Seattle Public Utilities
An Experience with Asset Management

May 14, 2010

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Seattle Public Utilities

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Seattle Public Utilities Background:

Seattle Public Utilities (SPU) is a Municipal Utility Owned Directly by the City of Seattle and Funded Entirely by the Rates Paid for our Services

- SPU provides retail water service to the citizens of Seattle and wholesale water service to 21 water purveyors in the Seattle Metropolitan Area.
- Wastewater within the City of Seattle is collected by SPU and treated by King County

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SPU Background (Cont'd)

Four Utilities (Water, Wastewater, Drainage, & Solid Waste) with Over $4.5 Billion in Assets

- 1,830 mile water system serving approximately 1.3 million retail and wholesale customers
- 2,020 mile drainage and wastewater system serving approximately 700,000 retail customers
- 800,000 tons of solid waste is collected and disposed of annually
- 1,500 - 2,000 customer calls per day
- Annual operating budget of $630+ million
- Ten year capital program of ~$1.3 billion
- 1,350 employees

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Emerging Issues Leading to a Refocus of Priorities

- Rate increases averaged 6% per year during the 1990's
- Spending for both O&M and capital increased significantly in the 1990's and early 2000's
- Worsening financial conditions in the late 1990's and early 2000's:
  - Increasing reliance on debt
  - Increasing use of cash reserves
  - Weakening debt service coverage

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The General Lay of the Land…

- Tightening regulations
- Mounting rate pressure and public scrutiny
- Aging infrastructure
- Increasing emphasis on the environment

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Starting in 2002…A New Direction at SPU

- A new focus on Asset Management
- Learn from the best - Technical exchange with Hunter Water in Australia
- Fit best practices into our needs
- Change the culture

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In Specific, our Exchanges with Australia and New Zealand Have Taught Us That We

- Need More Focus on Risk Management
- Should Create Organizational Simplicity
- Should Improve Forward Planning
  (Including O & M Planning)
- Should Improve System Modeling
- Need More Use of KPIs
  (Key Performance Indicators)
- Should Increase Transparency
- Should Encourage Innovation
- Need to Improve Communications

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Define Service Levels

To Create This We Are Working to

- *Find out from customers what services are most important to them.*
- *Set Service Levels and make investments needed to meet them – now and into the future.*
- *Establish and measure Performance Indicators.*

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Wastewater Service Levels

Category	Service Level	Performance indicators
Effective Conveyance (SSO sewer backups)	By 2020, no more than one sewer backup in 5 years, on average, at any location, caused by a problem with the SPU sewer system.	Number of annual SSOs as reported by location.
Wet Weather Combined Sewer Overflows	By 2020, CSOs shall be limited to an average of one untreated discharge per CSO per site per year.	Number of precipitation-related CSO events per CSO site per year.
Dry Weather Combined Sewer Overflows	No dry weather CSOs are currently allowed by regulation.	Number of total dry weather CSO events per year in SPU's system.
Problem Response	SPU shall respond quickly and effectively to problems with potential health consequences.	– 80% of high priority sewer backup/overflow problems responded to within 1 hour. – 80% of high priority sewer backup/overflow problems have service reinstated within 6 hours.

