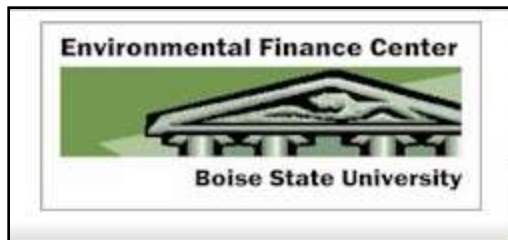


Visualizing Decision Making

Sustainable Infrastructure Financing

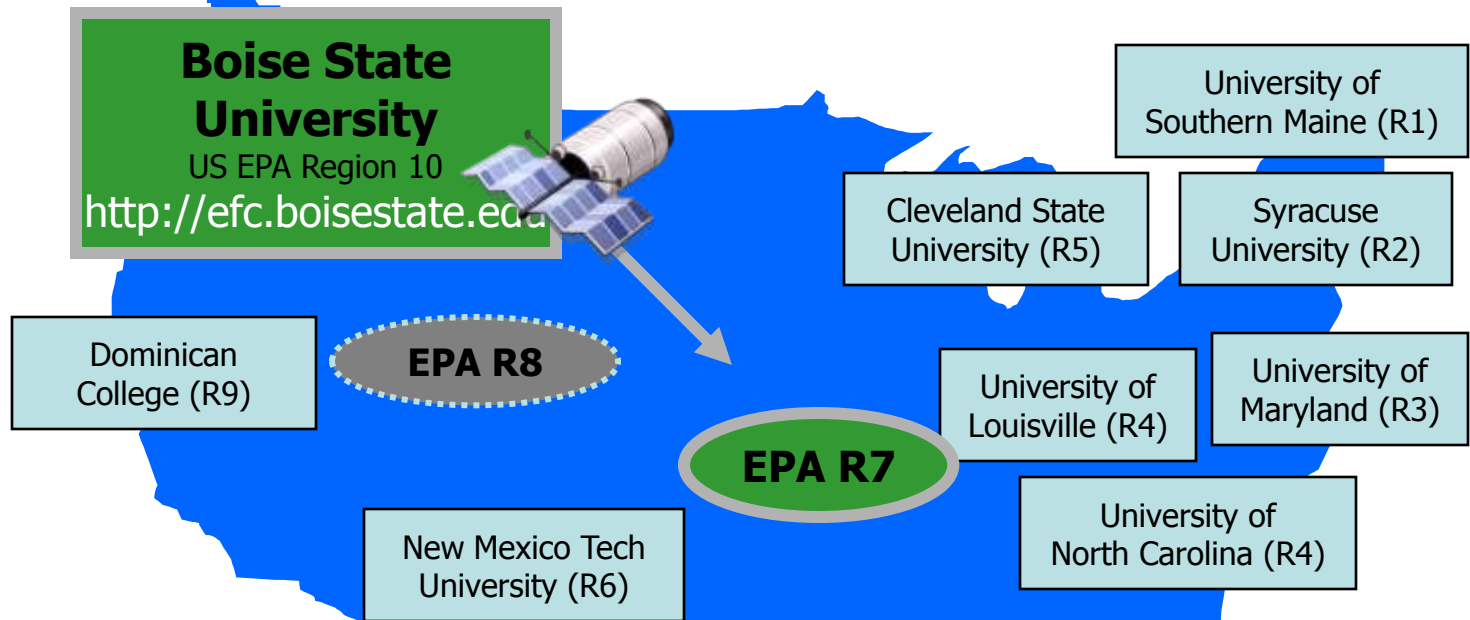


**Kansas Government Finance Officers Association
Annual Fall Conference
September 18, 2008**

**Meghan Hemenway
Environmental Finance Center
Region 7 Satellite Office
Boise State University**

The Environmental Finance Center Network

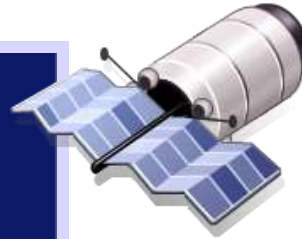
A Resource for the Nation



The University-based Environmental Finance Center Network Provides Third-Party Assistance to Communities and Groups on Financing Environmental Compliance

<http://www.epa.gov/efinpage/efcn.htm> for more information

The EFC Provides Services to Communities on the “How to Pay” Issues of Environmental Compliance



Macro – EF

multi-community focus

- Watershed restoration finance
- Non-point source pollution reduction
- Watershed financing database
- Community charrettes
- Strategic planning tools for local decision-makers
- Strategic decision models

Micro – EF

single community focus

- Water system finance & management
- Wastewater finance & management
- Utility rate setting tools & training
- Asset management and “gap” financing
- *Guidebook of Financing Tools*
- Brownfield redevelopment financing
- Financial & management capacity measurement & technical assistance
- Financial analysis for exemptions



New Tool from the EFC



Knowing the current and

future financial status of your water system is an integral part of responsible management and of the highest importance to leaving the system in better condition for the next generation. The Environmental Finance Center's Financial Dashboard will give a clear and powerful picture of how the system is currently performing, areas of improvement and what the future outlook is. After inputting information for each of the dashboards, you will be given a fully interactive tool that will allow for a limitless number of different scenarios.



