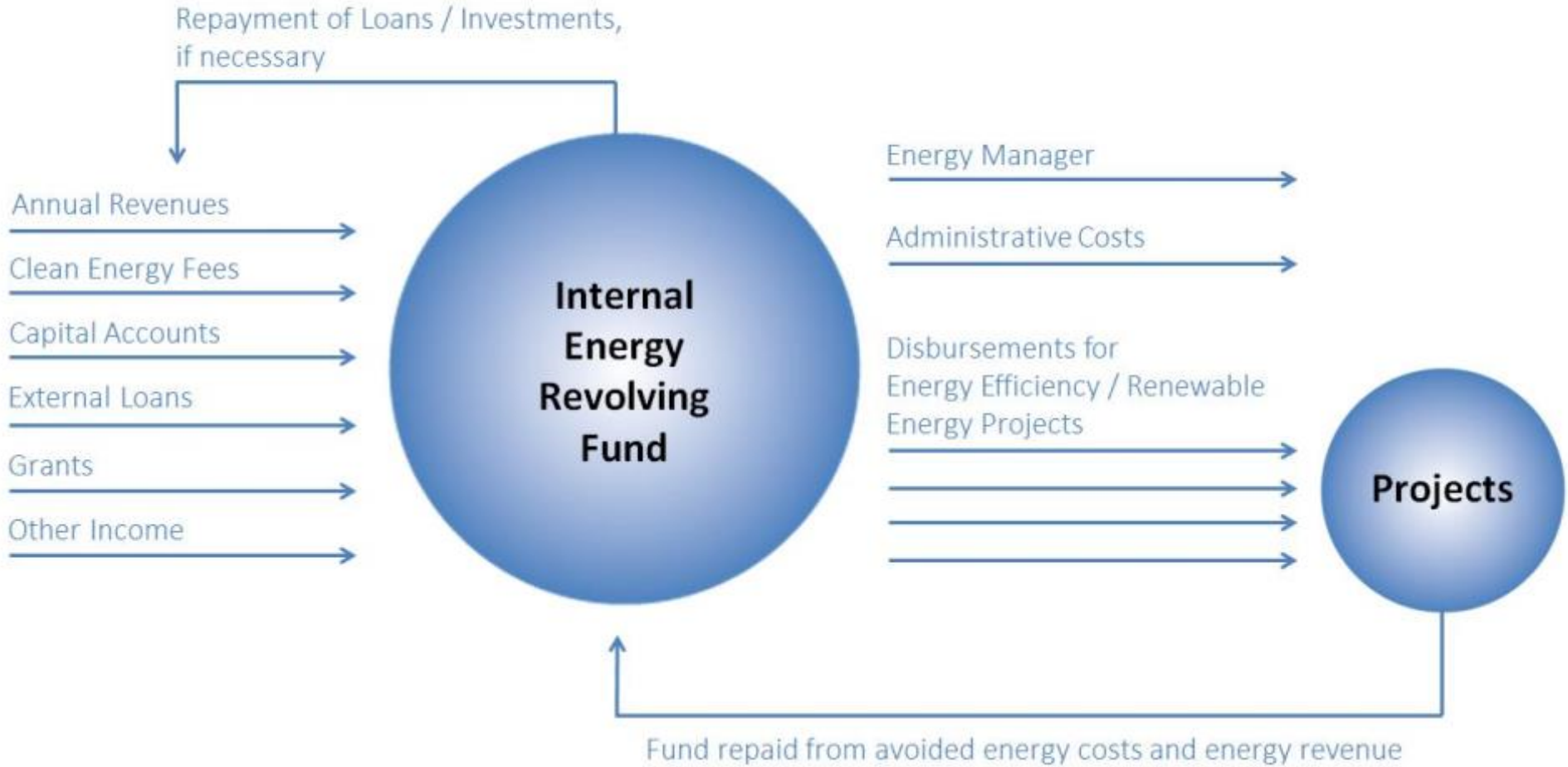
Find Money in the Water System Budget: Internal Energy Revolving Funds

Glenn Barnes and David Tucker, Environmental Finance Center at the University of North Carolina at Chapel Hill

How a revolving energy fund works

- Capitalized as a “bank” from which water systems can borrow to fund energy efficiency, renewable energy or energy conservation projects.
- Allows water systems to provide a continual stream of funds for energy efficiency improvements without tapping into existing capital cycles.

Internal Revolving Energy Fund



What Are “Avoided Costs”?

