Long Term Capital Planning

Glenn Barnes

Environmental Finance Center

The University of North Carolina at Chapel Hill

919-962-2789

glennbarnes@sog.unc.edu

Session Objectives

- Learn about two aspects of long-term system planning: asset management and capital planning
- Figure out how to pay for the future needs

In the Old Days...

- Water systems took advantage of the federal government's ambitious construction grants program of the 1970s and 1980s

- Everybody loved their "free" money

Capital Finance Today

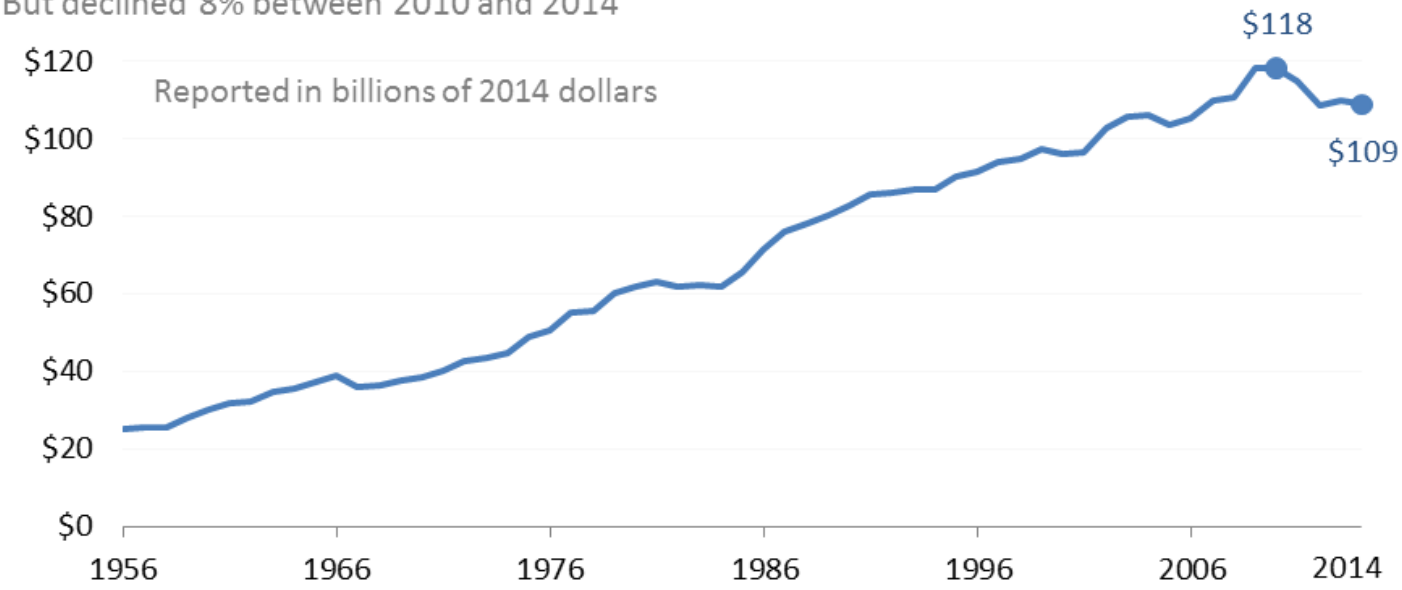
- The money never really was “free”—it came from tax dollars

- Today, there is a different philosophy of how to pay for water system capital improvements

Total Public Spending Has Grown...

Total federal, state and local government spending on water and wastewater utilities grew steadily over time