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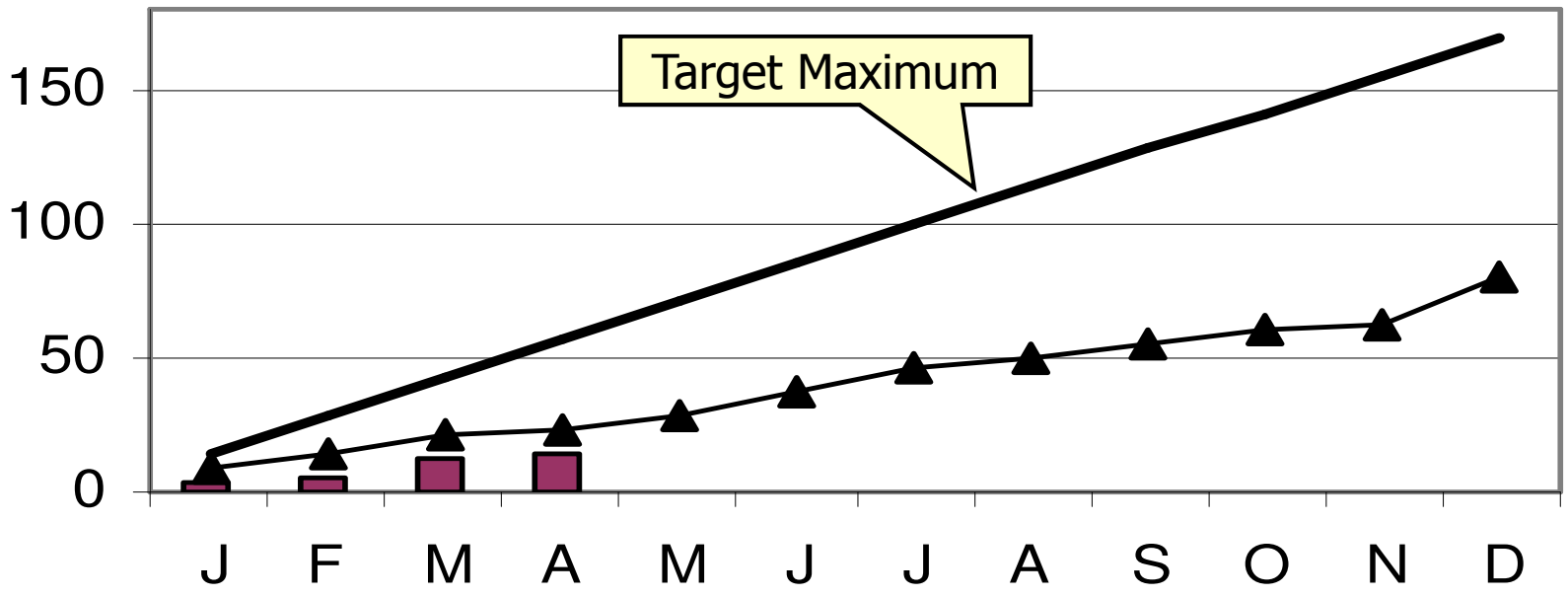
Performance Indicators



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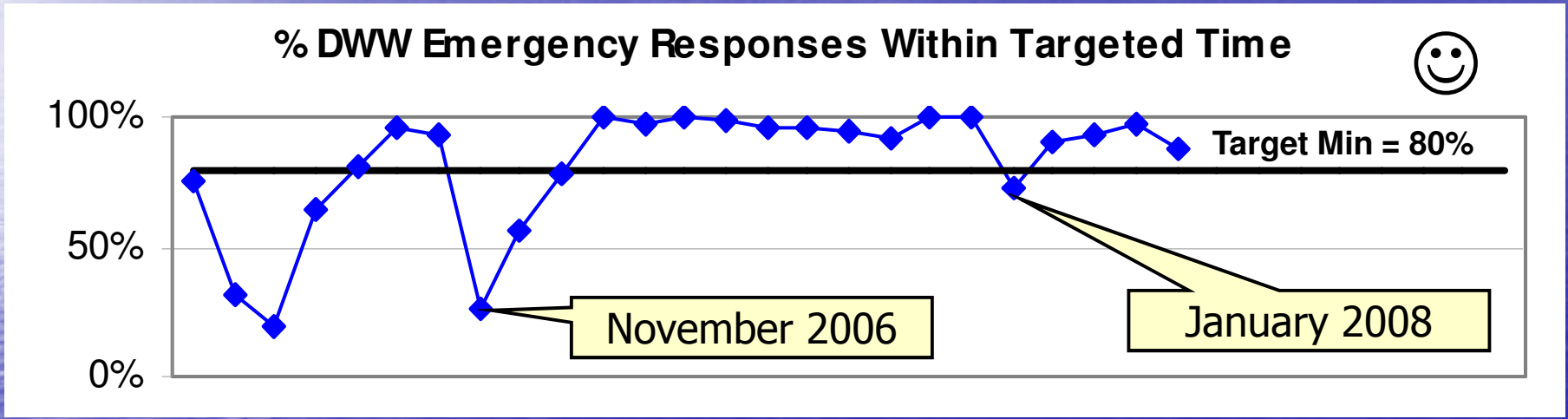
Performance Indicators