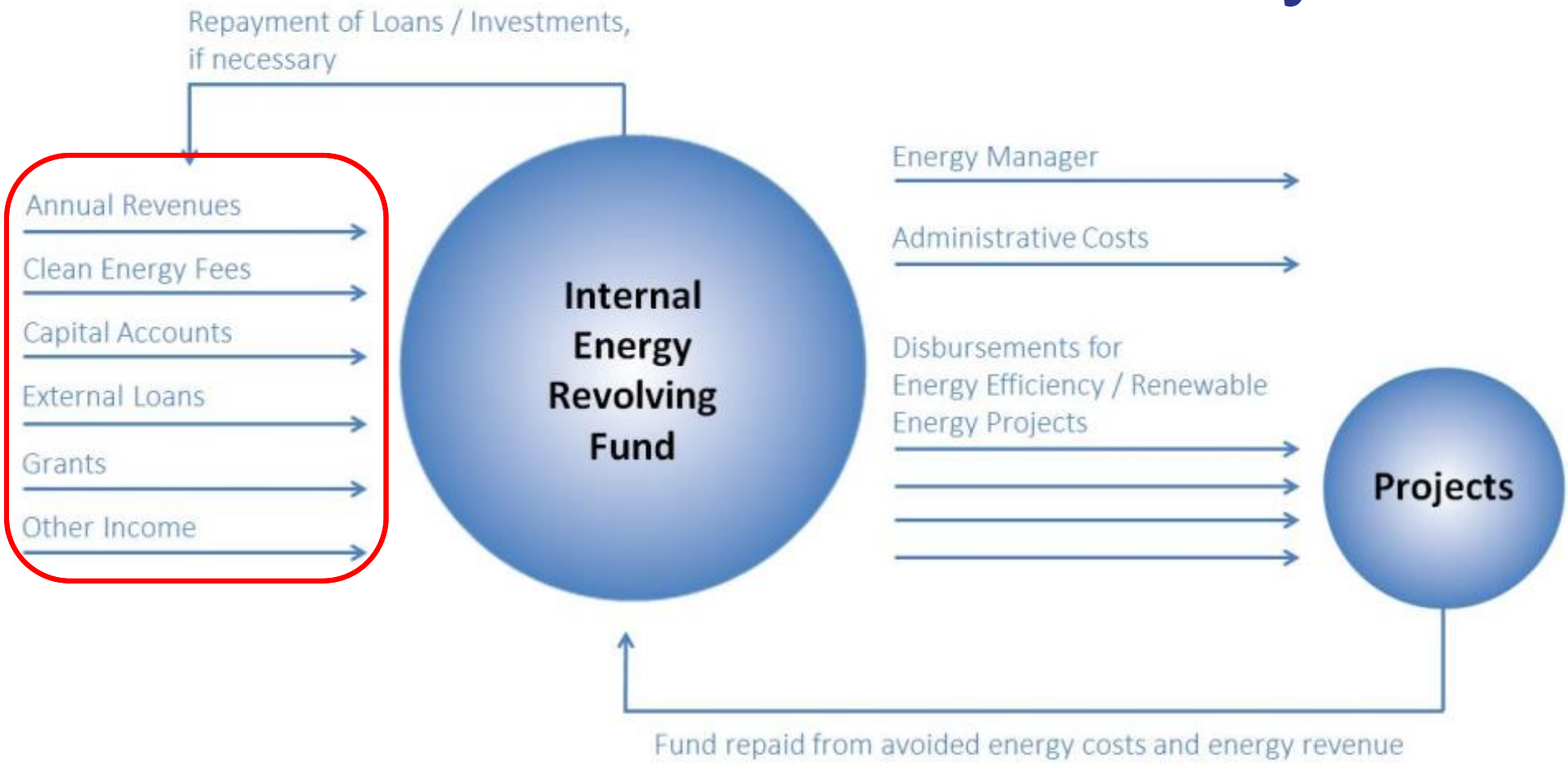
- And why do you think we use “avoided costs” and not “cost savings”?

What is an Energy Upgrade?

- An energy upgrade to water or wastewater system is really just a **capital improvement**

