

Asset Management: Integrating Strategic Thinking With Tactical Action

Presentation to the Clean Water
and Water Supply Advisory
Council of New Jersey

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This Presentation

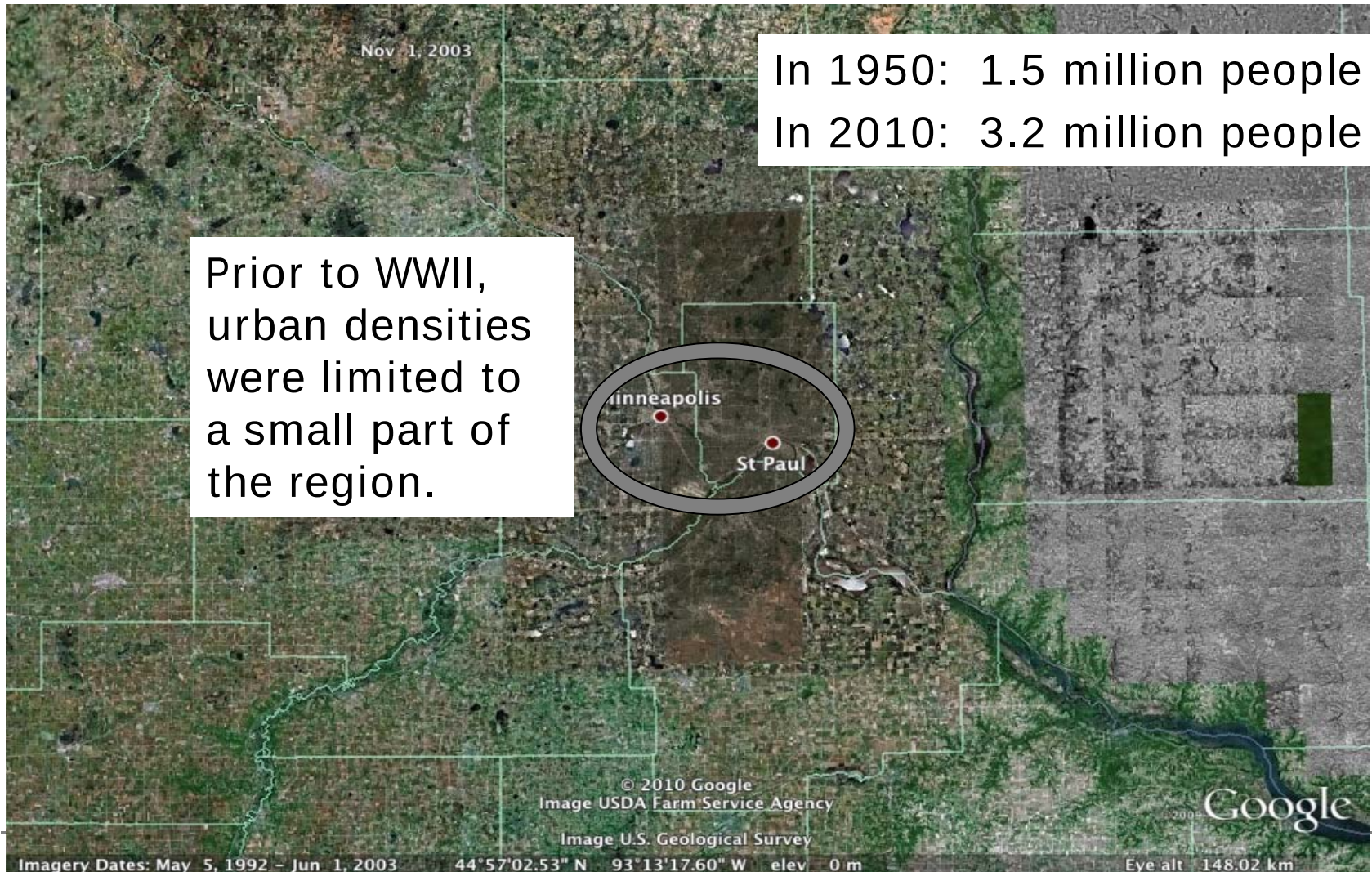
- The multi-generational challenges of urbanization, system expansion and upgrade.
- The financial context and resource requirements associated with water and wastewater systems
- The public policy aspects of managing urban systems and the long term sustainable delivery of services.
- Introduce Asset Management as a process and practice integral to the sustainable deliver of water and wastewater services.

Prior to WWII, Our Urban Areas Were Compact

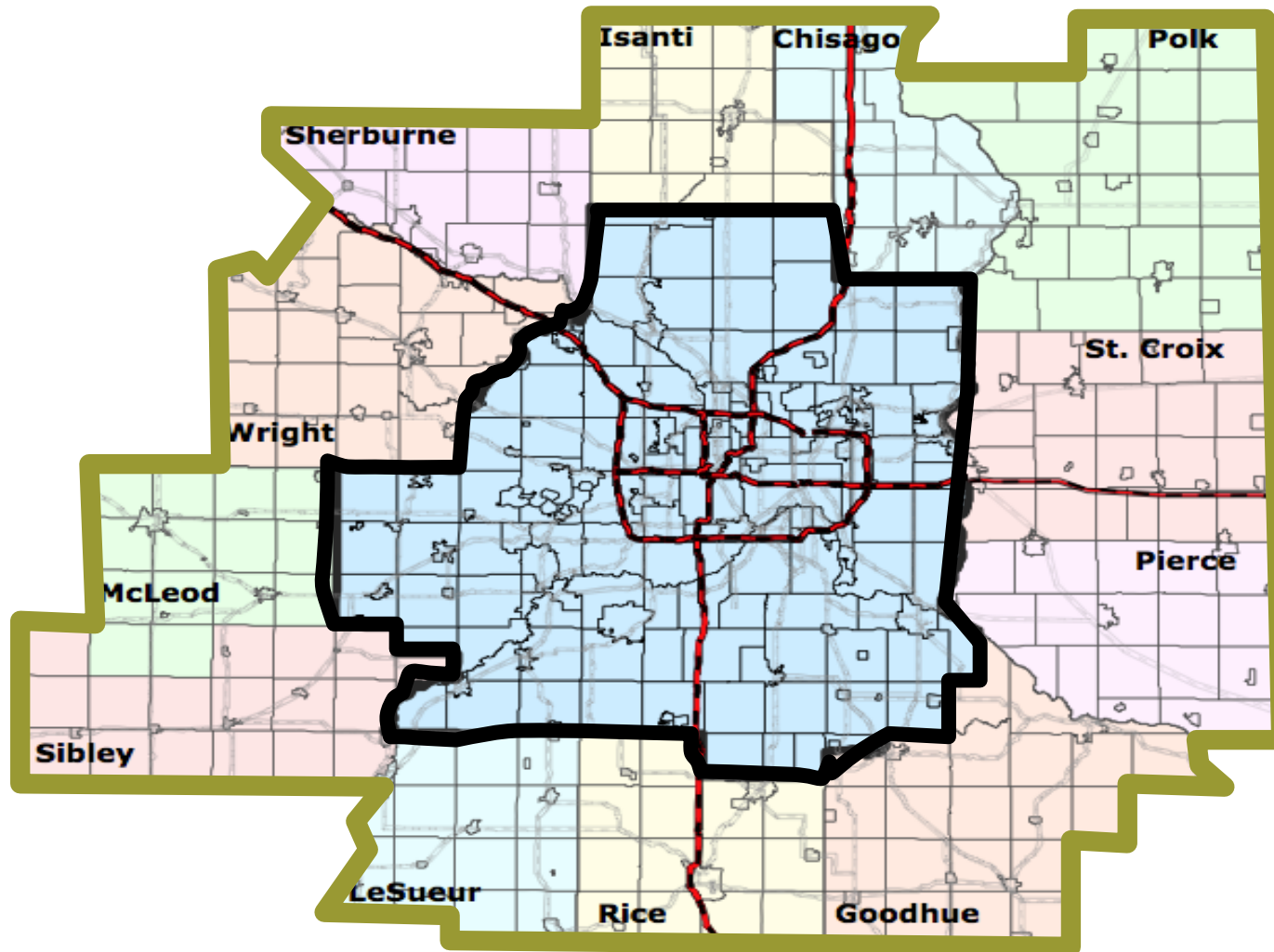
Where and How We Live Has Changed Dramatically