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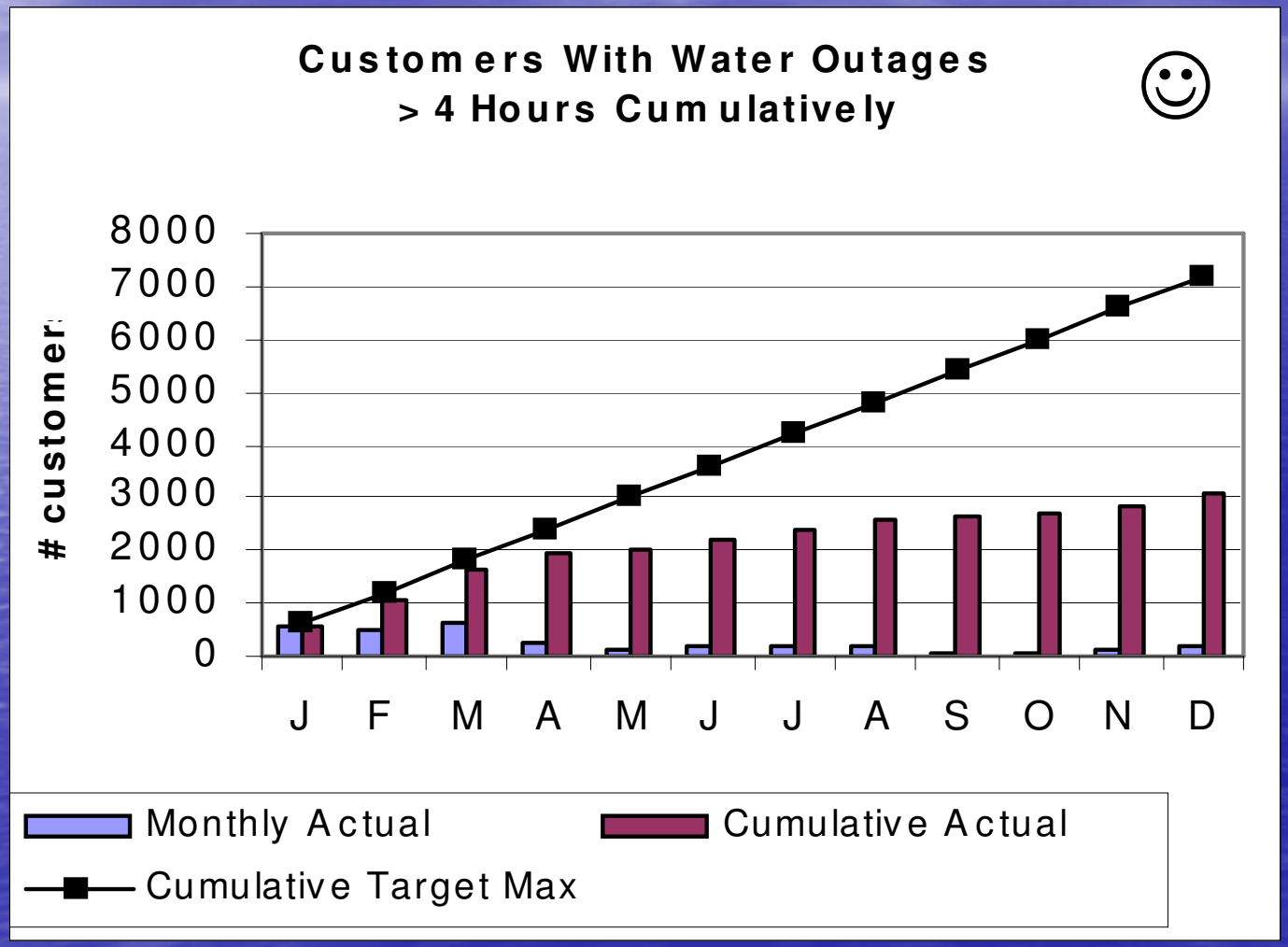
Performance Indicators