- You can treat energy upgrades just like any other capital improvement

Establishment: Seed Money



Establishment: Seed Money

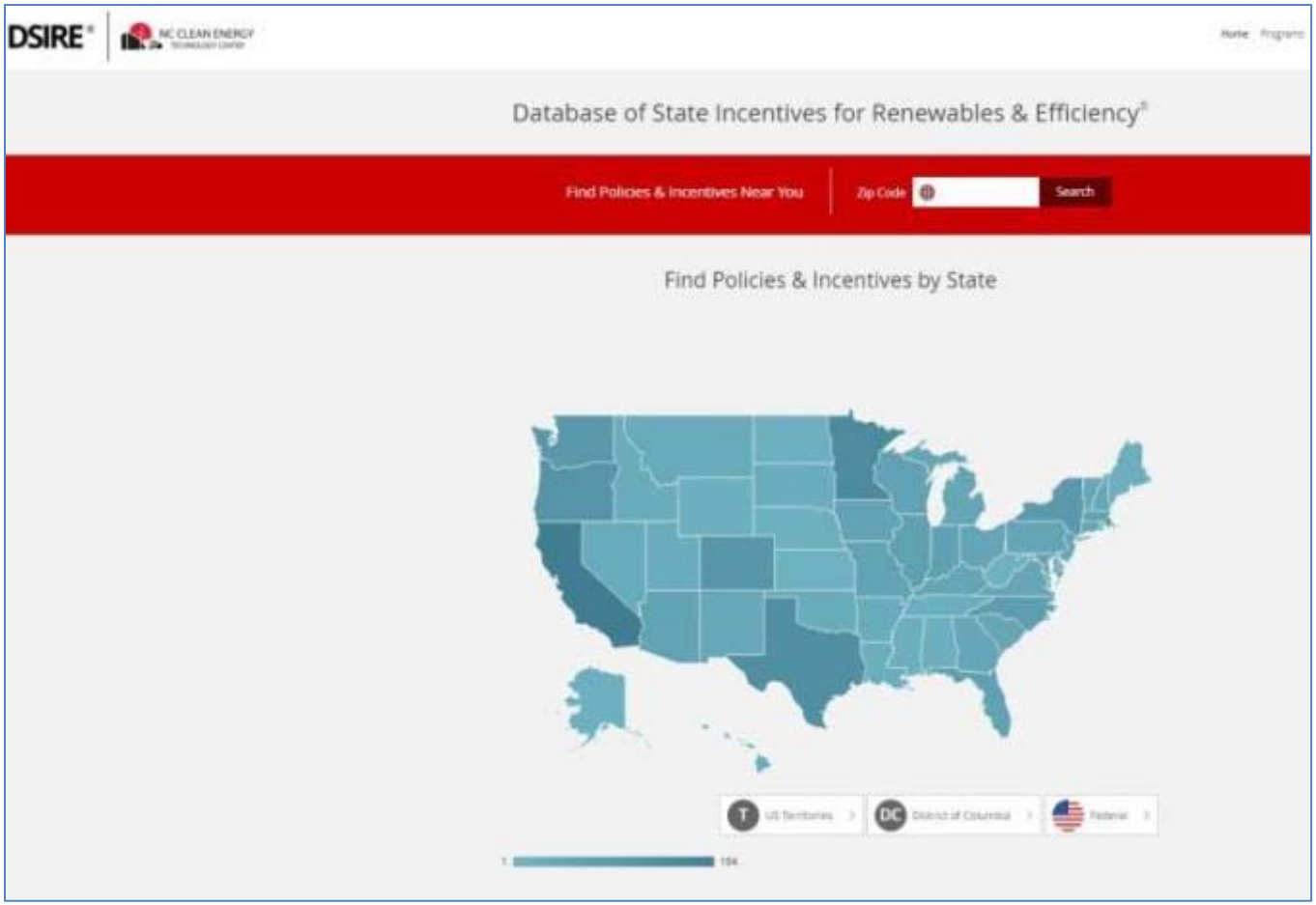
- Revenue from rates & fees
- Unrestricted fund balance
- Capital reserve fund
- ESCO financing
- Grants
- Assessments
- Debt

What is an Energy Upgrade?

- An energy upgrade to a water or wastewater system is also a **special capital improvement**

- As a result, there are special financing options available for energy upgrades

http://www.dsireusa.org/



Establishment: Seed Money

- Special loans for energy improvements (including SRF “green” projects)
- Rebates
- Tax Credits (for those eligible)
- Net Metering and Power Purchase Agreements (PPA)

TDR9

How the Money Is Handled

- Issues to consider:
  - It may depend on your water system's internal policies and/or how your energy bills are paid
  - A clear, consistent policy is key for the long-term success of the revolving fund

Slide 24

TDR9 May want to split into two slides.
Tucker, David Rexford, 3/31/2016

How the Money Is Handled

- Ways for the money to be handled:
  - Within your finance office
  - Each project repays the fund
  - The budget includes a certain amount of money to be re-appropriated into the fund each year