About Us...

Boise State University is the site of the Environmental Finance Center (EFC) for US EPA Region 10. Our mission is to provide help to those facing the "how to pay" challenges of environmental protection. EFC-10 is committed to helping the regulated community build and improve the technical, managerial, and financial capabilities needed to comply with federal and state environmental protection laws. Nine universities in the United States have been designated EFC's by the Environmental Protection Agency to help states and regulated entities manage environmental mandates

required by federal law. ...more

Region 7 Satellite EFC



On October 1, 2007 Boise State University opened a satellite office of the Environmental Finance Center (EFC) in the Midwest for Region 7. The Environmental Protection Agency designated the Region 7 Satellite EFC will provide communities in Kansas, Missouri and Nebraska with the same services, tools and technical assistance provided by the EFC in Region 10. The Satellite Office is located at the Region 7 Headquarters Office in Kansas City, Kansas. Please contact us if you would like to learn more about the Environmental Finance Center.

Search Input [] [Go]

EFC Training



On Demand

How Training on Demand Works:



Step 1: Are you looking for training on environmental finance and management topics?



Step 2: Request training from EFC Training on Demand. Select your topic and submit date and time preferences.



Step 3: The EFC will respond to your request with selected date and time details and virtual classroom details.

efc.boisestate.edu

How EFC Training On Demand Works:



Step 1. Are you looking for training on environmental finance and management topics?



Step 2. Request training from EFC Training On Demand. Select your topic and submit date and time preferences.



Step 3. The EFC will arrange the event and post it on the website for others to register.



Step 4. Others are invited by email to register for the training workshop.



Step 5. On the date and time of the training workshop, participants join the web conference.



› Sustainable Infrastructure

Financially Sustainable Water Infrastructure Initiative

A joint initiative by members of the Environmental Finance Center Network

Is your community water/wastewater system financially sustainable?

One of the greatest challenges of water and wastewater system management is ensuring the system's financial health. The purpose of this initiative is to equip system managers, operators and staff with the tools to evaluate system financial health, to educate the utility board and the public and to overcome political barriers to making the system financially sustainable.

How do I...

determine whether my system is financially sustainable?

- Basic ratios every system manager should know
- Simple and effective tools for evaluating sustainability
- Financial warning signs to watch out for
- Case studies of financial crises



design a financially sustainable rate structure?

- Simple rate setting tools
- How to address affordability at the household level
- Understanding conservation price signals



determine how much money I need to operate and maintain my system?

- Why it's about so much more than Operating Expenses
- Basics of Asset Management and Capital Planning
- Using Capital Reserves to keep rates low



convince the board to raise our system's rates?

- Twelve simple methods for building support for rate increases
- Why not to compare rates with your neighbors
- Tools for selling rates to the board and to the public



EPA's Four Pillars of Sustainable Infrastructure

Better Management

One pillar in our ability to ensure sustainable water infrastructure is better management at the local or facility level. Tools include: asset management, environmental management systems, capacity development, and other systems that successful enterprises have demonstrated to be effective.

Full Cost Pricing

Pricing that seeks to recover all of the costs of building, operating, and maintaining a system is absolutely essential to achieving sustainability.

Water Conservation

Water quantity and quality issues are inextricably linked. Examples include infrastructure for both water supply and water quality, and reuse of water.

Restoration through the Watershed Approach

About a decade ago, EPA embraced the watershed approach, focusing on multi-stakeholder and multi-program efforts within hydrologically-defined boundaries, as a better way to address water quality problems.

How to Understand Financial Capacity:


Progression of tools and techniques used or produced by the EFC to help communities learn about financial capacity

- Ken Brown's 10-point Test
 - International City/County Management Association
- Ratio8*
- Capacity Tracker*
- Financial Dashboard*

**produced by EFC*

Financial Dashboard: Goals and Concepts

- The Financial Dashboard is designed to help decision makers understand the effects of their financial decisions on the sustainability of the water system.
- The idea is to get rapid feedback on issues such as modifying rates, capital investment, asset replacement, and other fundamental financial management decisions. This is similar to the feedback we receive from the gauges in an automobile dashboard.
- This tool uses internally generated information such as budgets, financial reports, and system performance indicators. Combined with externally generated information, the Financial Dashboard displays indicators of financial capacity.



Finish & View

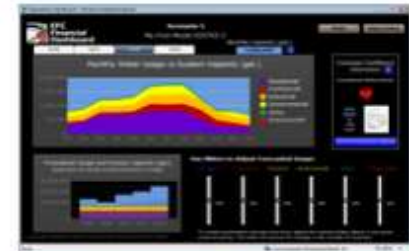
Pick on one of the three dashboards below to view the area of interest. The three Dashboards: Financial, Strategic and Operational Dashboards display the information entered into the previous load forms.