But declined 8% between 2010 and 2014

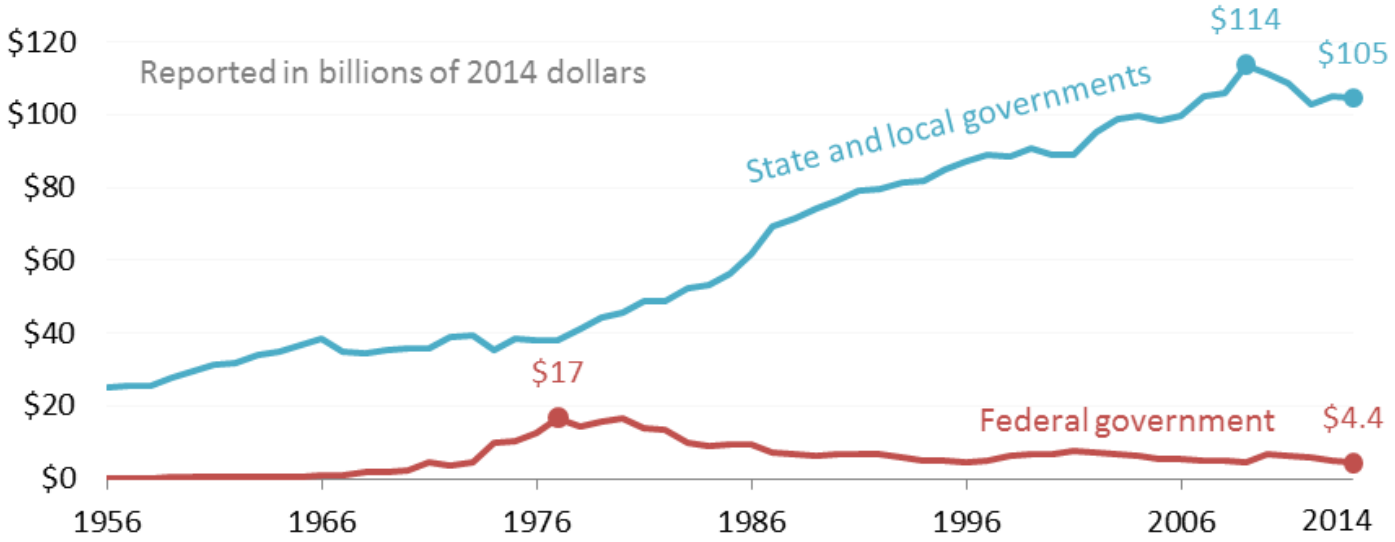


Graphed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.
Source: Congressional Budget Office supplemental data for the *Public Spending on Transportation and Water Infrastructure, 1956 to 2014* report (March 2015). Displays public spending on supply systems for distributing potable water as well as wastewater and sewage treatment systems and plants. Real spending is shown after adjusting nominal spending to their 2014 dollar equivalent using infrastructure-specific price indexes.

...Mostly from State and Local Governments

State and local government spending on water and wastewater utilities continued to grow while federal spending declined since the 1980s

State and local governments spent 24 times as much as the federal government in 2014



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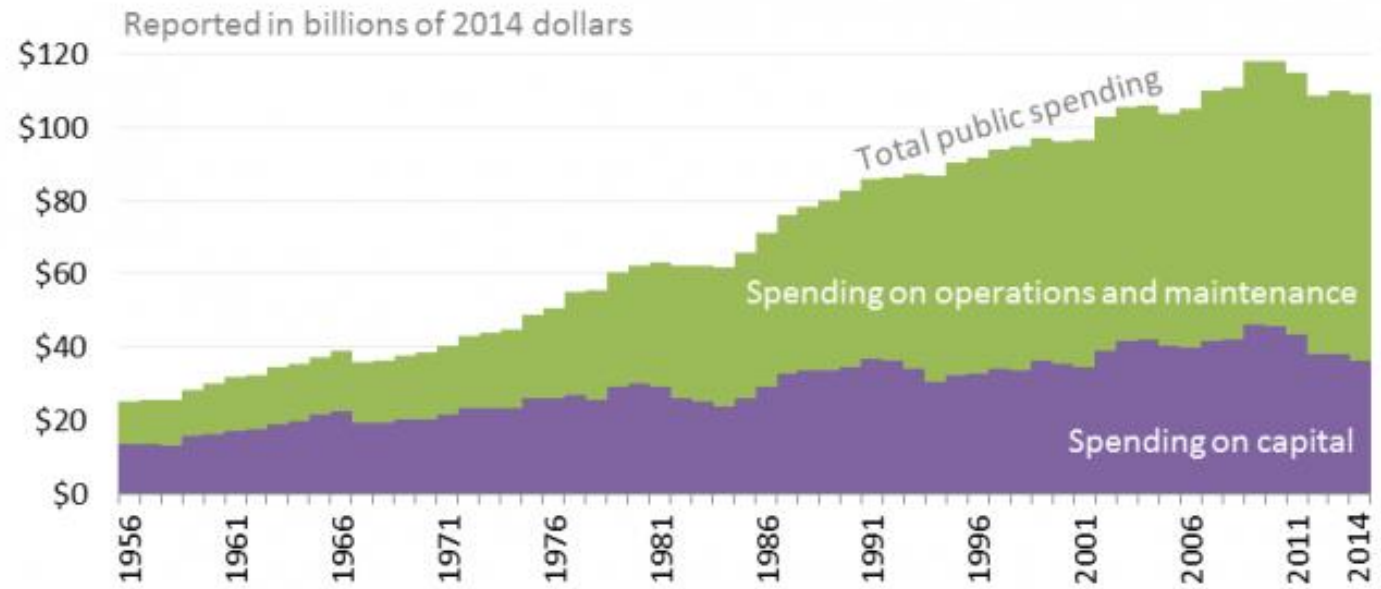
...And Mostly for O&M, not Capital

Federal, state and local government spending on water and wastewater utilities, 1956 - 2014