Slide 25

TDR10 May want to split into two slides.
Tucker, David Rexford, 3/31/2016

M&V of Projects

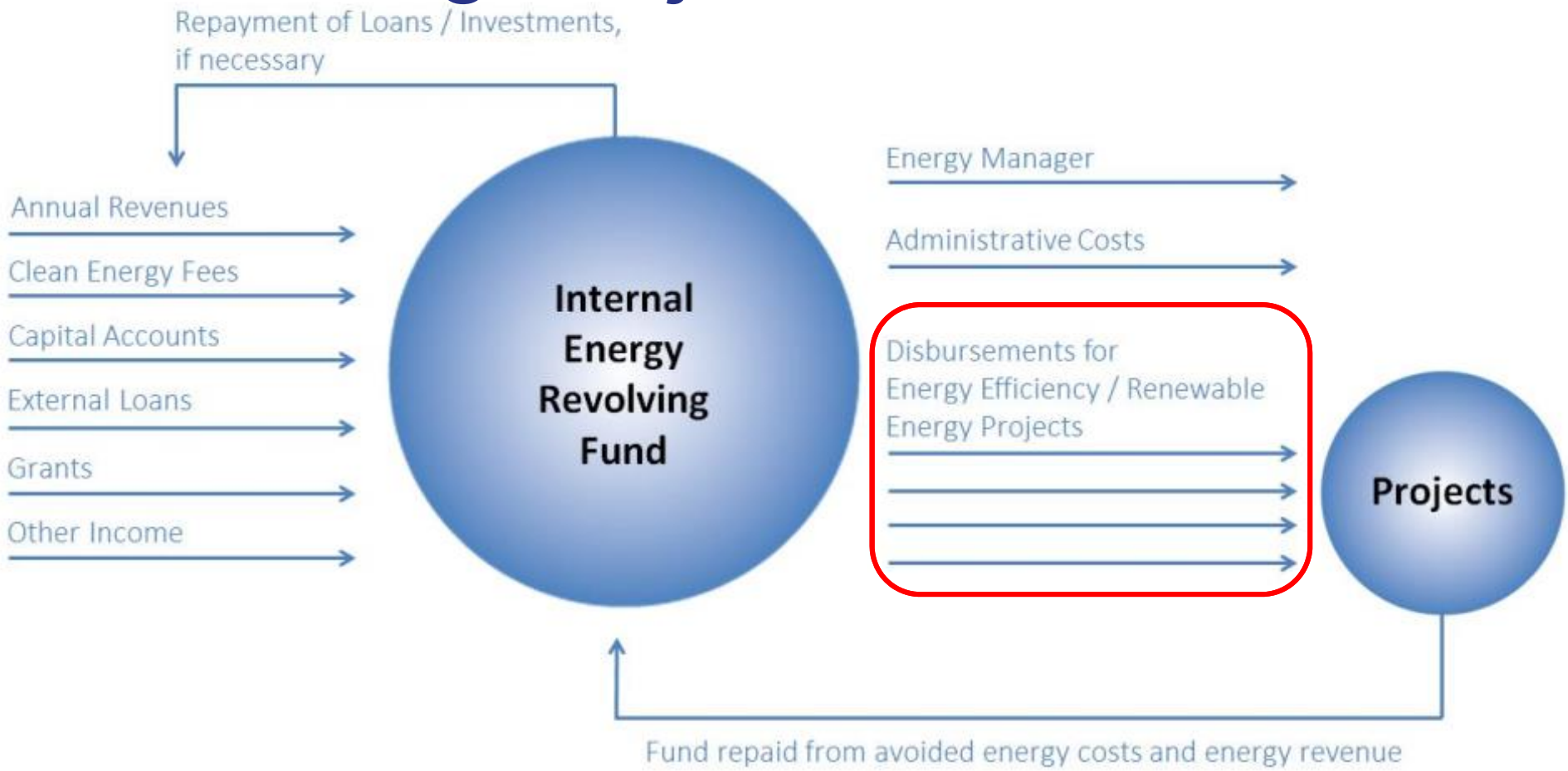
- From a finance and management perspective, the issue is how to determine repayments into the fund.
  - Actual savings
  - Estimated savings
  - Annual lump sum, regardless of savings

M&V of Projects

- If repayments are tied to actual savings (note: actual energy savings ≠ actual dollar savings), you need a pre-determined M&V system.

- If repayments are on a fixed schedule based on estimated savings, M&V is not relevant for repayments.