Financial Dashboard



Strategic Dashboard



Operational Dashboard

Once you have entered data into the above load forms you will see the information displayed in the three different dashboards.



**Dashboard
Details**



Rates &
Revenues



Expenses



Strategic



Operational



Finish &
View



Dashboard Details

Save & Continue ->

Use this form to enter in general information about the water system and the surrounding community.

System Name:



Population:



Median Income:

\$



Year:



Save & Continue ->


 Dashboard
Details


**Rates &
Revenues**

 Expenses


 Strategic


 Operational


 Finish &
View


Rate & Revenues


[<- Previous](#)
[Save & Continue ->](#)

The four tabs below provide dashboard users with the opportunity to develop a revenue plan for the water system by providing the ability to plan a rate structure, and gives the option to enter additional revenues related to "New Customer Charges", "Capital Improvements" and any "Other" revenue sources.

[Rate Revenue](#)
[New Customer Charges](#)
[Other Revenue](#)
[Capital Improvements Revenue](#)

Rate Revenue

	Residential	Commercial	Industrial	Governmental	Other
Number of customers:	5000	1500	100	50	10
Fixed rate:	\$ 15.00	25.00	25.00	20.00	25.00
Volume Charge					
Volume rate per 1000 gallons:	\$ 0.15	0.20	0.20	0.20	0.20
Monthly average usage per customer (gallons):	12900	34827	40000	20000	20000
Monthly Customer Vol. Charge	1.94	6.97	8.00	4.00	4.00
Total Monthly Cost per Customer	16.94	31.97	33.00	24.00	29.00
Total Annual Rate Revenue	1016400.00	575460.00	39600.00	14400.00	3480.00

[<- Previous](#)
[Save & Continue ->](#)



Dashboard
Details



Rates &
Revenues



Expenses




Strategic



Operational



Finish &
View



Expenses

[<- Previous](#)
[Save & Continue ->](#)

Users of the Dashboard can use this load form to enter in expense items related to the water utility. Expense items can be categorized into one of three categories: "Operation and Maintenance", "General and Administrative" and "Capital and Other".

[Operation and Maintenance](#)
[General and Administrative](#)
[Capital and Other](#)

Operation and Maintenance

Salaries and benefits:	\$	<input type="text" value="0.00"/>
Power and other utility:	\$	<input type="text" value="0.00"/>
Chemicals and treatment:	\$	<input type="text" value="0.00"/>
Monitoring:	\$	<input type="text" value="0.00"/>
Materials, supplies, and parts:	\$	<input type="text" value="0.00"/>
Transportation:	\$	<input type="text" value="0.00"/>
Miscellaneous:	\$	<input type="text" value="0.00"/>
Unaccounted for water:	\$	<input type="text" value="0.00"/>
Total operations and maintenance expense:	\$	<input type="text" value="0.00"/>

[<- Previous](#)
[Save & Continue ->](#)


 Dashboard
Details



 Rates &
Revenues


 Expenses


Strategic

 Operational


 Finish &
View

 **Strategic**


<- Previous

Save & Continue ->

The Strategic Dashboard displays capital asset information. On this load form, dashboard users should enter in capital assets that the system has inventoried; specifically the valuable or critical assets. The Strategic Dashboard will display this information in a way that effectively portrays the age and importance of the water utility's capital assets.

Strategic

Add a Capital Asset

 Asset "Well 1" added successfully.

Asset name	Category	Installation Year	Expected life ⓘ	Original Cost	Criticality ⓘ	Inflation %
<input type="text"/>	-None- ▾	1900 ▾	<input type="text"/>	\$ <input type="text"/>	0 ▾	<input type="text"/> %

List of Capital Assets

Asset Name: Category: -None- ▾ Criticality: 0 ▾

Edit	Delete	Asset Name	Category	Installation Year	Expected Life	Original Cost	Criticality	Inflation %
Edit	Delete	Well 1	Source	2000	10	\$1,000.00	8	3.00%

<- Previous

Save & Continue ->


 Dashboard
Details



 Rates &
Revenues


 Expenses


 Strategic


Operational

 Finish &
View

 **Operational**


<- Previous

Save & Continue ->

Use this Operational load form to enter in system production and compliance information by year. The dashboard produced by this form will provide valuable trend information, helping the utility address system capacity and compliance issues.

 2004 2005 2006 **2007** Forecast

 System Capacity:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	0
Commercial	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	0
Industrial	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	0
Governmental	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	0
Other	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	0
Unaccounted	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	0


NOTE: All values are in thousands of gallons.

Consumer Confidence Report (CCR) for 2007

No CCR has been uploaded. Please upload a CCR.

