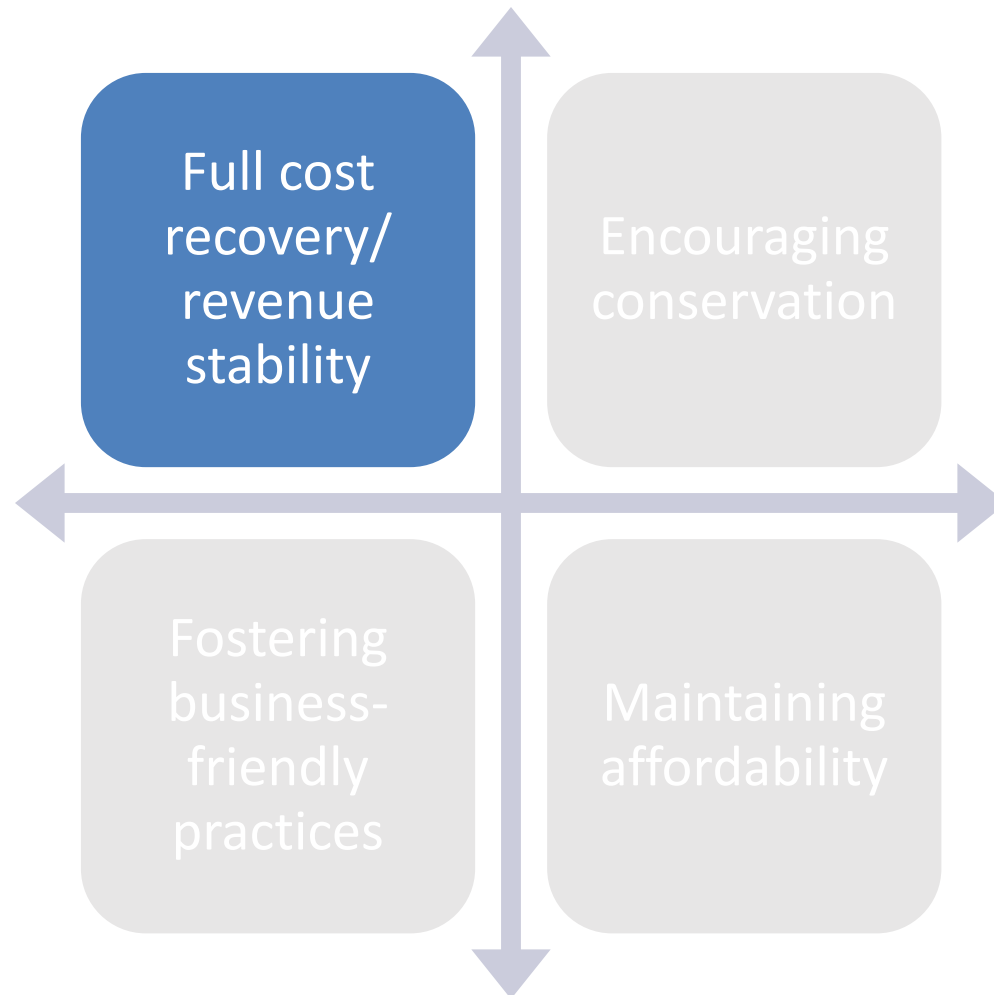




Understanding the Costs of Water Service



Water System Objectives





Session Objectives

- Understand different types of costs for water systems
- Learn which costs change based on the volume of water produced vs. those that do not change
- Examine a water system budget



What are different ways of categorizing costs?

Types of Budgetary Costs



Operating Costs



Capital Costs



Debt Service

A blue-tinted photograph of industrial water treatment equipment, including large pipes and valves, serves as a background for the top of the slide.

Fixed
Cost

vs.

Variable
Cost

Some costs for a water system are generally stable (**fixed**) regardless of the volume of water treated. Others **vary** based on the amount of water treated.



Exercise:

Costs of water systems

Let's make a list!