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To Create This We Are Working to

Define

S

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Learn About Risk

- *Understand our highest risk activities.*
- *Understand the likelihood and consequence of failure of our assets.*
- *Manage based on risk cost and the cost to mitigate risk.*
- *Reduce asset risk through capital investments, or changed maintenance practices and response protocols.*

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Risk Assessment

1. Define failure.
2. Collect and analyze data.
3. Determine Risk…

Risk Cost = Likelihood of Failure **x** Consequence of Failure

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Corporate Risk Management

RISK SIGNATURE LEVEL DETERMINANT

Likelihood	**Consequence**				
	Minimal	Minor	Moderate	Major	Extreme
Almost certain	M	M	H	C	C
Likely	M	M	H	C	C
Possible	L	M	M	H	H
Unlikely	L	L	M	H	H
Rare	L	L	M	M	M

L	Low
M	Medium
H	High
C	Critical

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Corporate Risk Categories:

- Public Trust
- Regulatory
- Asset and Service Reliability
- Legal
- Environmental
- Workforce
- Financial
- Public Health

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Corporate Risk Management
An Example: Water Conservation Policy

Alternative Conservation Baseline Strategies	Description and Performance Measure	Public Trust Risk	Regulatory Risk	Asset and Service Reliability Risk	Legal Risk	Environmental Risk	Workforce Risk	Financial Risk	Public Health
Do Nothing	No messaging or incentives. No performance measure.								
Awareness Campaign	Messaging; no incentives. Less intense than 1% program. Customer survey to assess effectiveness. Results estimated <.3 MGD annual savings.								
Program to Shave Peak Investment Variable	Less intense than 1% program. Set performance goal for peak season. Results could range from <.3-.5 MGD peak season savings.								
Low Intensity Program / Investment	Less intense than 1% program. Set performance goal on per capita demand. Results could be in range of .7 MGD annual savings.								
Medium Intensity Program / Investment	Similar intensity to 1% program. Set performance goal to keep demand flat. Results could range from 1-1.5 MGD annual savings.								
High Intensity Program / Investment	Intensity estimated to be greater than 1% program. Set performance goal to reduce total demand. Results could be above 1.5 MGD annual savings.								