Upload CCR file for 2007:

 Did the water system meet all regulatory requirements? Yes No

 **Finish & View**

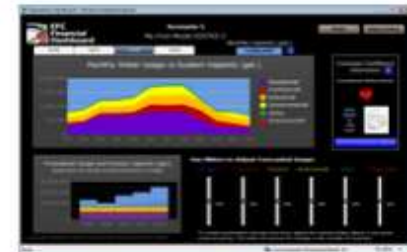
Pick on one of the three dashboards below to view the area of interest. The three Dashboards: Financial, Strategic and Operational Dashboards display the information entered into the previous load forms.



Financial Dashboard



Strategic Dashboard



Operational Dashboard



Financial Summary

Rates and Revenues

Expenses

Forecast

Revenues

Rate Revenue

\$57,402

Hookup Revenue

\$7,750

Other Revenue

\$90,000

Capital Funding

\$128,200

Expenses

Operation and Maintenance

\$33,042

General and Administrative

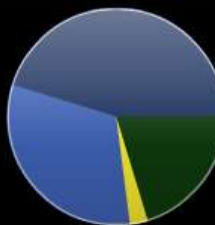
\$34,835

Other Expenses

\$6,845

Capital Improvement

\$267,000

Revenue Distribution


Total Revenue

\$283,352

Expense Distribution
System Reinvestment:

This value shows the system's budget/actual depreciation expense for the base year covered in the model. This value is compared against what the Depreciation/Replacement expense of the system needs to be, plus what would be required to fully fund system replacement (not considering interest savings).

Financial Indicators Dashboard
Affordability Index

Operating Ratio

System Reinvestment

Revenue vs Expense


[Financial Summary](#)
[Rates and Revenues](#)
[Expenses](#)
[Forecast](#)

	Residential	Commercial	Industrial	Governmental	Other
Number of Customers	100	12	5	7	2

Rate Charges
New Customer Charges
Other Revenues and Resources
Fixed Rate:

\$	30	\$	40	\$	50	\$	35	\$	35
----	----	----	----	----	----	----	----	----	----

Volume Charge:

Volume Rate (1000 gal.):	\$	0.35	\$	0.4	\$	0.5	\$	0.3	\$	0.35
--------------------------	----	------	----	-----	----	-----	----	-----	----	------

Monthly Average Usage per Customer (gal.):

	10000	15000	100000	25000	20000
--	-------	-------	--------	-------	-------

Monthly Customer Volume Charge:

	\$3.50	\$6.00	\$50.00	\$7.50	\$7.00
--	--------	--------	---------	--------	--------

Total Monthly Cost per Customer:

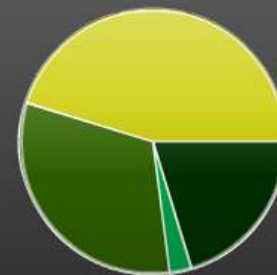
	\$33.50	\$46.00	\$100.00	\$42.50	\$42.00
--	---------	---------	----------	---------	---------

Total Annual Rate Revenue:

	\$40,200	\$6,624	\$6,000	\$3,570	\$1,008
--	----------	---------	---------	---------	---------

Revenue Sources

(Mouse Over Chart for Details)



Revenue

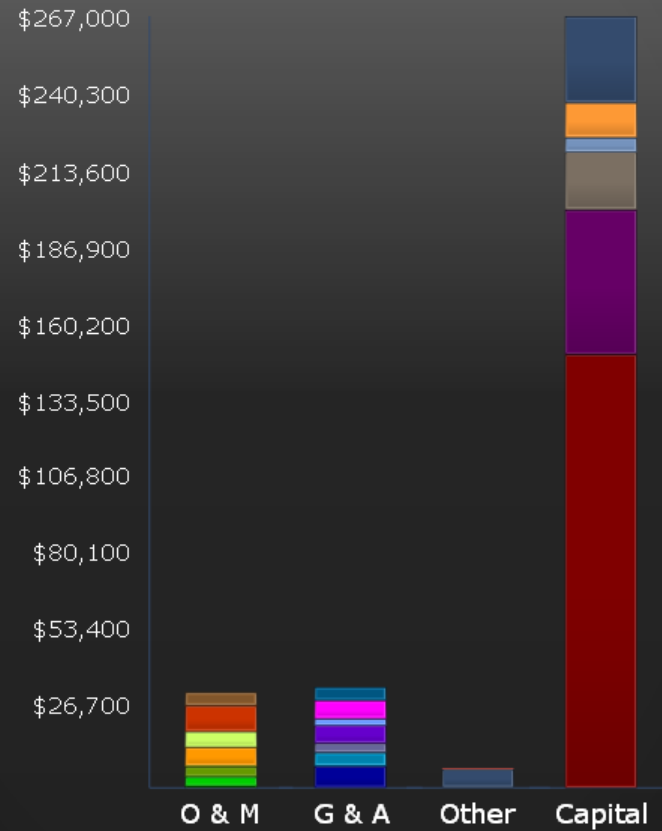
Rate Revenue	\$57,402
Hookup Revenue	\$7,750
Operating Revenue	\$65,152
Other Revenue	\$90,000
Funds/Resources for Capital Improvements	\$128,200
Total Revenue	\$283,352