Annual Budget

- All of these costs become part of the annual budget for our water system
- That budget can be helpful as we figure out what to charge for water service, so it is important that the budget be both **accurate and complete**
- A budget is only a starting point – some budgets particularly operating budgets may be missing important costs



Setting Small Drinking Water System Rates for a Sustainable Future

One of the Simple Tools for Effective Performance (STEP) Guide Series





Exercise:

Budgeting for the full cost of
water service

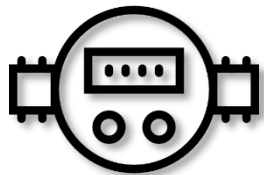


Irvindale, USA Exercise

Small town with a water and wastewater system



Population: 1,100



Service Connections: 450



MHI: \$24,432



Irvindale, USA Exercise

- Identify examples of **fixed** costs and examples of **variable** costs
- Is there anything missing in the budget?
- Does anything surprise you?

Irwindale Budget Expenses

??

Which costs vary based on volume of water treated or delivered?

	Account	Budget
19	30-810-01 W/S PROF. SERVICES	\$500.00
20	30-810-02 TOWN MANAGER SALARY	\$28,499.99
21	30-810-03 W/S EMPLOYEE SALARY	\$57,200.00
22	30-810-04 CLERK SALARY	\$37,251.88
23	30-810-05 FICA EXPENSE	\$8,703.00
24	30-810-06 W/S EMPLOYMENT TAX	\$975.00
25	30-810-07 W/S OVERTIME	\$4,500.00
26	30-810-08 MERIT BONUS	\$3,000.00
27	30-810-09 HOLIDAY/EMPLOYEE APREC	\$1,200.00
28	30-810-10 POSTAGE	\$2,700.00
29	30-810-11 Office Supplies/Repairs	\$4,700.00
30	30-810-12 PHONE	\$3,400.00
31	30-810-13 W/S UTILITIES	\$30,000.00
32	30-810-14 TRAINING	\$2,400.00
33	30-810-15 Employee Screening	\$105.00
34	30-810-16 MAINT/REPAIR:SYST-EQUIP	\$30,000.00
35	30-810-17 Mayor Salary	\$1,800.00
36	30-810-18 Board Salary	\$10,500.00
37	30-810-20 W/S UNIFORMS	\$2,000.00
38	30-810-30 GAS AND OIL FOR VEHICLES	\$4,500.00
39	30-810-31 TIRES FOR VEHICLES	\$600.00
40	30-810-32 REPAIRS TO VEHICLES	\$1,000.00
41	30-810-33 SUPPLIES & MATERIALS	\$3,000.00
42	30-810-34 CHEMICALS AND SALT	\$20,000.00
43	30-810-45 CONTRACTED SERVICES	\$36,500.00
44	30-810-46 STATE PERMITS	\$1,700.00
45	30-810-48 DUES/SUBSCRIPTIONS	\$1,500.00
46	30-810-50 DEPRECIATION	\$0.00
47	30-810-54 INSURANCE	\$13,608.00
48	30-810-55 HOSPITAL INSURANCE	\$22,443.00
49	30-810-57 MISC EXPENSE	\$500.00
50	30-810-60 W/S - LGERS	\$9,272.00
51	30-810-70 WATER STUDY EXPENSES	\$24,000.00
52	30-810-74 Online Payments SVC	\$1,600.00
53	30-810-75 ARRA LOAN PRINCIPAL	\$8,875.00
54	30-810-76 PURCHASE WATER BILL	\$2,400.00
55	30-810-79 Banking Fees	\$500.00
56	30-810-89 CAPITAL OUTLAY NEW EQUIP	\$0.00
57	30-810-90 TRANSFER TO OTHER FUND	\$0.00
58	30-810-95 FINES AND PENALTIES	\$1,500.00
		\$382,932.87

Irwindale Budget Expenses

	Account	Budget
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		\$382,932.87

What's missing?