As an Example: The Minneapolis / St Paul Region Has a Relatively Common Growth Pattern Since The 1950s



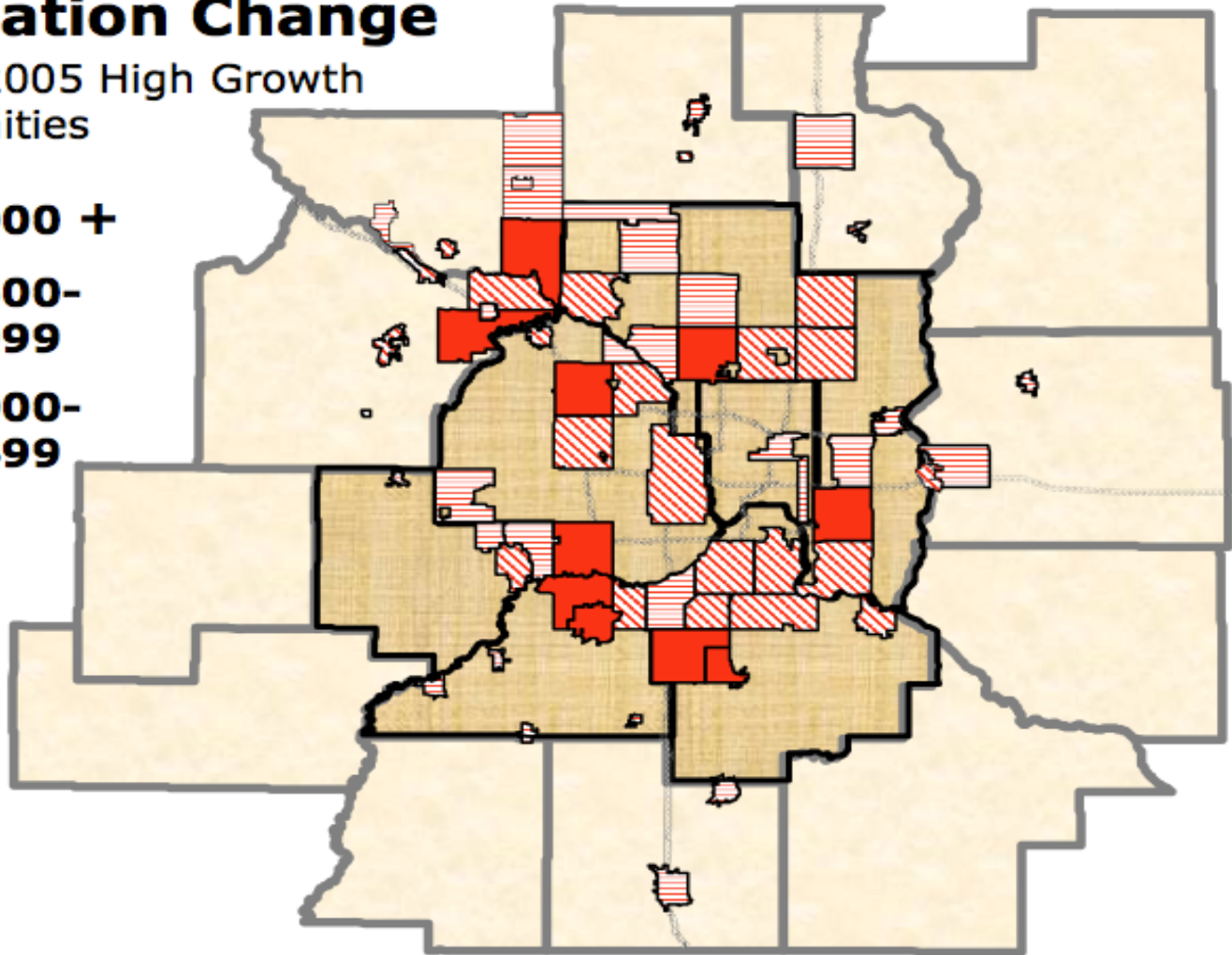
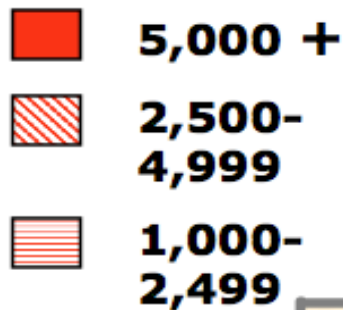
By the 1970/80s, the Impacts of Urbanization Began to Reach Into a Number of Adjacent Counties



By 2000, Some of the Fastest Growth Was Occurring in Counties That Just a Few Decades Earlier, Were Not Thought To Be Part of the Urban Metropolitan Region

Population Change

2000 – 2005 High Growth Communities

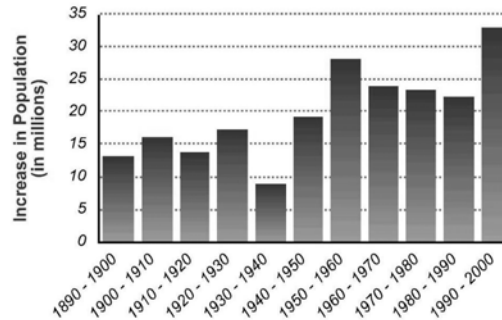


Understanding The Demographic and Legacy Aspects of Assets Within a Particular System Is Very Important.