Operation and Maintenance Expenses:

Salaries and Benefits \$ <input type="text" value="550"/>	Materials, Supplies and Parts \$ <input type="text" value="6456"/>
Power and Other Utility \$ <input type="text" value="3310"/>	Transportation \$ <input type="text" value="5469"/>
Chemicals and Treatment \$ <input type="text" value="3560"/>	Miscellaneous \$ <input type="text" value="8997"/>
Monitoring \$ <input type="text" value="54"/>	Unaccounted for Water \$ <input type="text" value="4646"/>

Total Operation and Maintenance Expense
\$33,042

Expense Budget by Category
(Mouse Over Chart for Details)



Financial Summary

Rates and Revenues

Expenses

Forecast
Customer Base

Revenues

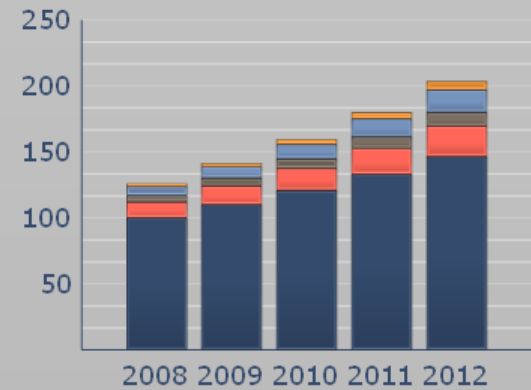
Expenses

Capital

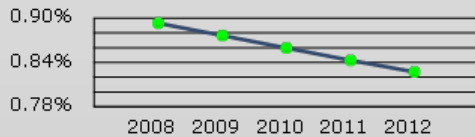
This Forecast Page will allow you to see the results coming from changes in the number of user connected to your system. Your adjustments to the Annual Median Household Income (MHI) will be reflected in the Affordability Ratio chart below. This will be beneficial in developing a rate structure for the forecast period.

	2008	% Change
Residential	100	10
Commercial	12	18
Industrial	5	20
Governmental	7	25
Other	2	35
Annual MHI	\$45,000	5

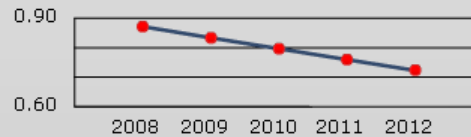
Future Customer Base



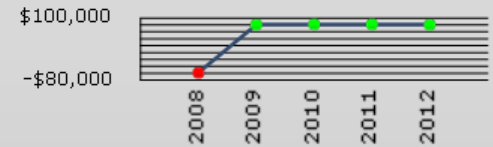
Affordability Ratio



Operating Ratio



Revenues vs Expenses





Dashboard
Details



Rates &
Revenues



Expenses




Strategic



Operational



Finish &
View



Finish & View

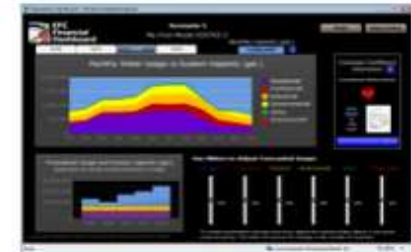
Pick on one of the three dashboards below to view the area of interest. The three Dashboards: Financial, Strategic and Operational Dashboards display the information entered into the previous load forms.



Financial Dashboard



Strategic Dashboard



Operational Dashboard



Example Water

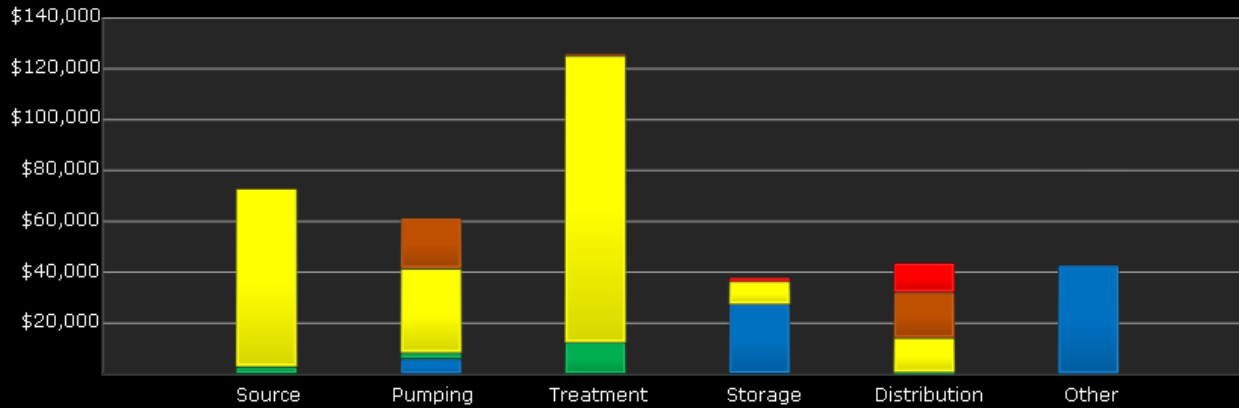
Print

Scenario

Data Entry

Current Asset Value by Category

(In Levels of Criticality)