Costs that may be overlooked

- Indirect costs of running the system (shared management costs, shared facility costs, etc.)
- Capital-related costs (debt service, **depreciation**, sinking fund transfers, pay as you go capital expenditures)
- Retirement/pension

**How does your system fund capital projects?
(type a few words)**

What not including money for capital looks like





Understanding how costs change

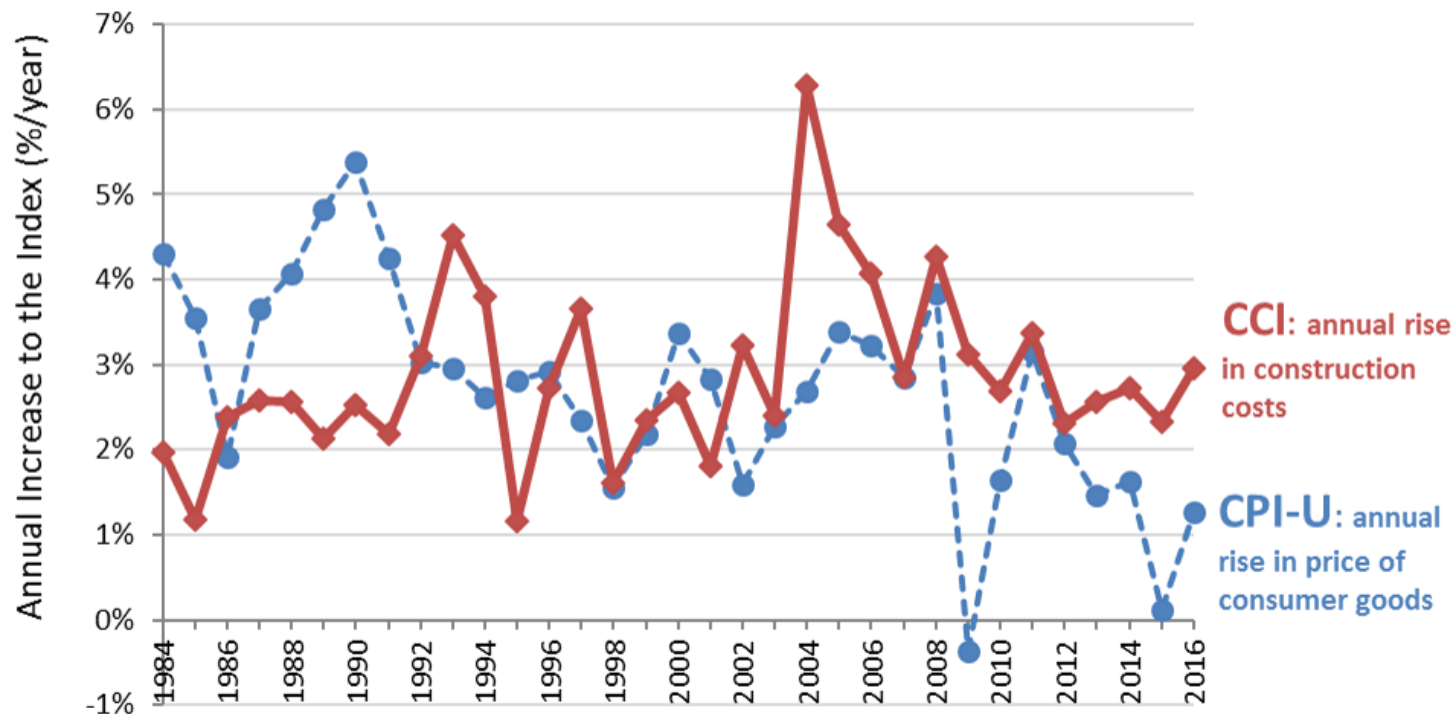


Measures of Inflation

- **Consumer Price Index (CPI)**—measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services
- **Construction Cost Index (CCI)**—average prices for labor and key construction materials from 20 cities across the United States

The **Construction Cost Index (CCI)** has been rising faster than the **Consumer Price Index-Urban (CPI-U)** in recent years

Construction costs (CCI) rose on average of **2.6%/year** in the last five years, while consumer goods (CPI-U) only rose an average of **1.3%/year** in the same period



Data graphed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.