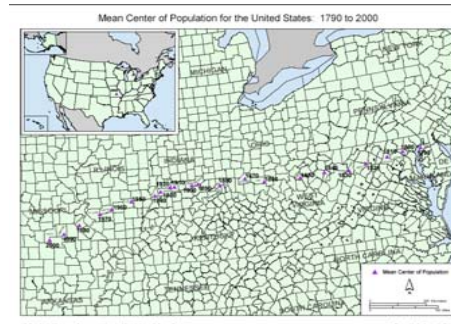
It Is Also Important To Have Insight Into What the Situation Looks Across Systems: A High Level National Assessment.

Long Life Assets (Example: Water Infrastructure) Are Impacted By Growth Patterns and Demographic Shifts.

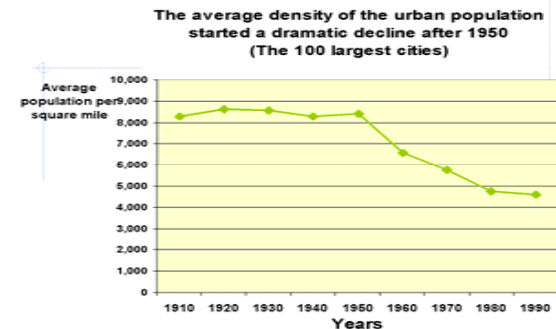
We are adding population



We are relocating



For the Better Part of 50 Years
Our urban densities declined

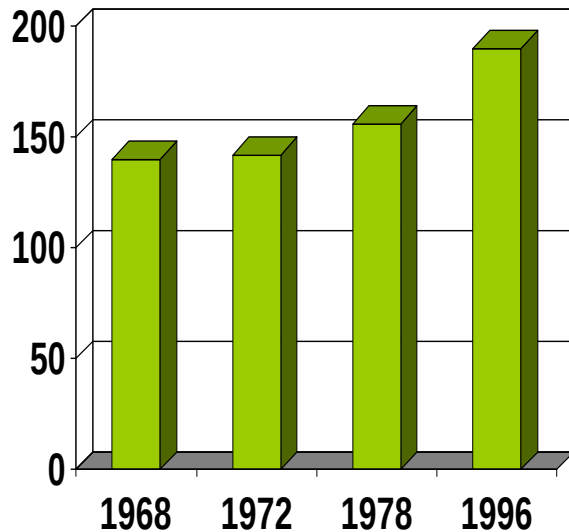


The History of Urbanization, Environmental Degradation, and a Generation of Expansion and Upgrade Substantially Defines Major Aspects of the Current Challenge

- In the 1970s, the country faced significant water quality problems and major policy and strategic changes resulted.
- The Federal government took on a larger role as a regulator and became a very significant source of funds for capital improvements.
- A new permit process was established to control discharges to the nation's waterways.
- Very large investments were made in the treatment of industrial waste and in the upgrading of the public wastewater systems.

The Last Several Decades Featured Large Investments in Expansion and Upgrade

50 Million More
People Served

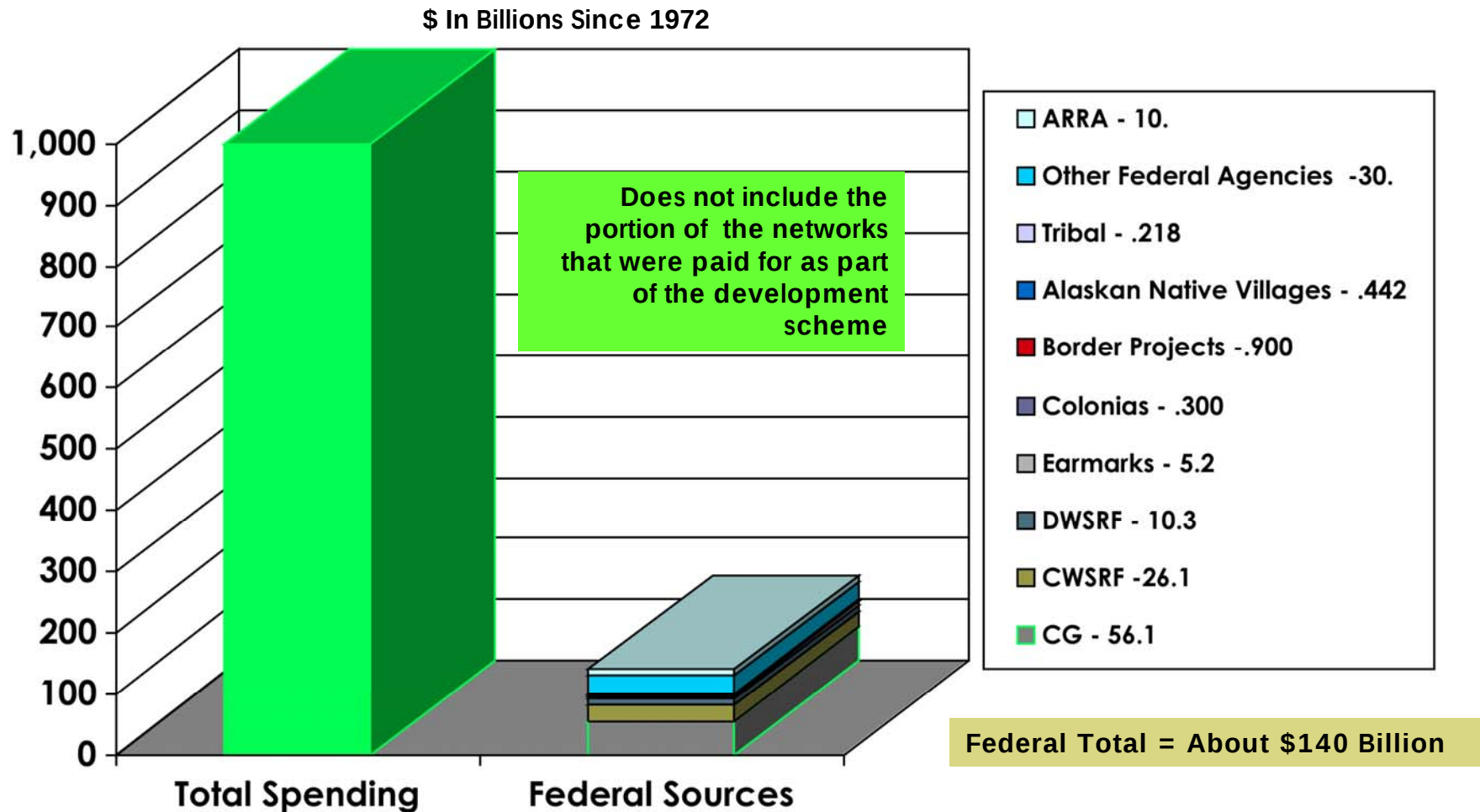


Source: USEPA, Progress in Water Quality. An Evaluation of the National Investment in Municipal Wastewater Treatment, June 2000.