Choosing Projects

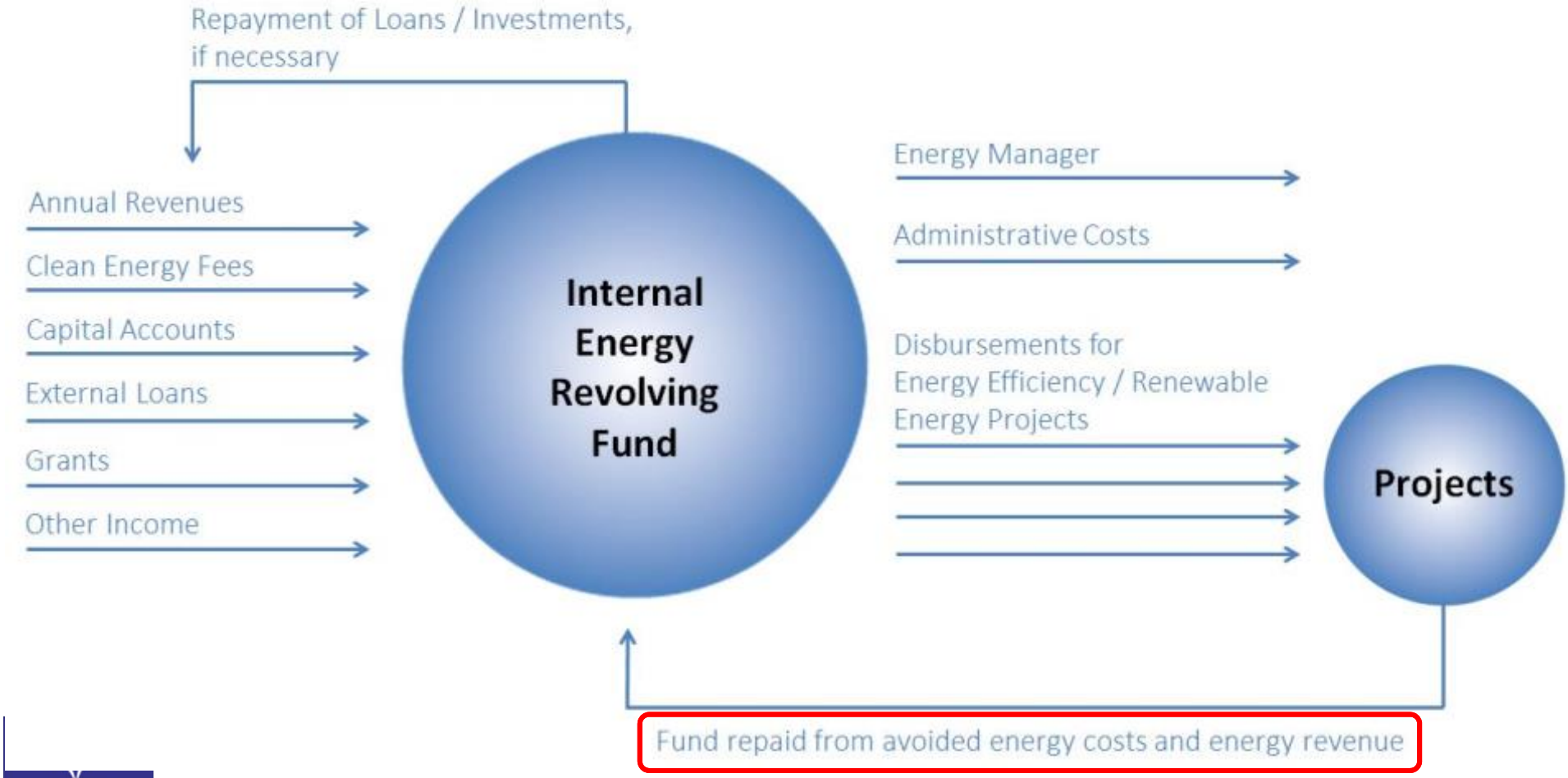


Choosing Projects

- Based on audits of water system facilities or other pre-determined criteria
- Energy efficiency tied to other capital improvements
- Applications from staff
- “Spreading the wealth”

Choosing Projects

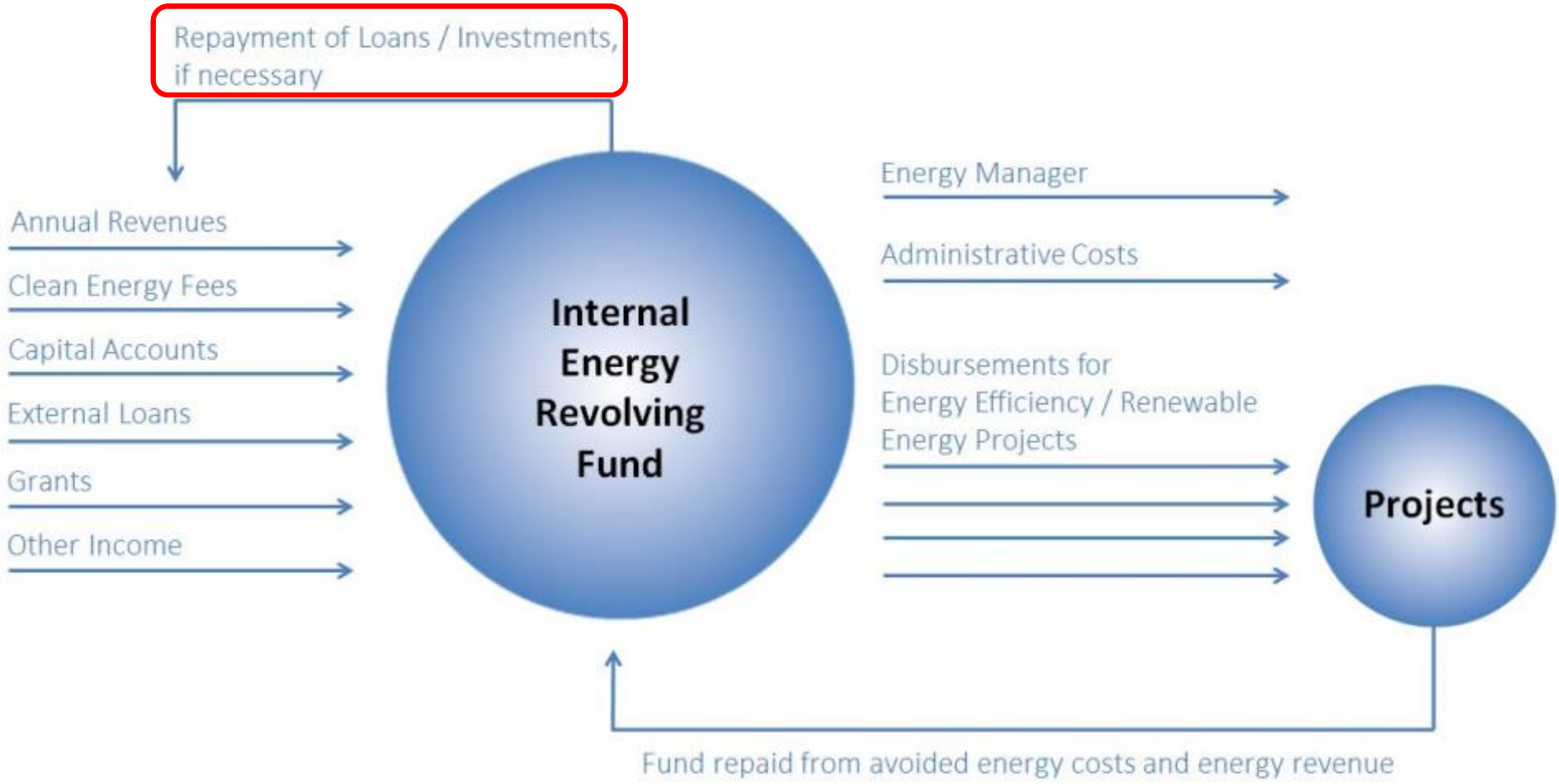
IERF Replenishment



IERF Replenishment

- Avoided energy costs
  - Repaid up to, or exceeding, 100% of project costs.
  - Note: You may wish to ask for more than 100% to cover administrative / overhead costs.
- Adding new money to the fund
- REC sales