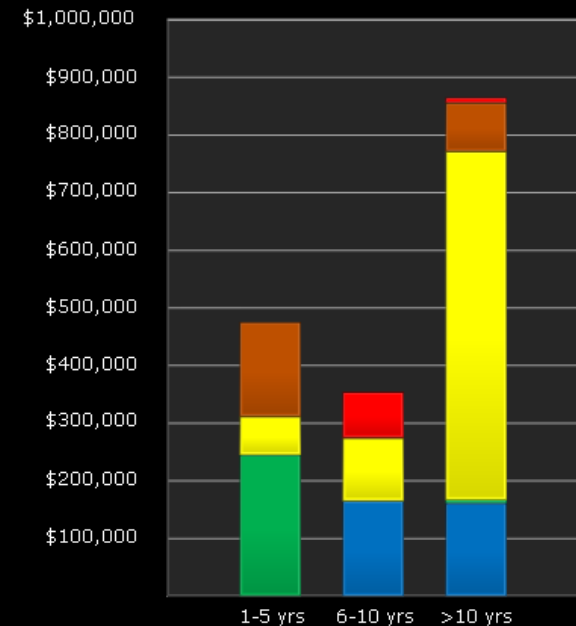
Current Value of Capital Assets

\$384,721

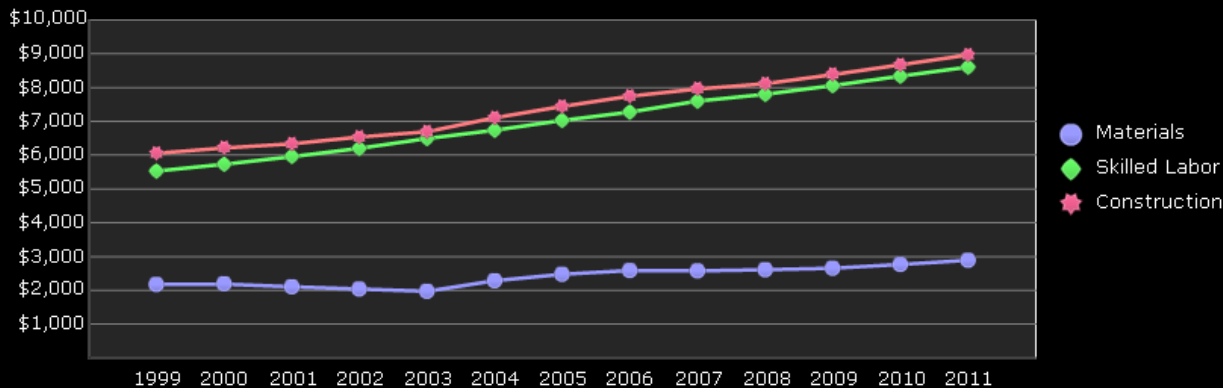
- Low risk due to asset failure
- Low/medum risk due to major asset failure
- Medium risk due to minor system failure
- Medium/high risk due to major system failure
- High risk due to total system failure

Replacement Cost of Assets


(In Levels of Criticality)



Cost Indexes with 3 Year Forecast



Source: <http://enr.construction.com/features/coneco/recentindexes.a>:



Finish & View

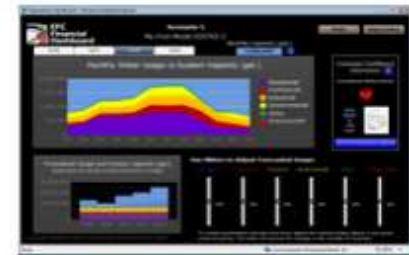
Pick on one of the three dashboards below to view the area of interest. The three Dashboards: Financial, Strategic and Operational Dashboards display the information entered into the previous load forms.