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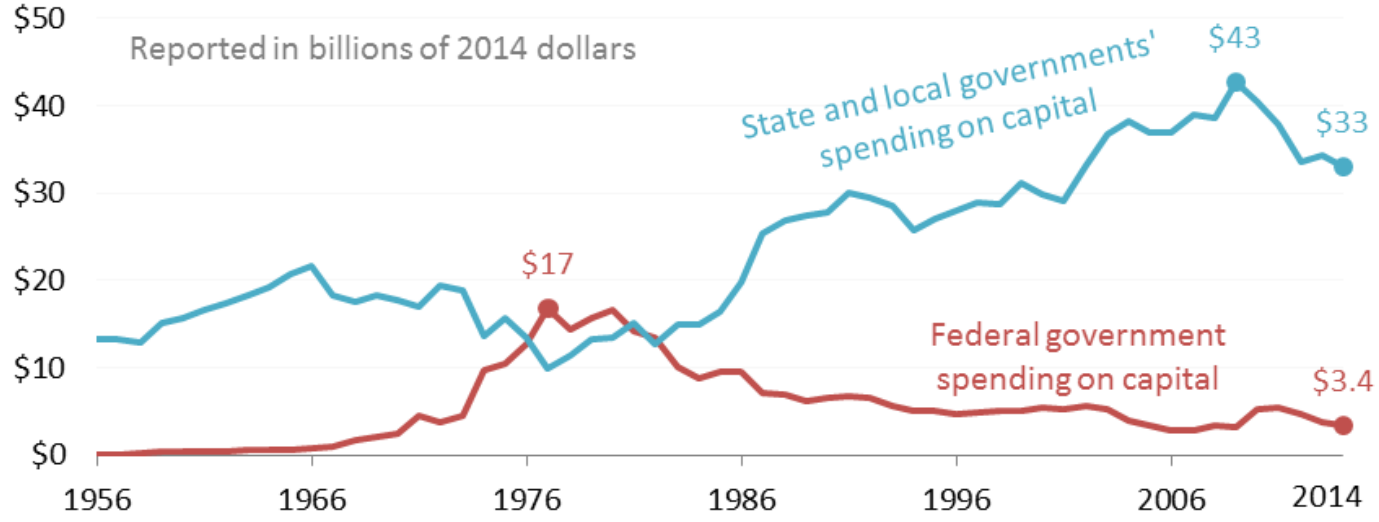
Feds Used to Spend More on Capital

Spending on capital infrastructure for water and wastewater utilities has increasingly been provided by state and local governments while federal spending on capital infrastructure declined since the 1980s

Over 90% of capital spending occurs by state and local governments



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Capital Finance Today

- In other words, you pay (no sense in sugar-coating this)

- The reality is that water and wastewater infrastructure is expensive, regardless of the size of your system. Smaller or poorer systems will likely have a hard time paying for capital improvements

http://efc.web.unc.edu/2015/09/09/four-trends-government-spending-water/

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Four Trends in Government Spending on Water and Wastewater Utilities Since 1956

SEPTEMBER 9, 2015 / SHADI ESKAF / 0 COMMENTS

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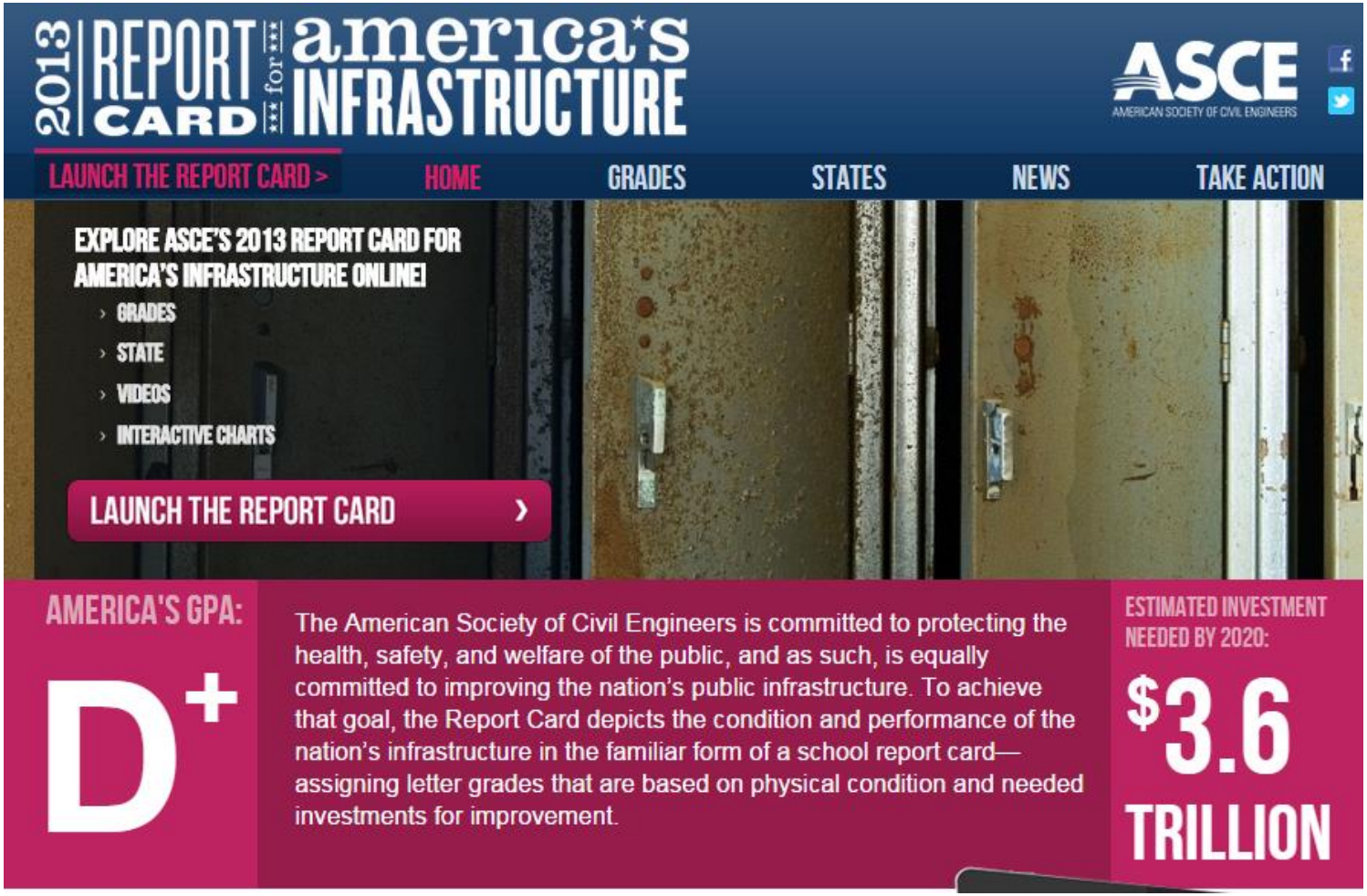
According to data collected and published by the Congressional Budget Office (CBO), federal, state and local governments in the United States spent more than $2.2 trillion in the last 59 years on operations, maintenance and capital infrastructure of water and wastewater utilities. That equates to more than $4,131,000,000,000 in 2014 dollars, adjusting for inflation of infrastructure-