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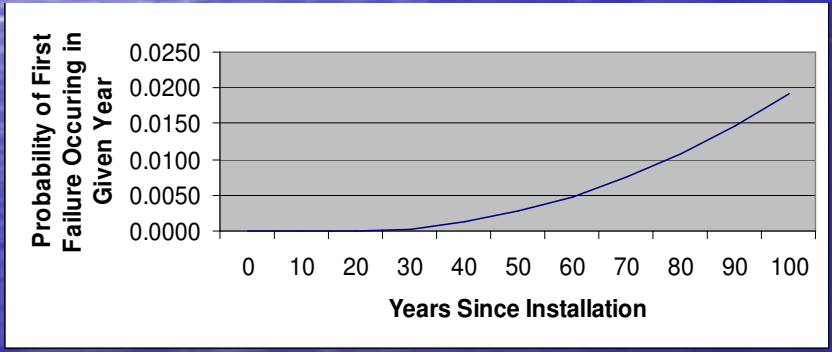
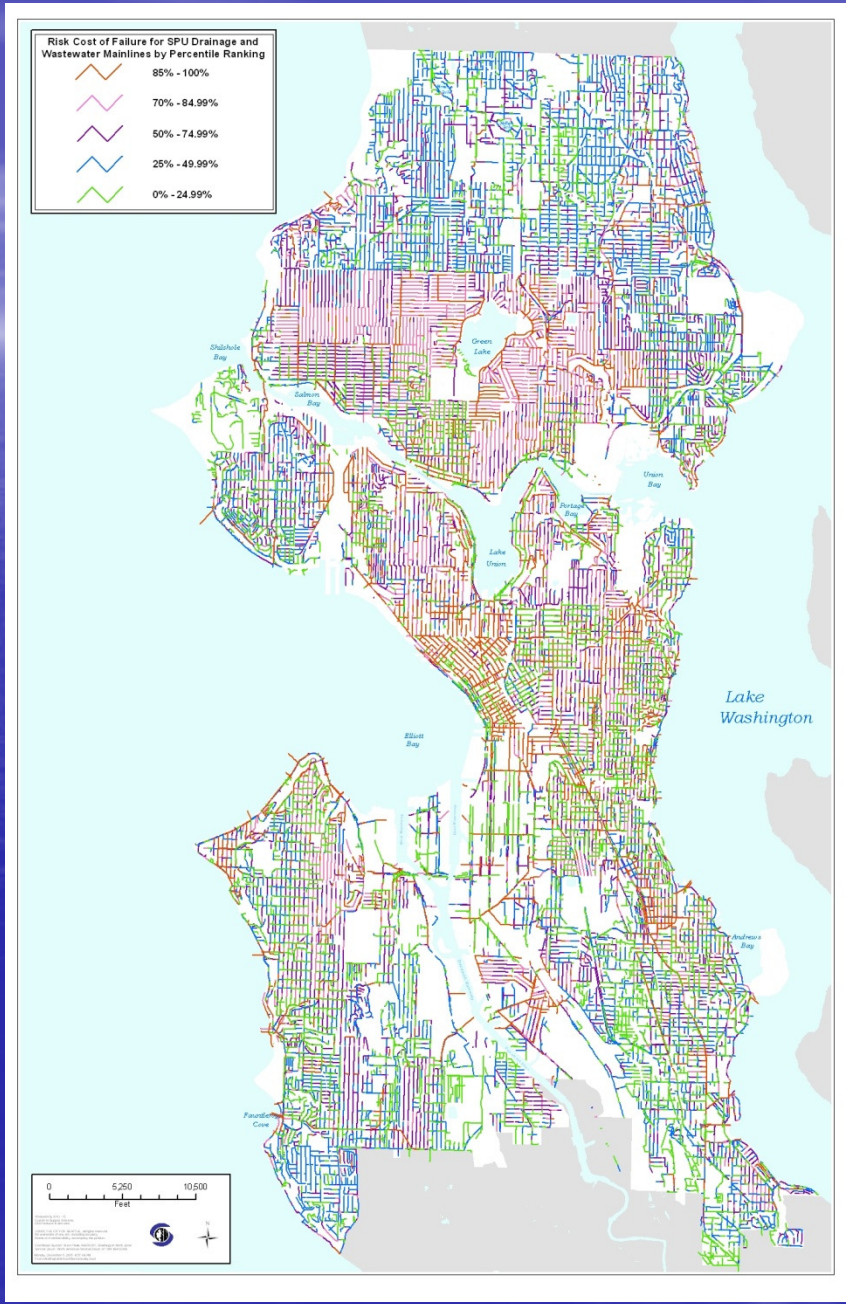
Asset Risk Assessment

An Example: Sewer Pipes

Risk is Minimized by Concentrating Limited Resources on Sewer Pipes with the Highest Risk Cost of Failure