Higher levels of treatment

	72	82	92	96
Total Plants	19,355	15,662	15,613	16,024
Less Than Secondary	13.4%	19.9%	5.6%	1.1%
Secondary	48.7%	50.7%	58.2%	58.6%
More Than Secondary	2.4%	17.6%	23.6%	27.6%
No Discharge	2.4%	10.2%	12.7%	12.7%

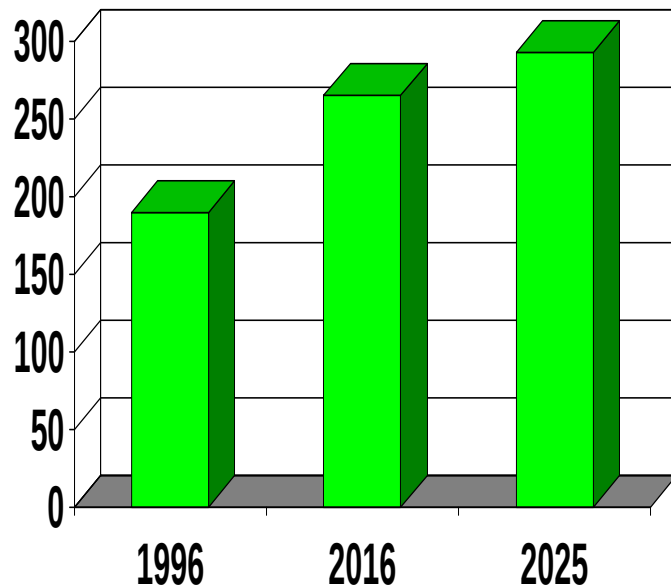
On a National Scale, The Expansion and Upgrade Required Huge Investments Over An Extended Period



The chart represents approximate values

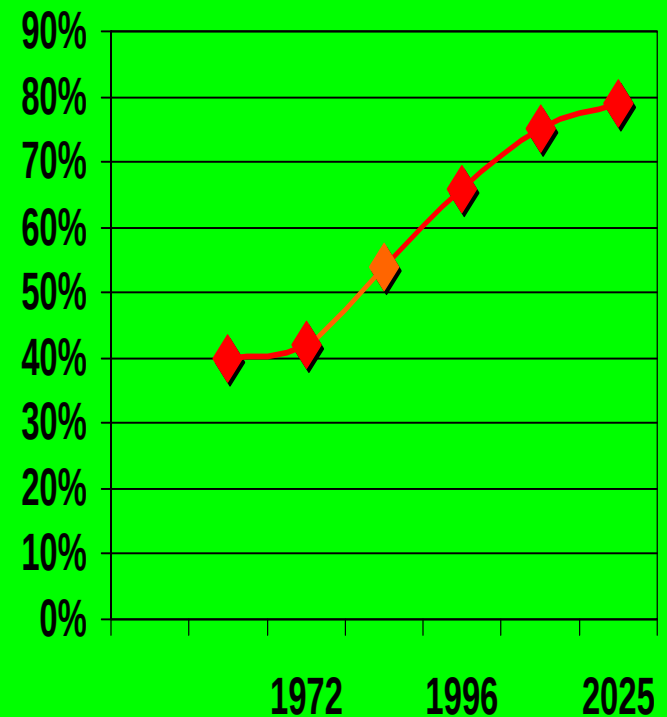
The Emerging Challenge

**Additional Served
Population 1996 to 2025
(In Millions)**

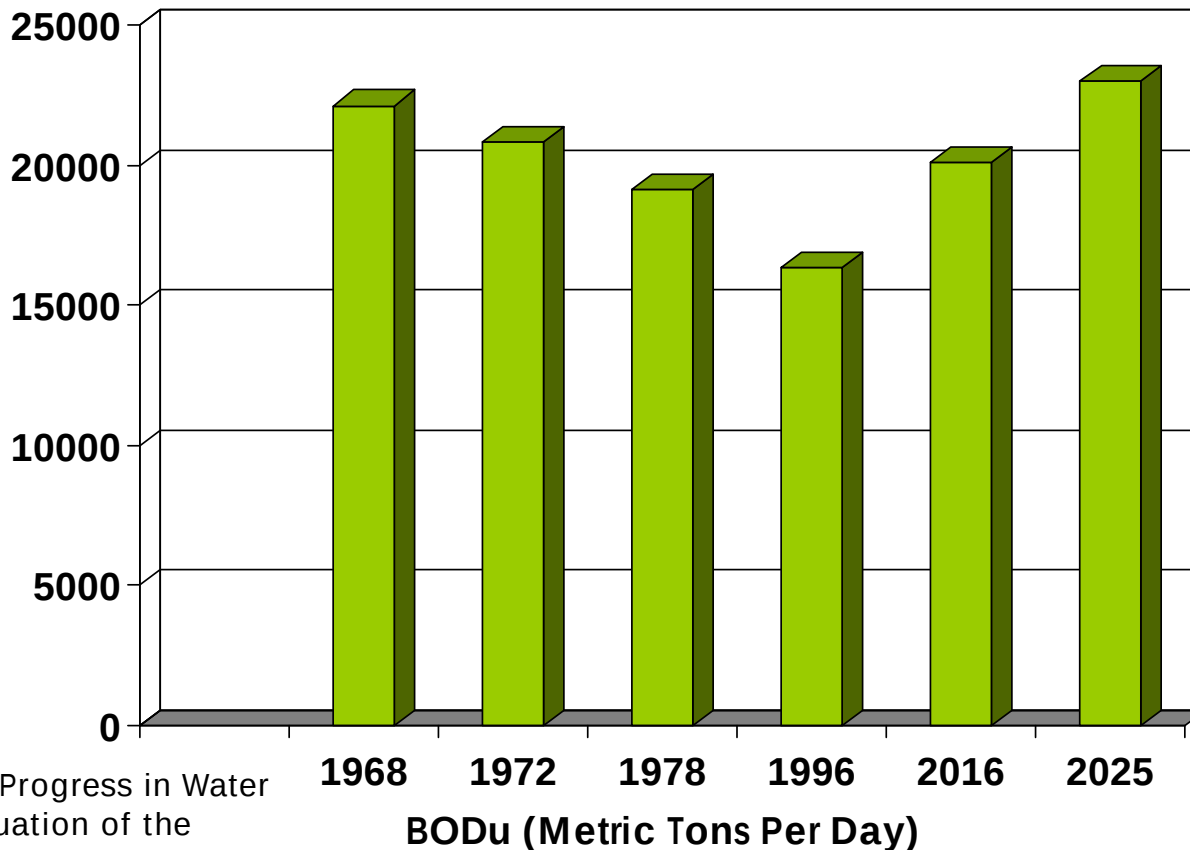


Source: USEPA, Progress in Water Quality: An Evaluation of the National Investment in Municipal Wastewater Treatment, June 2000.