Financial Dashboard



Strategic Dashboard



Operational Dashboard





Example Water

Print

Scenario

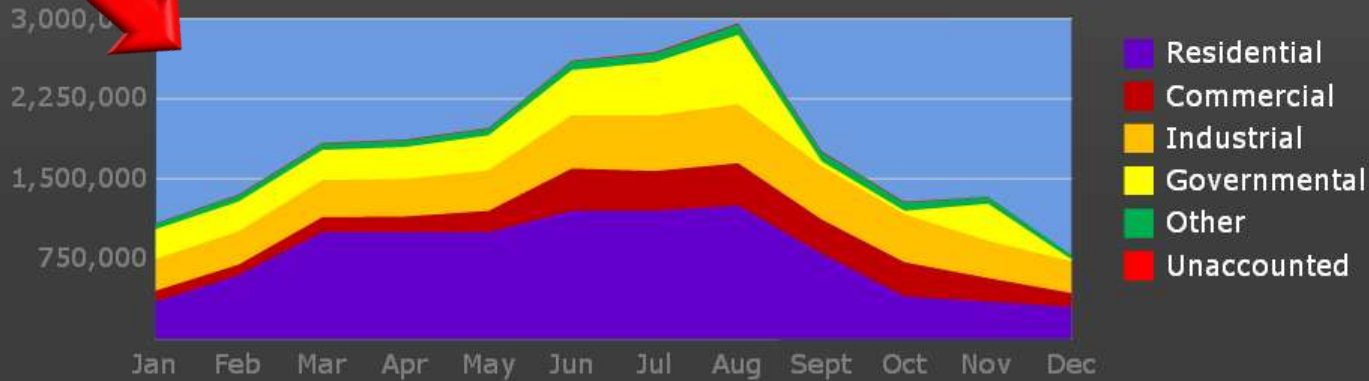
Data Entry

Monthly Capacity (gal.)

3,000,000

2004 2005 2006 2007

Monthly Water Usage vs System Capacity (gal.)



Consumer Confidence ⓘ

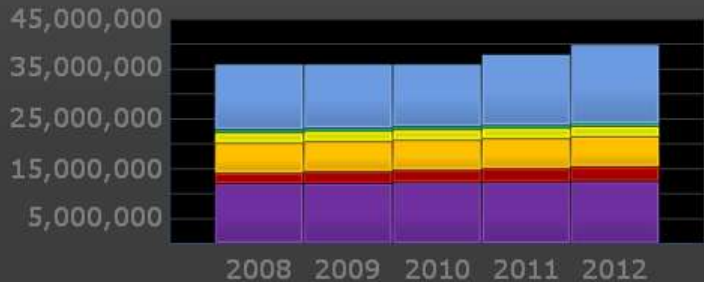
Compliance Performance:

Click [HERE](#) to view CCR

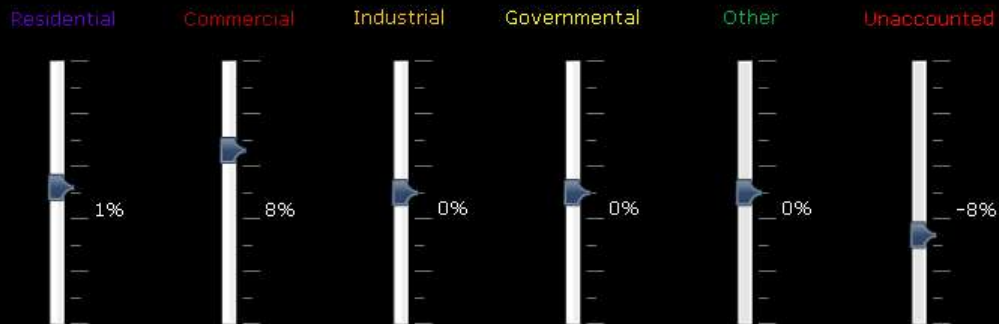
EPA Drinking Water Website

Forecasted Usage and Excess Capacity (gal.)

(graph does not consider monthly fluctuations in usage)



Use Sliders to Adjust Forecasted Usage:

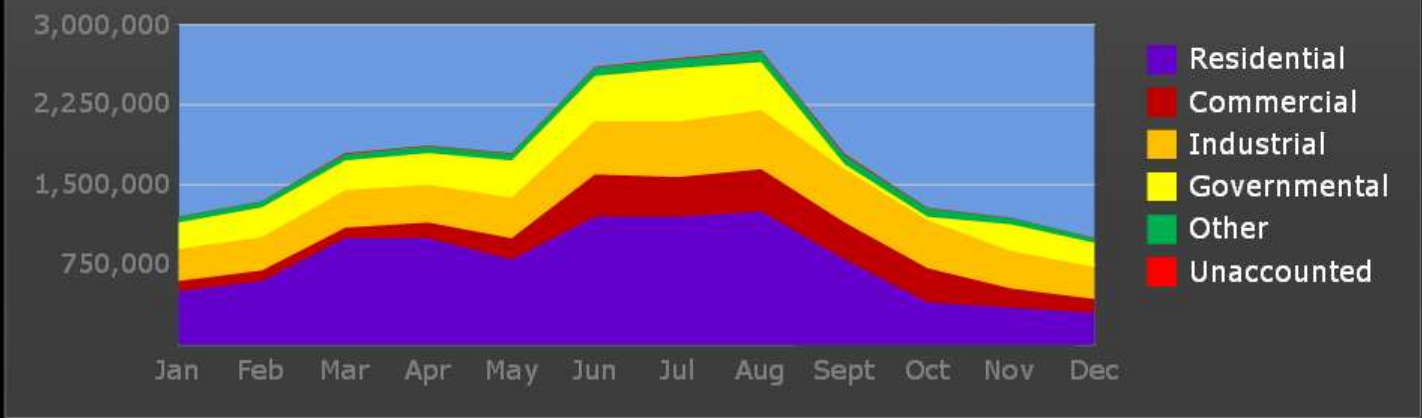


To model conservation savings over time, adjust the vertical sliders above in any given customer up. This does not account for change in the number of customers.