If You Borrow to Seed the Fund



If You Borrow to Seed the Fund

- Avoided energy costs can be used to repay your debt, and whatever is remaining replenishes the fund

- Have a Plan B

IERF Administration

Repayment of Loans / Investments, if necessary

Annual Revenues

Clean Energy Fees

Capital Accounts

External Loans

Grants

Other Income

Internal Energy Revolving Fund

Energy Manager

Administrative Costs

Disbursements for Energy Efficiency / Renewable Energy Projects

Projects

Fund repaid from avoided energy costs and energy revenue

IERF Administration

- This costs money!
- Can be paid out of the avoided energy costs

Shell game?

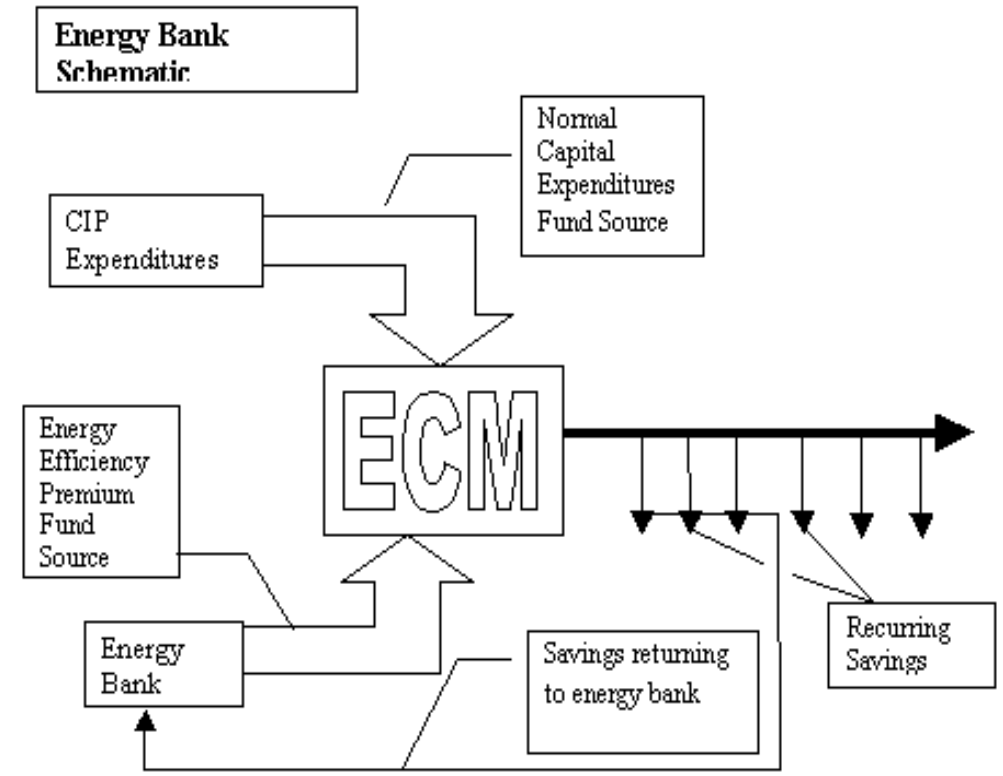
Management Benefits

- Structures incentives for energy improvements
- Rewards leadership and innovation
- Creates a process for choosing projects

Examples

Town of Chapel Hill's (N.C.) Energy Bank

- Established: 2006
- Seed money amount: $500,000
- Seed money source: Bond
- Fund maintenance: 100% of energy savings



http://www.townofchapelhill.org/Home/ShowDocument?id=4263

Town of Chapel Hill, N.C.

- Population: 57,233 people.
- History: Residents voted in 2003 referendum in favor of $500,000 bond for creation of an Energy Bank.
- Purpose: Acquire and install energy efficient equipment in public buildings, rolling avoided energy costs back into the bank for future project investments.
- Limitations: Can't be used for new construction. Any refits must meet LEED silver standards. Allows the Town to achieve multiple goals by careful design of the fund.

Town of Chapel Hill, N.C.

- Policy requires projects over $100,000 must have an energy audit.
  - Fund can't be used for these audits.
- Payback on any project can't be over seven years.
- Example: A $95,000 project to upgrade to a new HVAC system with a state-of-the-art energy management control system.
  - Simple payback period of 7 years.
- Other examples include lighting, heating, A/C, and other building machinery / equipment.