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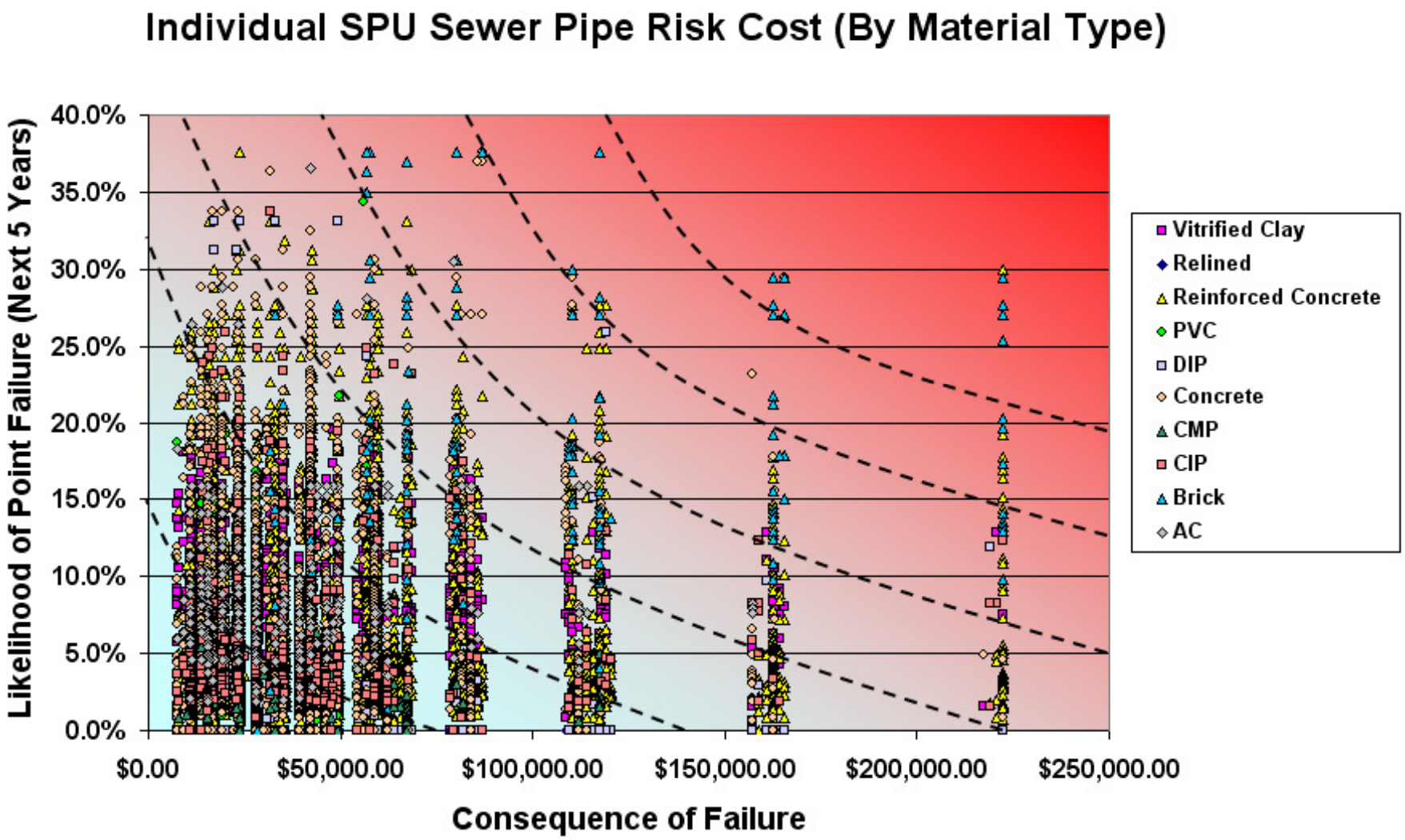
Asset Risk Assessment