Poor Investment → Poor Infrastructure



REPORT CARD

Aviation	D	Ports	C
Bridges	C+	Public Parks	C-
Dams	D	Rail	C+
Drinking Water	**D**	Roads	D
Energy	D+	Schools	D
Hazardous Waste	D	Solid Waste	B-
Inland Waterways	D-	Transit	D
Levees	D-	**Wastewater**	**D**

http://www.infrastructurereportcard.org/

ASCE Gives Drinking Water a D

- Bad news: … much of our drinking water infrastructure is nearing the end of its useful life. … estimated 240,000 water main breaks per year in the US. Assuming every pipe would need to be replaced, the cost … could reach more than $1 trillion, according to AWWA.

ASCE Gives Drinking Water a *D*

- Good news: The quality of drinking water in the United States remains universally high. Even though pipes and mains are frequently more than 100 years old and in need of replacement, outbreaks of disease attributable to drinking water are rare. (ASCE)

Two Related Concepts:

Asset Management
&
Capital Planning

Working smarter *not harder* is the essence of Effective Management / Asset Management

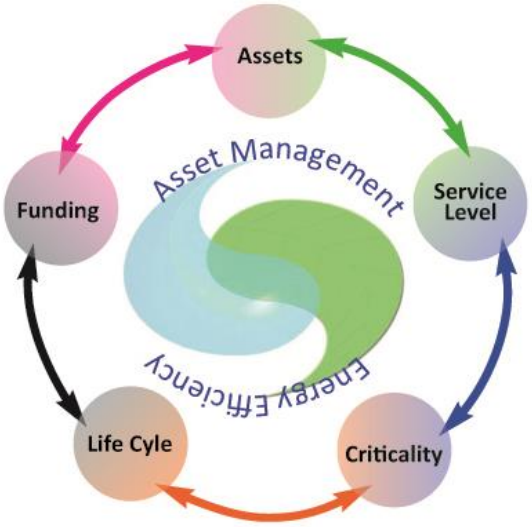
Let’s hear from a practitioner...

Asset management helps you have the most impact in your system by spending your limited dollars in the best way possible

What does this type of analysis take?

- Nothing more than following a systematic approach for managing the assets
- 5 core components of Asset Management

Five Core Components of AM



Current State of the Assets

Level of Service

Criticality

Life Cycle Costing

Long-Term Funding

Current State of the Assets

- What do I own?
- Where are the assets?
- What condition are they in?
- How much useful life is remaining?
- What is the replacement value?

Level of Service

Involve Customers

Measurable Goals: Internal and External

Track Progress Towards Meeting Goals

Involve Staff

What would my customers want?

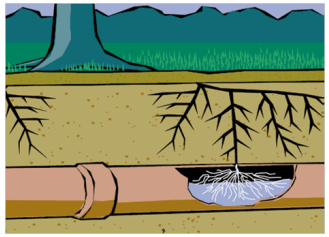
What do customers care about?