Hillsboro, OR: Sustainability Revolving Fund

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COMMUNITY SIZE
Small suburban, population 93,000

GOAL
To achieve a 60% reduction in City facility EUI by 2030, based on a 2007 baseline

BARRIERS
Inconsistent access to capital for energy efficiency projects

SOLUTION
Creation of Sustainability Revolving Fund (SRF), a dedicated internal fund established to finance projects that address one or more goals in the City's Sustainability Plan

OUTCOME
The SRF was originally seeded and is now replenished with savings from energy efficiency projects. Since its inception in 2010, the fund has provided more than $45,000 to support five projects that will produce an estimated $24,000 in annual cost savings. In addition to energy savings, the SRF has served to advertise the benefits of the sustainability program to City employees, increased awareness of the savings potential achieved through energy efficiency, and successfully highlighted the City's innovative approach to financing

Implementation Model:
Sustainability Revolving Fund

Hillsboro OREGON

OVERVIEW
The City of Hillsboro, OR, has more than doubled in population since 1995, making it the fifth-largest city in the state. Hillsboro strives to be a model of energy efficiency and sustainability. In 2010, the Hillsboro City Council approved the City's first Sustainability Plan which called for a 60 percent reduction in City facility energy use by 2030. The Plan builds on the City's Strategic Plan and 2020 Vision and Action Plan..

More

Hillsboro, Oregon

- Population: 93,000 people.
- City goal: achieve 60% reduction in city facilities' Energy Usage Intensity by 2030. (2007 baseline)
- Barrier: Access to capital for energy efficiency (E.E.) projects.
- Solution: Created a Sustainability Revolving Fund in 2010 to finance E.E. projects.
- Source: http://betterbuildingssolutioncenter.energy.gov/implementation-models/sustainability-revolving-fund#sthash.C8yfP6R4.dpuf

Hillsboro, Oregon

- Since inception, fund has provided over $45,000 in funding for E.E. projects.
- These projects will produce an estimated $24,000 in annual avoided energy costs.
- The five projects thus funded include:
  - GPS vehicle tracking (parks fleet)
  - Lighting upgrades (maintenance HQ)
  - Propane walk behind mowers (parks fleet)
  - Pool underwater lighting upgrade (aquatic/rec. ctr.)
  - Energy controls (library)

Additional Local Govt. Examples

- Union County, N.C.
  - Used American Recovery and Reinvestment Act grant funds starting in 2009 to establish a "Revolving Energy Fund."
  - Funding lighting, HVAC, and solar thermal projects.
  - Expecting to avoid $210,000 annually in energy costs.
- Ann Arbor, Michigan
  - Established a "Municipal Energy Fund" in 1998 to pay for lighting improvements, LED traffic signals, solar photovoltaic panels, etc.
  - Annually, over 1,000 MW of electricity usage has been avoided, as well as 270 MCF of natural gas.
  - Annual reductions of 180 metric tons of carbon dioxide emissions.

Examples: Colleges & Universities

- Over 80 U.S. colleges / universities have employed the IERF approach.
- For example, at the University of North Carolina at Chapel Hill, two such funds have been established:
  - The university's Green Revolving Fund (GRF), and
  - The Renewable Energy Special Projects Committee Revolving Fund, run by dedicated UNC students.
- One GRF-funded project outfitted a campus building with LED lighting:
  - Avoided $1,000,000 in energy and maintenance costs across 20 years.
  - Less than a 3 year simple payback period.
- Also, Harvard University's Green Revolving Fund has a $12 million fund:
  - Has supported nearly 200 projects.
  - Has yielded $4 million in avoided energy costs annually.

Other Considerations in Whether to do an IERF

- Energy prices (e.g. 9 cents/kWh vs. 54 cents/kWh)
- Demand charges (e.g. high peaking costs and/or demand ratchets vs. no demand charges)
- Effects of topography (e.g. on pumping costs)
- Sufficient administrative support for operating and maintaining the fund

Pros and Cons: IERF vs. ESPC

ISSUE	IERF (Internal Energy Revolving Fund)	ESPC (Energy Savings Performance Contract)
Simple Payback Periods (SPP) of Projects?	Probably need short SPP for all projects.	Can bundle together shorter and longer SPP's.
Staffing Challenges?	Will need to do all staffing internally.	Performance contractor works with your staff.
Formal Contracts Required?	Not necessarily. Depends on situation.	Definitely, and probably at least three separate ones.
Reporting Requirements?	Probably just those internal to the organization.	More partner organizations may mean more reporting.
Energy Conservation Project Expertise?	Will need to be self-driven by your organization.	Performance contractor brings extensive expertise.