**Leveling Off of BOD_u
Removal Efficiencies**



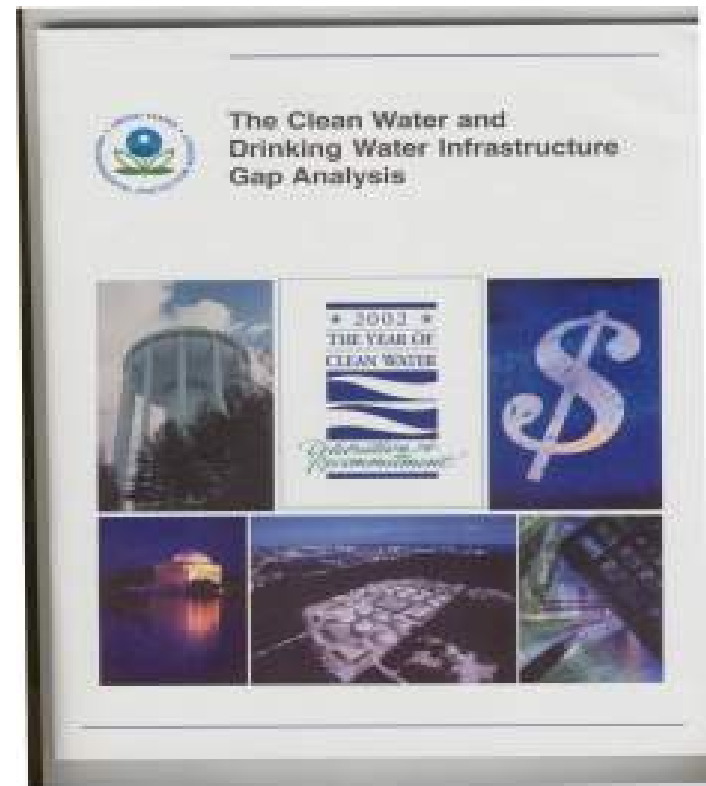
The Projected Growth (Alone), Could Produce BOD_u Loadings Similar to the Mid-1970s



Source: USEPA, Progress in Water Quality: An Evaluation of the National Investment in Municipal Wastewater Treatment, June 2000.

A Gap Report Was Used To Provide a Transparent Starting Point for Thinking About the Challenge Ahead

- The Gap Report Was Released - - WEFTEC 2002.
- The Purpose - - To reach a common quantitative understanding of the (Funding Gap) the potential magnitude of increase in investment needed to:
 - Address growing population and economic needs, and
 - Renew our existing aging infrastructure.



<http://www.epa.gov/owm/gapreport.pdf>

Asset Management Is a Natural Response to the Gap Analysis

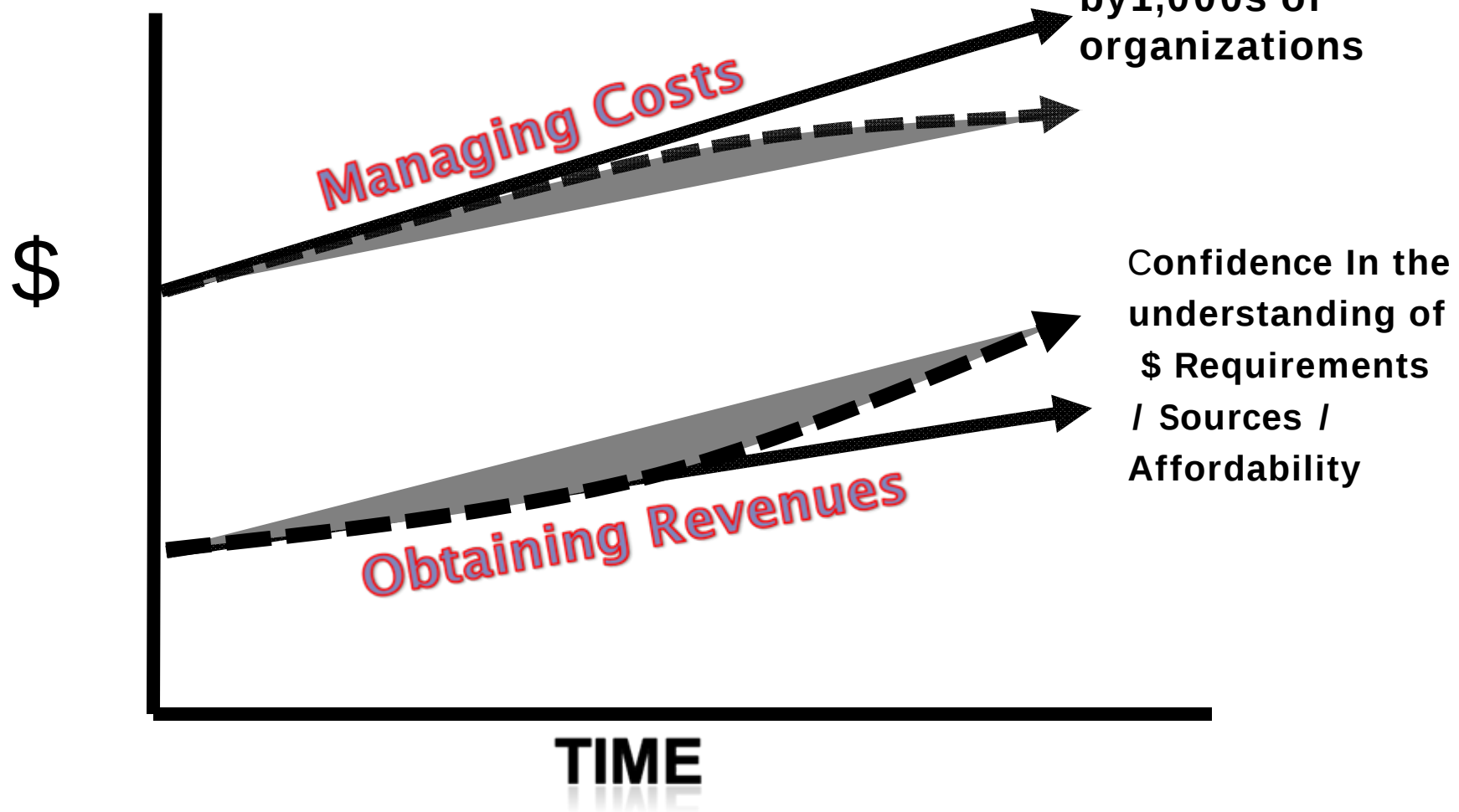
No Revenue Growth Scenario

Total Payment Gap (20 Years) (Average in Billions of Dollars)		
	Clean Water	Drinking Water
Capital	\$122	\$102
O&M	\$148	\$161
Total	\$271	\$263

Revenue Growth Scenario

Total Payment Gap (20 Years) (Average in Billions of Dollars)		
	Clean Water	Drinking Water
Capital	\$21	\$45
O&M	\$10	\$0
Total	\$31	\$45

The Policy Thrust of Sustainably Closing the Gap Requires



The Single Most Important Measure of Success in Pursuing a Sustainable Strategy

**Service Providers Are Able to Do Their Work
Expertly and Carry Forward Advancements in
Sustainable Practices**



Local Strategic Context - -

“It’s very, very difficult to run a first class country or city on second rate infrastructure” LGAC Video

From a Community Viewpoint

- Successfully leading requires a forward looking sustainable pathway for both community wealth (infrastructure) and natural assets.
- Infrastructure decisions necessitate significant financial commitments. Investment choices accrue benefits for generations.
- Short term constraints are contrasted with long term views regarding best value and intergenerational equity.
- Major decisions take place in a context of known unknowns and unknown unknowns.
- Conflicts arise between regulators and the providers and the ratepayers and the providers. Compulsion is sometimes required.
- Sustainability strategies demand a collaborative way of thinking and acting; the knowledge requirements encompasses scientific, engineering, public policy, business and HR skills.