Asset Criticality

What is the probability or likelihood that a given asset will fail?

How do my assets fail?

What's the condition of my assets?



Asset Criticality

What is the consequence if the asset does fail?

- What is the cost of the repair?
- Are there legal consequences, environmental consequences, social consequences?
- Are there redundant assets?

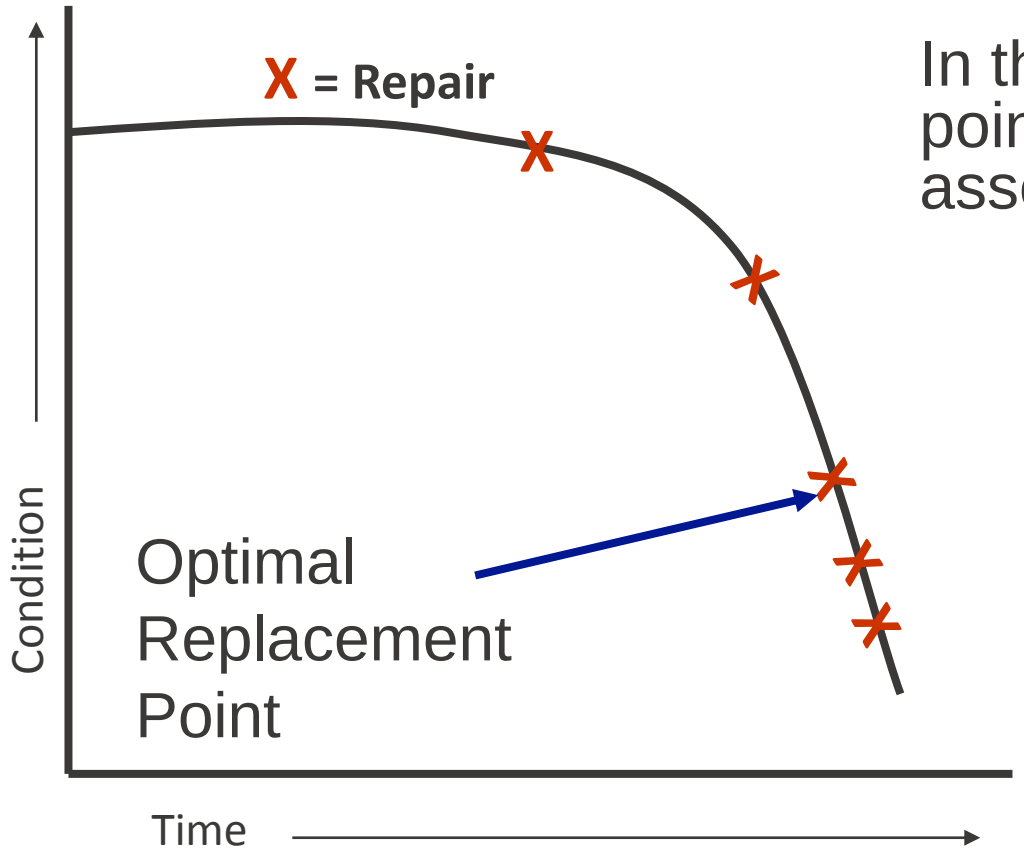
Asset Criticality

Quick Exercise—4 Assets

1. Brand new overhead storage tank
2. Aging booster pumps that serve a hospital and neighborhood
3. 20 year old lines on Forest Drive, a typical residential neighborhood
4. 20 year old meters

Asset Criticality

Life Cycle Costing: Replacement of Assets



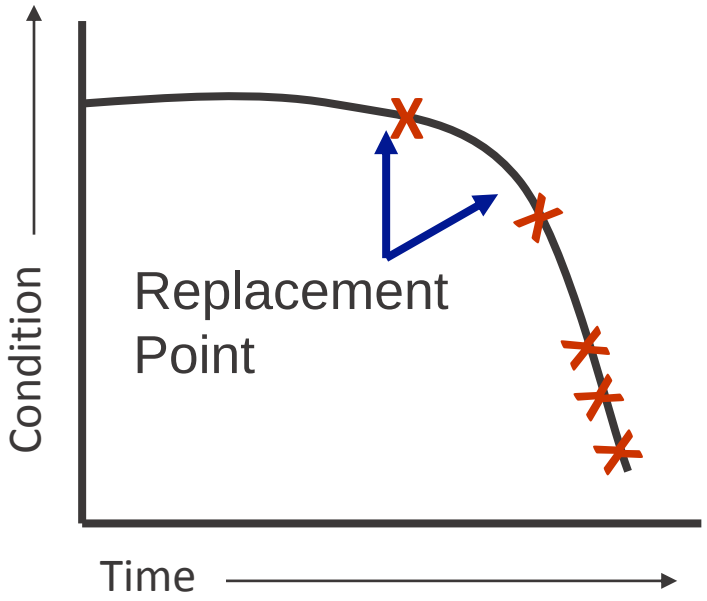
In theory, there is an exact right point at which to replace an asset