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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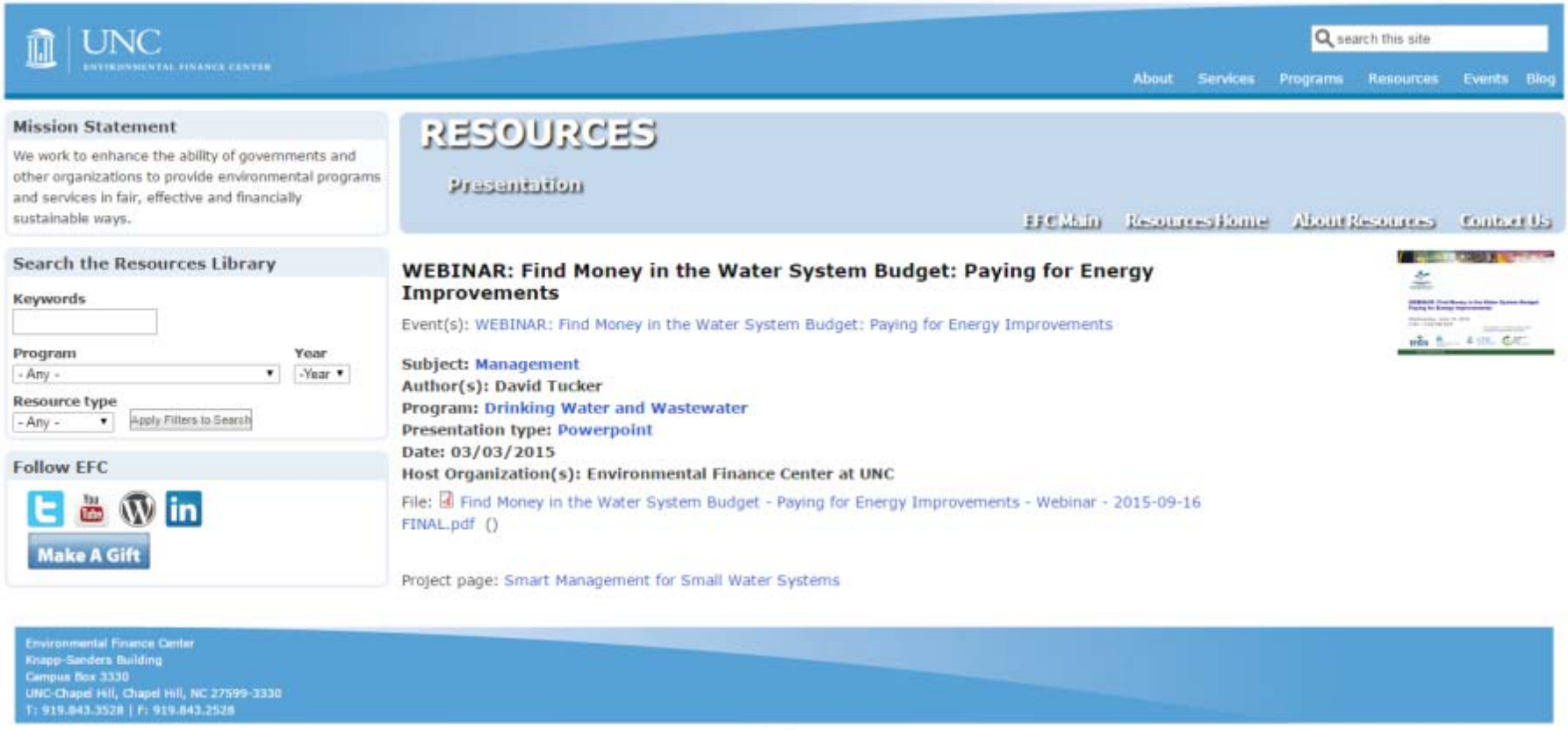
Webinar: Energy Savings Performance Contracts



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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New IERF Tool in Excel!

Internal Energy Revolving Fund Wizard

End of Year IERF Balance: Pink means the fund is out of money!		
2016	✓	$ 9,510.16
2017	✓	$ 8,725.50
2018	✓	$ 2,900.63
2019	✓	$ 2,585.78
2020	✓	$ 2,281.19
2021	✓	$ 1,987.10
2022	✓	$ 1,703.74
2023	✓	$ 1,431.35
2024	✓	$ 1,170.18
2025	✓	$ 920.47
2026	✓	$ 228.19
2027		$ 667.05
2028		$ 732.96
2029		$ 804.07
2030		$ 880.48
2031		$ 962.27
2032		$ 1,049.56
2033		$ 1,142.45
2034		$ 1,241.03
2035		$ 1,345.40

	Project Label	Energy Source	Start Year of Project	Can you Afford to Start this Project in this Year?	Will the project save you money over its lifetime?	Current Annual Energy Consumption		Projected New Annual Energy Consumption		Estimated Annual Energy Costs Avoided	Estimated Current Cost of Energy	Annual Cost Inflation	Project Cost	Operating C Savings
1	Pump Upgrade	Electricity	2016	YES	YES	25,000	kWh	20,000	kWh	20%	$ 5,000	2%	$ 10,000	$ 1
2	Insulation	Electricity	2018	YES	YES	30,000	kWh	27,000	kWh	10%	$ 6,000	2%	$ 5,000	$ -
3														
4														
5														
6														
7														
8														
9														
10														

Will you be able to pay back your loans in this year?

Go back to your initial IERF setup

Only have this figure as a percentage of the previous energy use? Enter a formula here: "=Current Energy Use * 1-% Reduction"

If the new device/ less (or more) to c this he

Want to see the annual cash flow of the IERF?

Want to see some graphs showing how your IERF is working?

Want to see the cash flow for each project?

Instructions | Diagram | Initial Setup | Projects | Cash Flow - IERF | Graphs | Cash Flow - Each Project | blank

Ready

Polling Question 4

Would you like to subscribe to the UNC Environmental Finance Center blog? *(choose one)*

- Yes
- No

Polling Question 5 and Evaluation Survey Link

Are you interested in receiving in-depth technical assistance for your small water system? *(choose one)*

- Yes
- No
- Would Like More Information About This

Thank You!

And please let us know if you have any questions.

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