From a Systems Standpoint, Our Systems Do Not Represent An “ *All Broke Crisis, Today*” But, Are On the Way to presenting a Persistent Systemic Problem

- Our systems are aging.
- The status quo will result in increased public health and environment risk.
- Failure to manage the assets based on least life cycle costs strategies will require more revenues over the long term to meet service objectives.
- We can do better!



A Sustainable Pathway Requires the Ability to Make Smart Investments Driven Toward Long Term Outcomes

- Customers need to understand what a utility does!
- They need to believe that it has value!
- They need to be able to accept as true that the way the work is done (The Practices) are competent, if not exceptional!

The need to be good

The need to be transparent

This about Process, practice, tools
and improved data for decision making

Asset Management Relates to Sustainability

It's A Critical Building Block

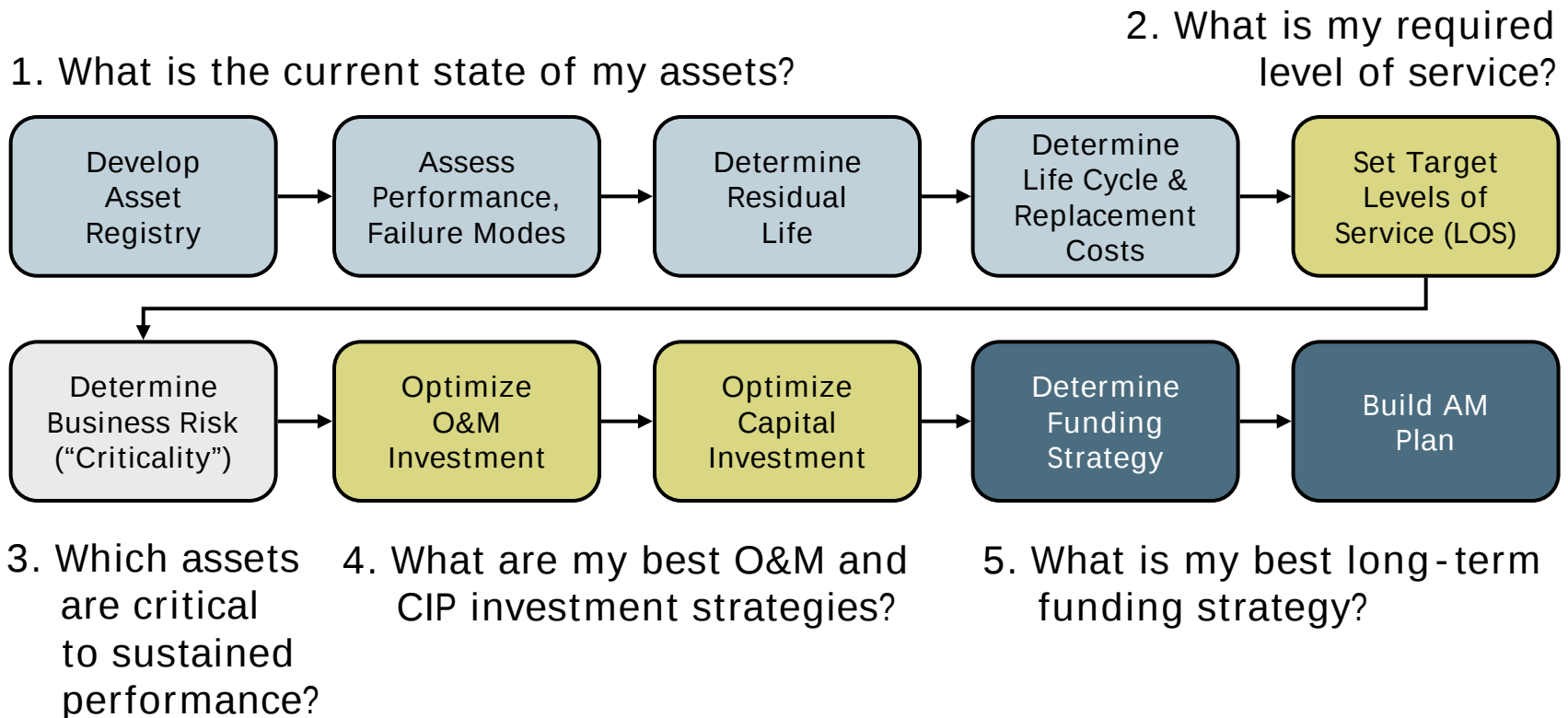
- Better acquisition, operations, maintenance, and renewal and replacement DECISIONS makes a sustainable strategy more manageable.
- A focus on the “How to” aspects of making better choices helps achieve service objectives at least life cycle costs.