Not possible to know the optimal time to replace every asset

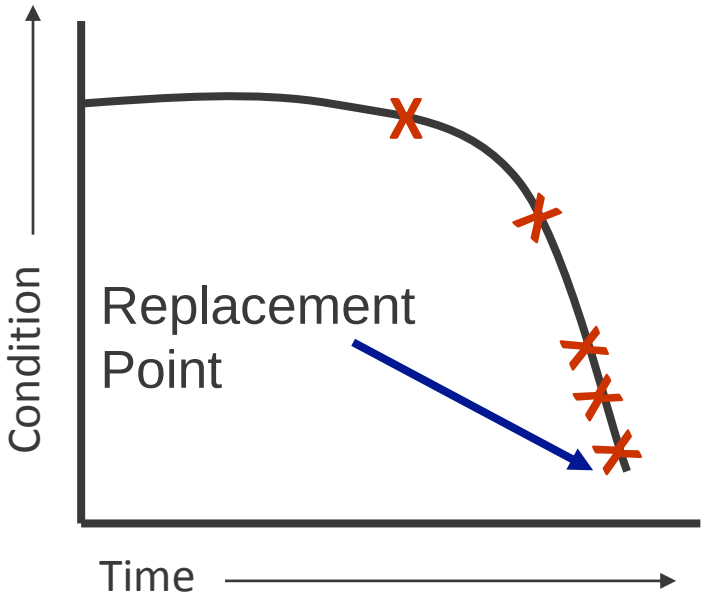
So… need to use the concept of risk

Life Cycle Costing & Risk

High risk assets:
replace assets early,
before failure



Low risk assets:
run to failure and
replace afterwards



Long Term Funding

- This is where capital planning comes in
- Once you figure out how to get the longest life out of your assets, plan to have the money you need to replace them when necessary

Long Term Capital Planning

- This is strongly related to asset management

- An official multi-year document that identifies and prioritizes capital projects, identifies funding sources, and sets timelines

Capital Improvement Program

- Identify regulatory deficiencies (discuss with regulatory agencies, look at proposed regulations, talk to consultants) in a 10-20 year window
- Identify population changes (growth, stagnation, decline)
- Identify deferred maintenance problems or where current service is inadequate

Capital Improvement Program - Timelines

- Use **Asset Management Plan** to plan for capital expenses in the long term (~20 years)

Capital Improvement Program - Timelines

- Create a **Capital Improvement Plan** with a narrower timeline (~5 years) in more detail. Specify the projects and accurate estimates of cost. Plan where money will come from.

Capital Improvement Program - Timelines

- Create a **Capital Improvement Budget** with an even narrower timeline (1 – 2 years) committing funds for the planned capital projects. Get it approved/adopted.

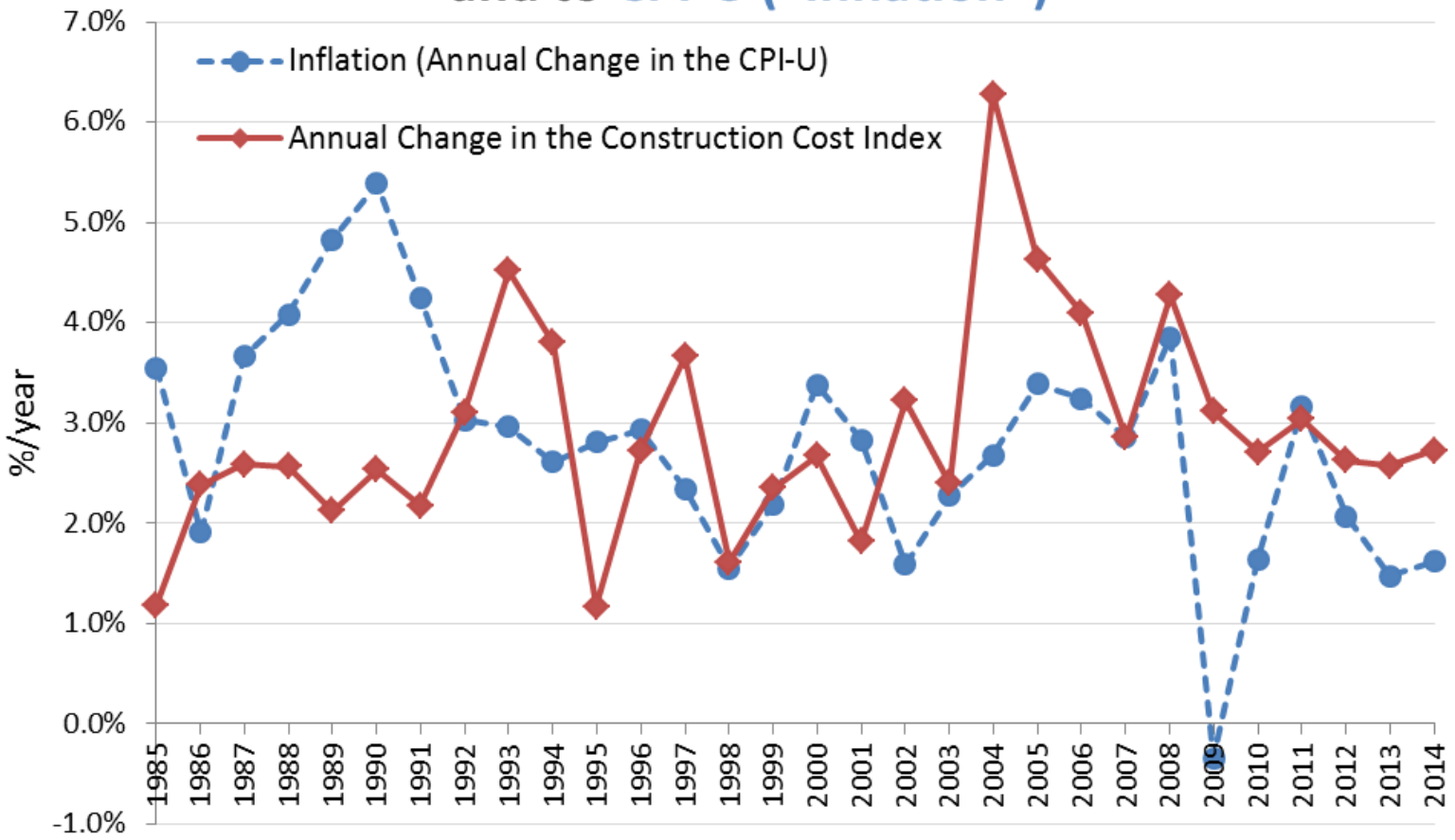
Where Can You Find the Prices?