2004 2005 2006 **2007**

Monthly Capacity (gal.)
3,000,000

Monthly Water Usage vs System Capacity (gal.)



Consumer Confidence ⓘ

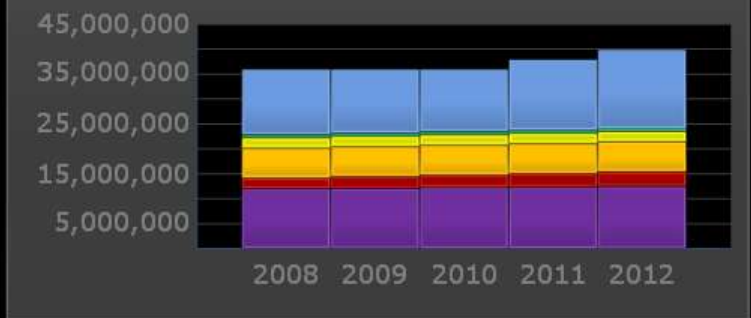
Compliance Performance:

Click [HERE](#) to view CCR

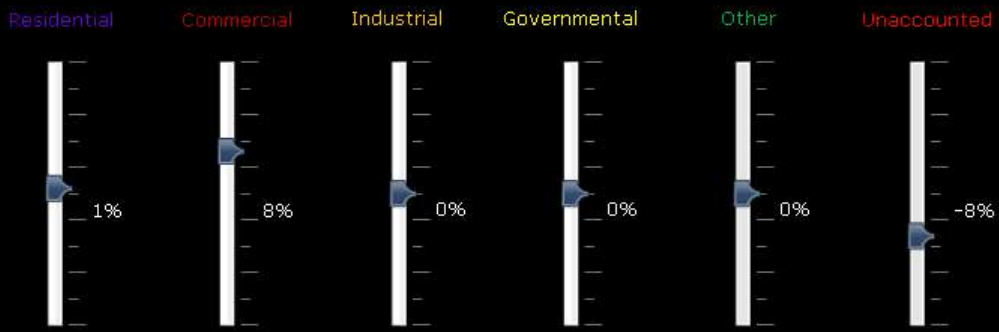
EPA Drinking Water Website

Forecasted Usage and Excess Capacity (gal.)

(graph does not consider monthly fluctuations in usage)



Use Sliders to Adjust Forecasted Usage:



To model conservation savings over time, adjust the vertical sliders above in any given customer group. This does not account for change in the number of customers.

1. Select Your Utility Rate Structure:

Example Utility

2. Select Type of Bill (5,000 Gallons/Month):

Water Bills

\$22.50

Rates: FY
2006-07

Sewer Bills

3. Select Your Comparison Criterion:

All Systems

All Systems

All Utilities

Example Utility

378 rate structures compared



Water Bill for 5,000 GPM

Conservation Pricing Signal



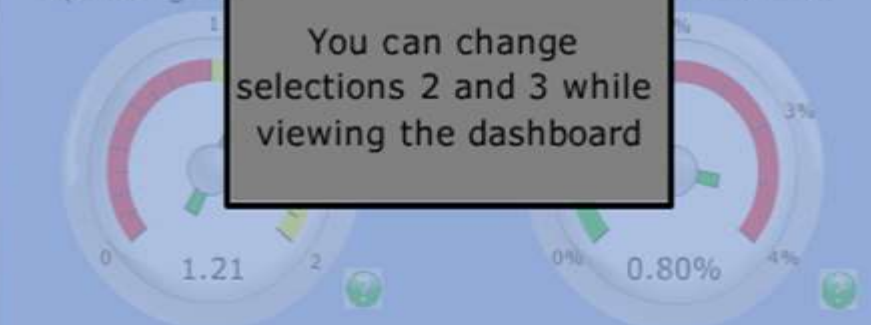
Change selections 1 - 3
on the left

Then click here to view
the dashboard

You can change
selections 2 and 3 while
viewing the dashboard

Operating Rat

as % MHI



Water & sewer
oper. rev./oper. expenses
for the utility, last year

Expenditures for 5,000 GPM
as % Median Household
Income of Town A

Environmental Finance Center



EPA Region 7
Satellite Office

Boise State University

Meghan Hemenway
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Region 7 Satellite Office

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