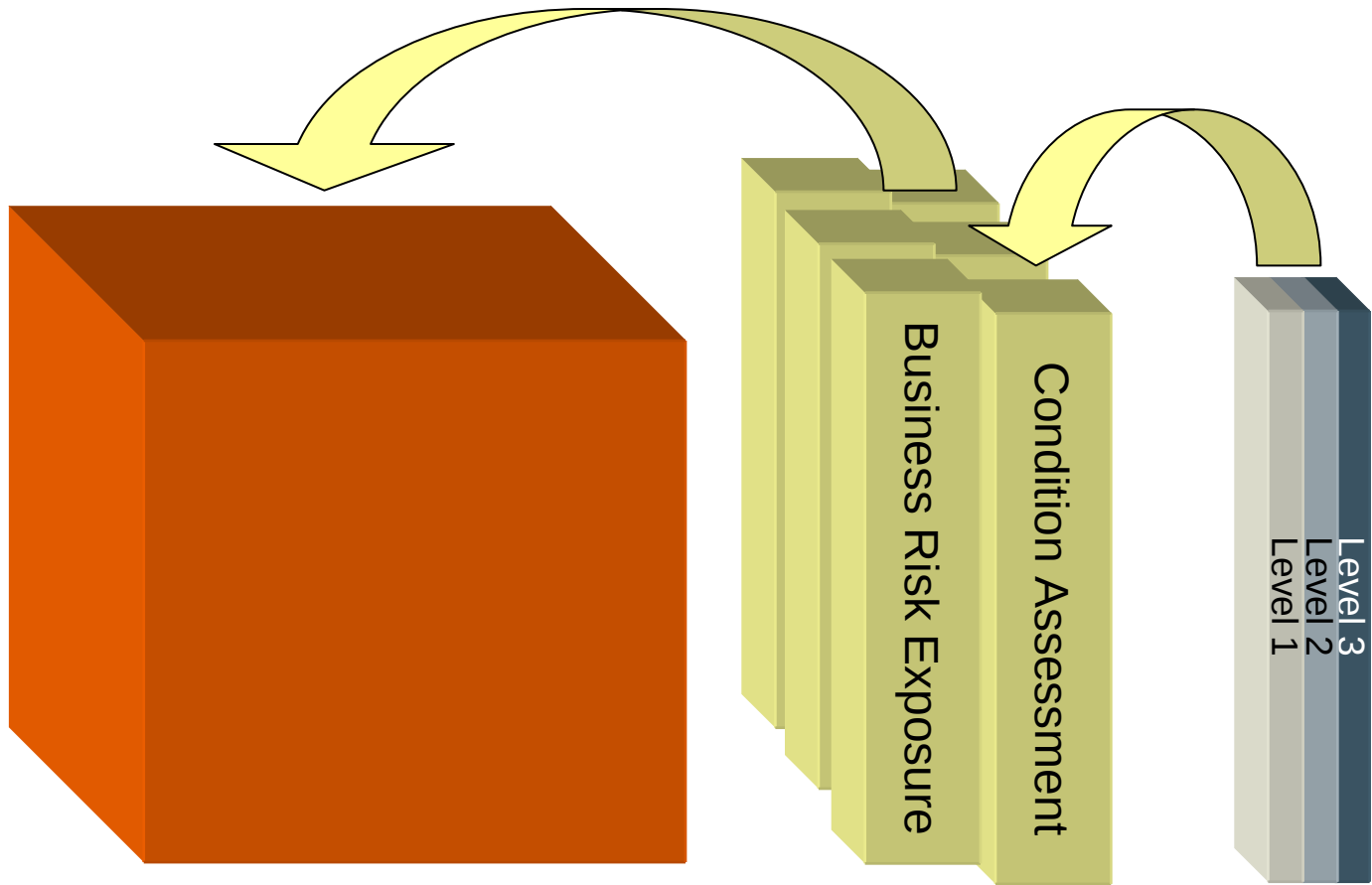
A Common Definition Is Helpful: Asset Management

- *Management paradigm* and *body of management practices*
- Applied to the *entire portfolio* of infrastructure assets at all levels of the organization
- Seeking to *minimize total costs* of acquiring, operating, maintaining, and renewing assets...
- Within an environment of *limited resources*
- While *continuously delivering the service levels* customers desire and regulators require
- At an acceptable level of *risk* to the organization

USEPA's Asset Management Efforts Have Focused On Knowledge Transfer, Training and Collaboration



Inside the AM Framework



Improving Asset Management Practices Is a Foundation Issue. The Direction Is Relative Easy to Envision, But Difficult to Make It Happen. These Are the Elements:

- Take actions that support and promote universal adoption of advanced asset practices and there are multiple approaches.
 - ❖ **Sustain Communities.** Assure investments are aligned with sustainable principles. Every dollar from every source for every purpose is an investment decision.
 - ❖ **Think First.** Focus on upfront planning - - invest dollars early to save long term.
 - ❖ **Build Confidence that the choices are the right ones.**
 - ✓ Invest in research and decision support (guidance, case studies, tools, etc).
 - ✓ Invest in knowledge transfer through training and education initiatives.

Improving Asset Management Practices - - Continue

- ❖ **Require Asset Management Plans** as a platform for integrating base programs such as permitting, funding and enforcement activities with initiatives such as green investments, energy and water conservation, climate adaptation, and capacity development. Investments are made in the context of the asset plan. Improve the processes and data quality used in supporting decisions.
- ❖ **Document Progress.** Defined and track success against triple bottom line measures for social, economic and environmental objectives.
- **Professionalize the Practice.** Bring about practice excellence through knowledge development and transfer initiatives. Facilitate opportunities and venues for education and training. Document the learning process through the certification and credentialing.
- **Collaborate with Other Sectors.** Encourage multi-sector AMPs & cross-sector partnering.
- **Advance by Taking Small Steps in the Right Direction.** Work toward a better outcome. (continuous improvement)

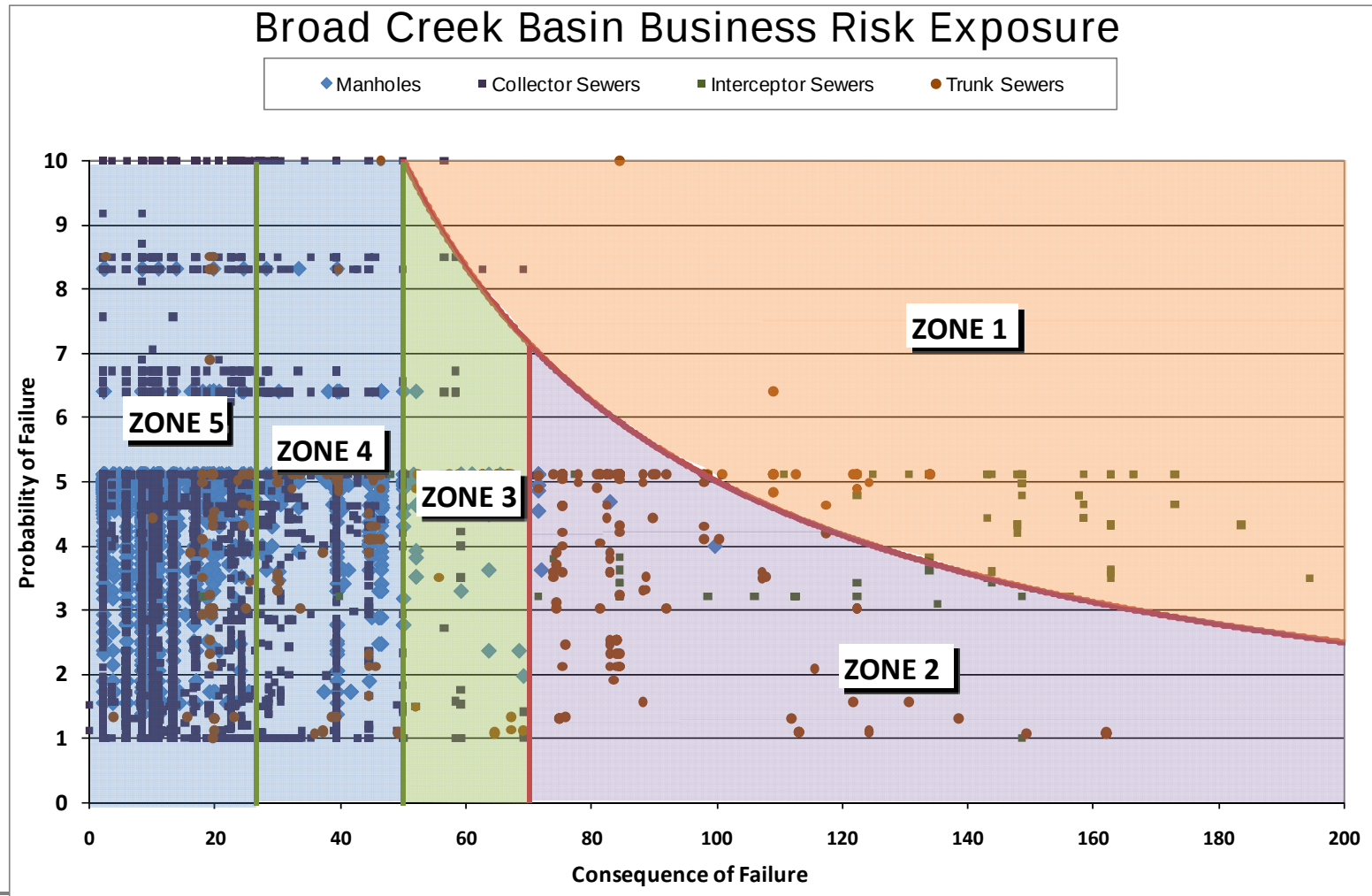
Capital, Operations, Maintenance,
Repair, Renewal, Replacement