Data Sources: Bureau of Labor Statistics (CPI-U), Engineering News-Record ENR.com (CCI), InflationData.com (CPI-U), USDA Natural Resources Conservation Services (spreadsheet containing CCI and CPI-U).

Linear Projections

- Assume that costs go up by a fixed percentage per year over the course of several years
- Excel is your friend!



Linear Projections

- Annual cost: \$10,000
- Expected annual increase: 2.5%

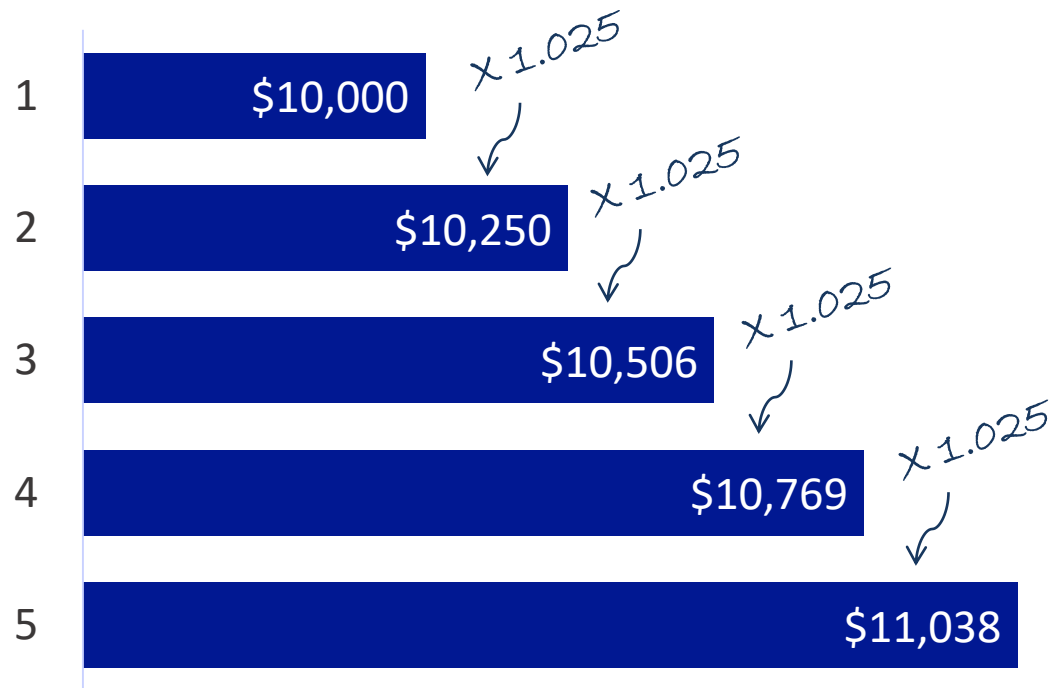


Linear Projections

- Annual cost: \$10,000
- Expected annual increase: 2.5%

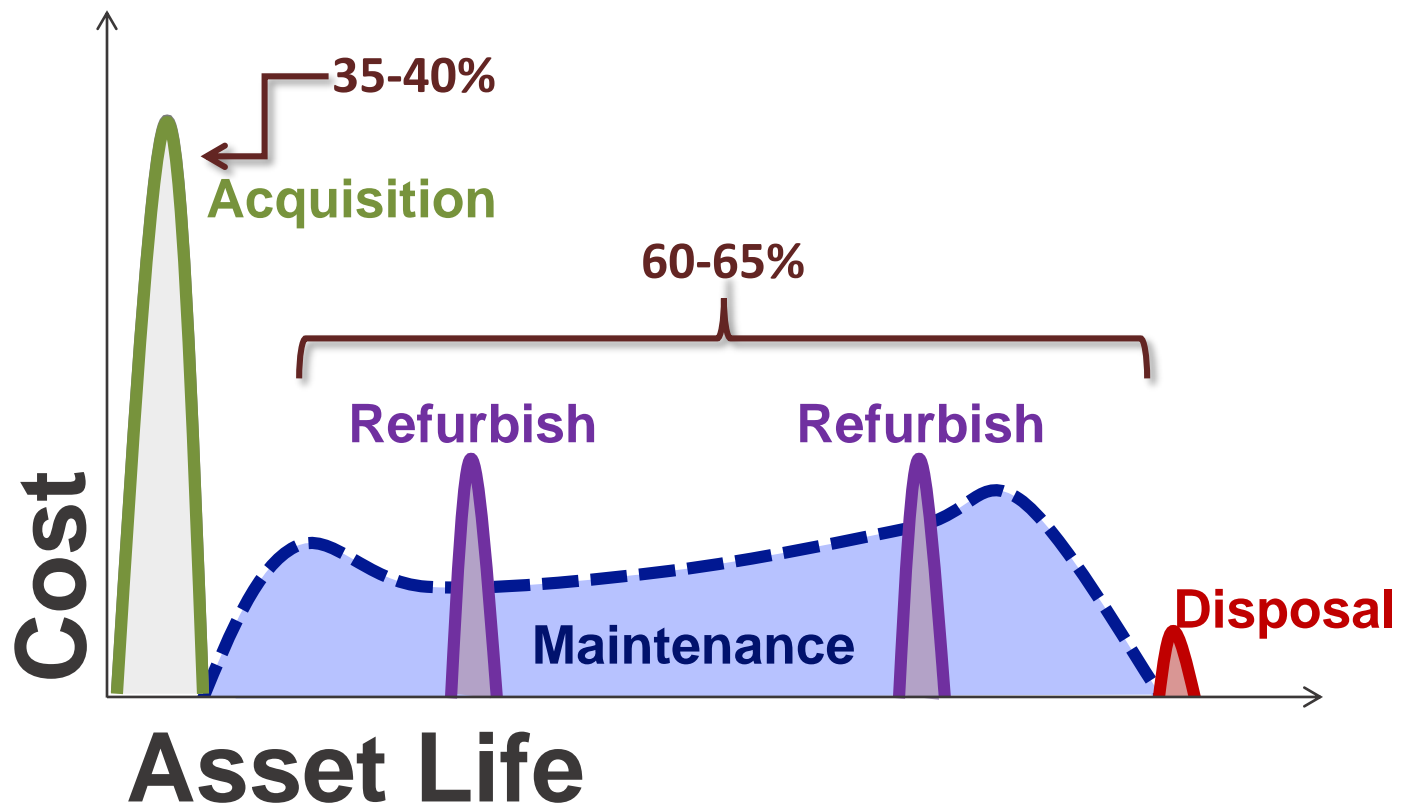
~~\$10,000~~
~~\$10,250~~
~~\$10,506~~
~~\$10,769~~
~~\$11,038~~

$\$10,000 \times 0.025 = \250
 $\$10,250 \times 0.025 = \256



Life-cycle costing

Purchase Price \neq Total Price



Source: Adapted from Steve Allbee, USEPA



Understanding your Customers



Getting to Know your Customers

- Residential vs. non residential
- Incomes and economic status of customers
- Use of water (irrigation, industrial production, tourism)
- Seasonality patterns
- Economic future of large users
- Population and usage trends



Customers



4,000 gallons/month
(all indoor)



15,000 gallons/month
(all indoor)



15,000 gallons/month
(4,000 indoor;
11,000 summer irrigation)