- Call a vendor. Actually, call a few.
- Ask other systems
- Look at past expenses but adjust for increases in costs

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

Annual Changes to the Construction Cost Index and to CPI-U ("Inflation")



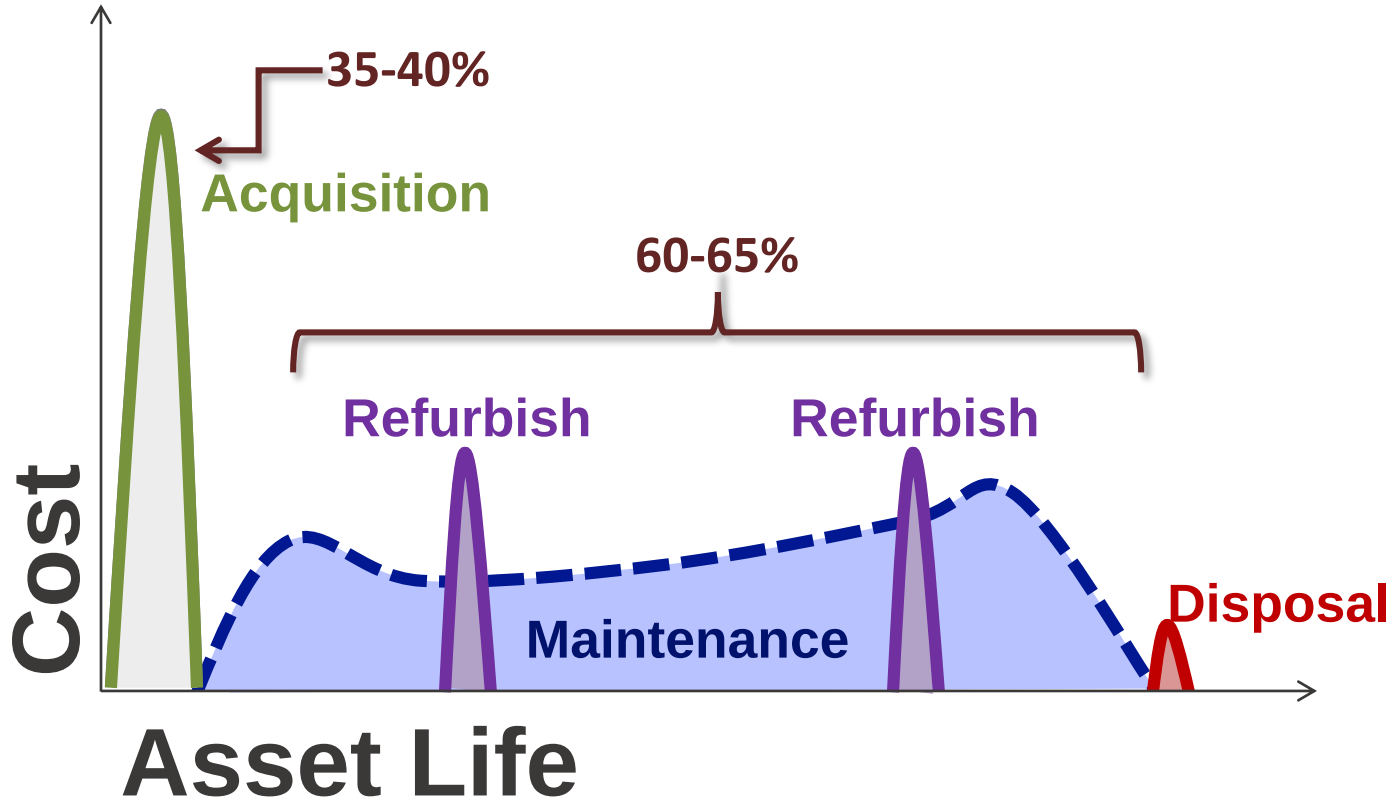
Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.
Data Sources: Bureau of Labor Statistics, Engineering News-Record ENR.com, InflationData.com, USDA Natural Resources Conservation Services.