A Key Take Home:

It's all investment!

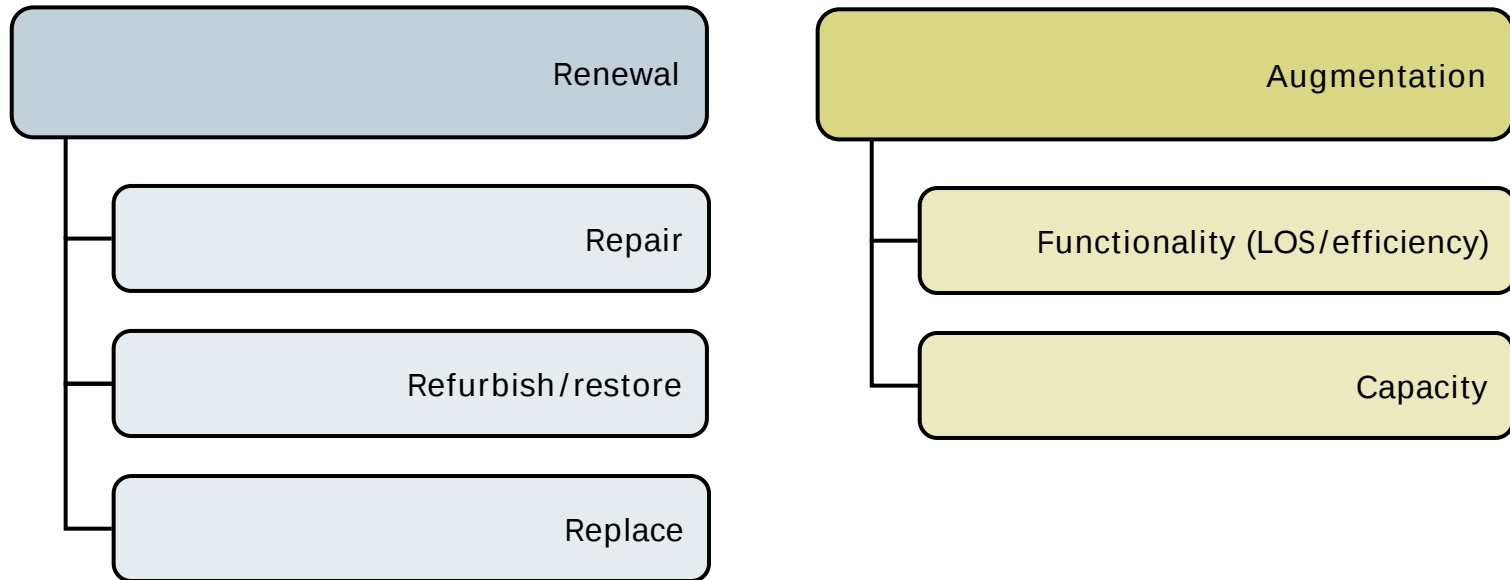
What Does Mature Practice Look Like?

Assets Are Critical to Sustained Performance *Broad Creek Basin*



Start Simple: Grow the Practice:

Capital Investment Is Made Up of Two Major Types of Projects

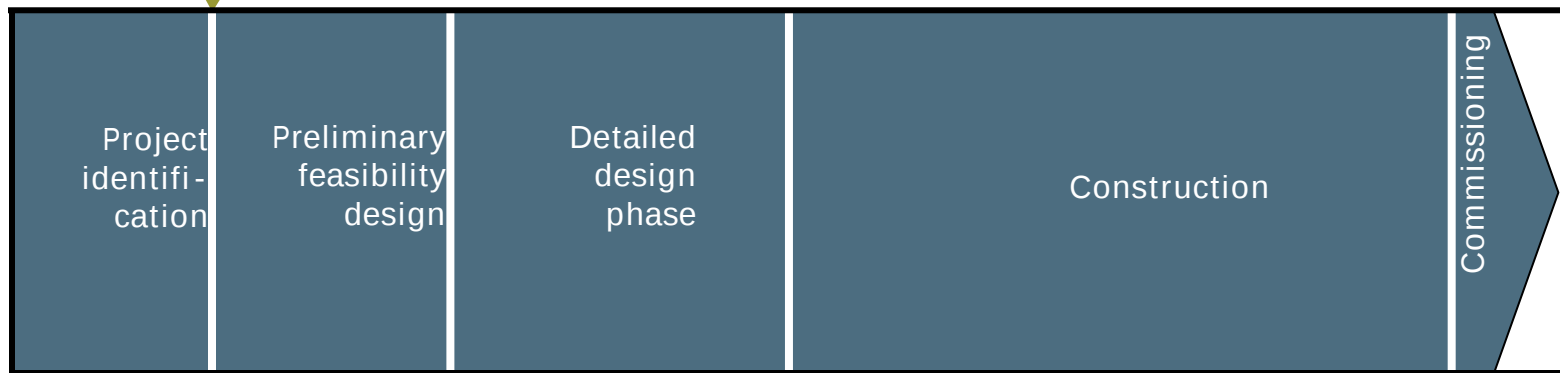


What is the minimum you really need to know to gain confidence that the project is a sustainable investment?

The CIP Process *Locks In* Life Cycle Costs!

65-85% of all life-cycle costs are “locked-in” here!

Life-cycle O&M costs often are 5-10 (even 20) times initial construction costs



Life-cycle cost reduction opportunities diminish





Thank You for Your
Time!

Websites & Video Sources

<http://www.epa.gov/owm/assetmanage/index.htm>

<http://www.epa.gov/awi>

https://courses.worldcampus.psu.edu/public/buried_assets/

http://www.epa.gov/waterinfrastructure/lgac_video/index.html

<http://liquidassets.psu.edu/>