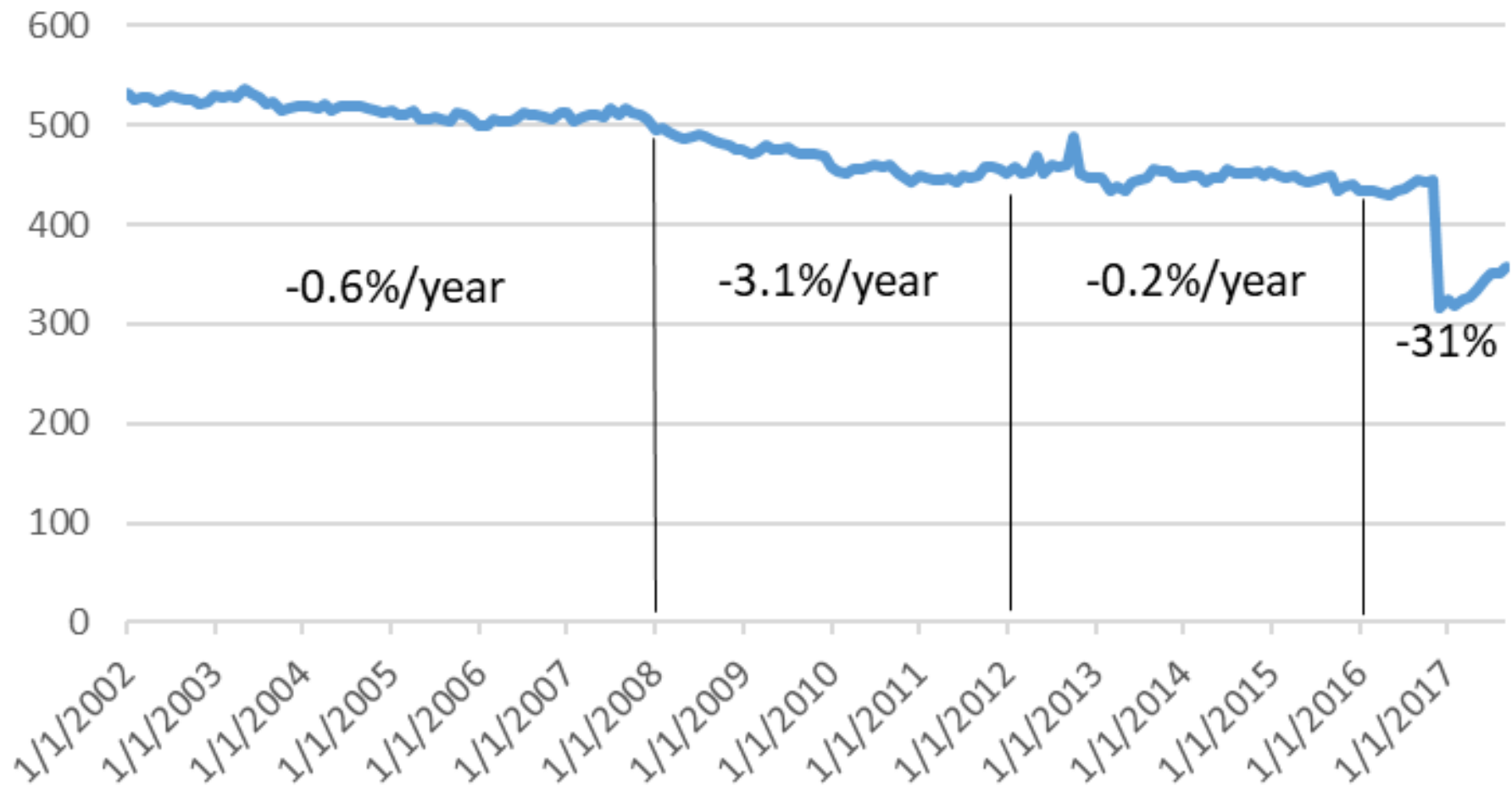
34,000 gallons/month
(all indoor)



Customer water usage

Monthly Usage Per Account	Count
0	563
1-999	1155
1,000-1,999	1755
2,000-2,999	1714
3,000-3,999	1238
4,000-4,999	748
5,000-5,999	444
6,000-6,999	328
7,000-7,999	179
8,000-8,999	144
9,000-9,999	89
10,000-10,999	56
11,000-11,999	38
12,000-12,999	27
13,000-13,999	9
14,000-14,999	16
15,000+	136

Beware population declines





Up next...

Pricing water for full cost recovery