http://efc.web.unc.edu/2012/09/26/using-an-index-to-help-project-capital-costs-into-the-future/

Reminder: Life Cycle Costing

- Purchase Price ≠ Total Price

Capital Investments are Just the Tip of the Iceberg…

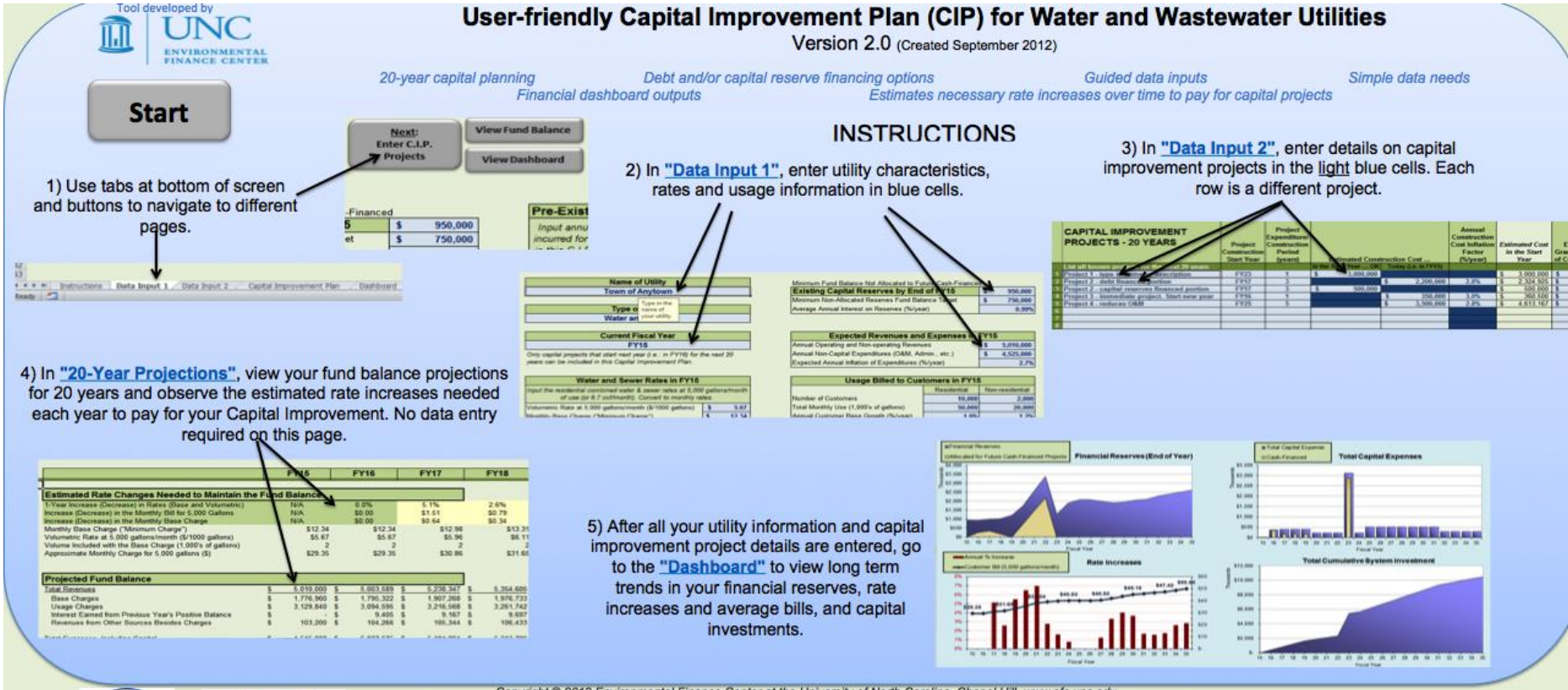


Source: Adapted from Steve Allbee, USEPA

EFC C.I.P. Tool

http://efc.sog.unc.edu/

Free, simplified CIP tool using only MS Excel (EFC @ UNC)



Development of this tool was funded by the NC Department of Environment and Natural Resources and the U.S. Environmental Protection Agency

Download this tool at www.efc.unc.edu/tools

Software: CUPSS (EPA)

http://www.epa.gov/cupss/