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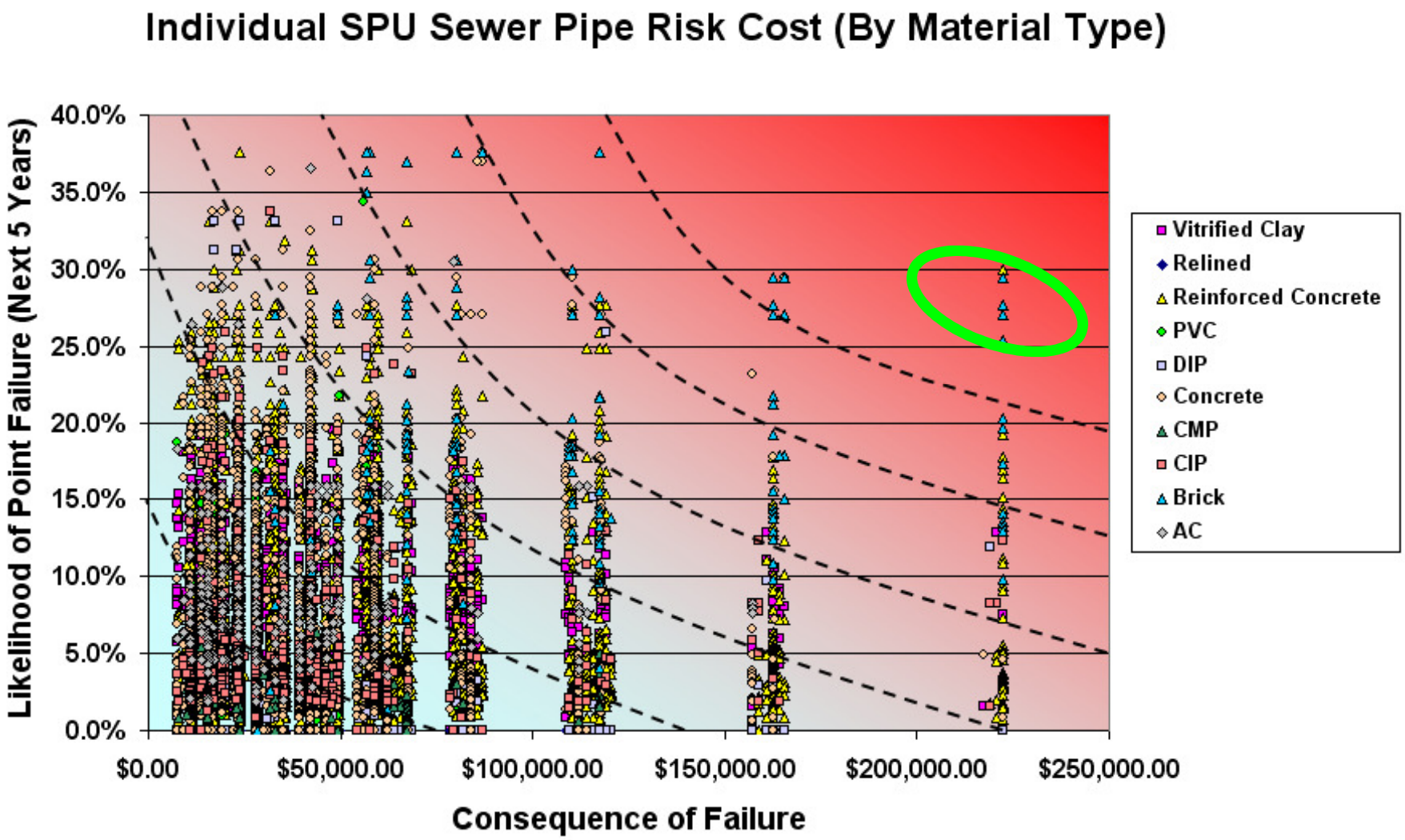

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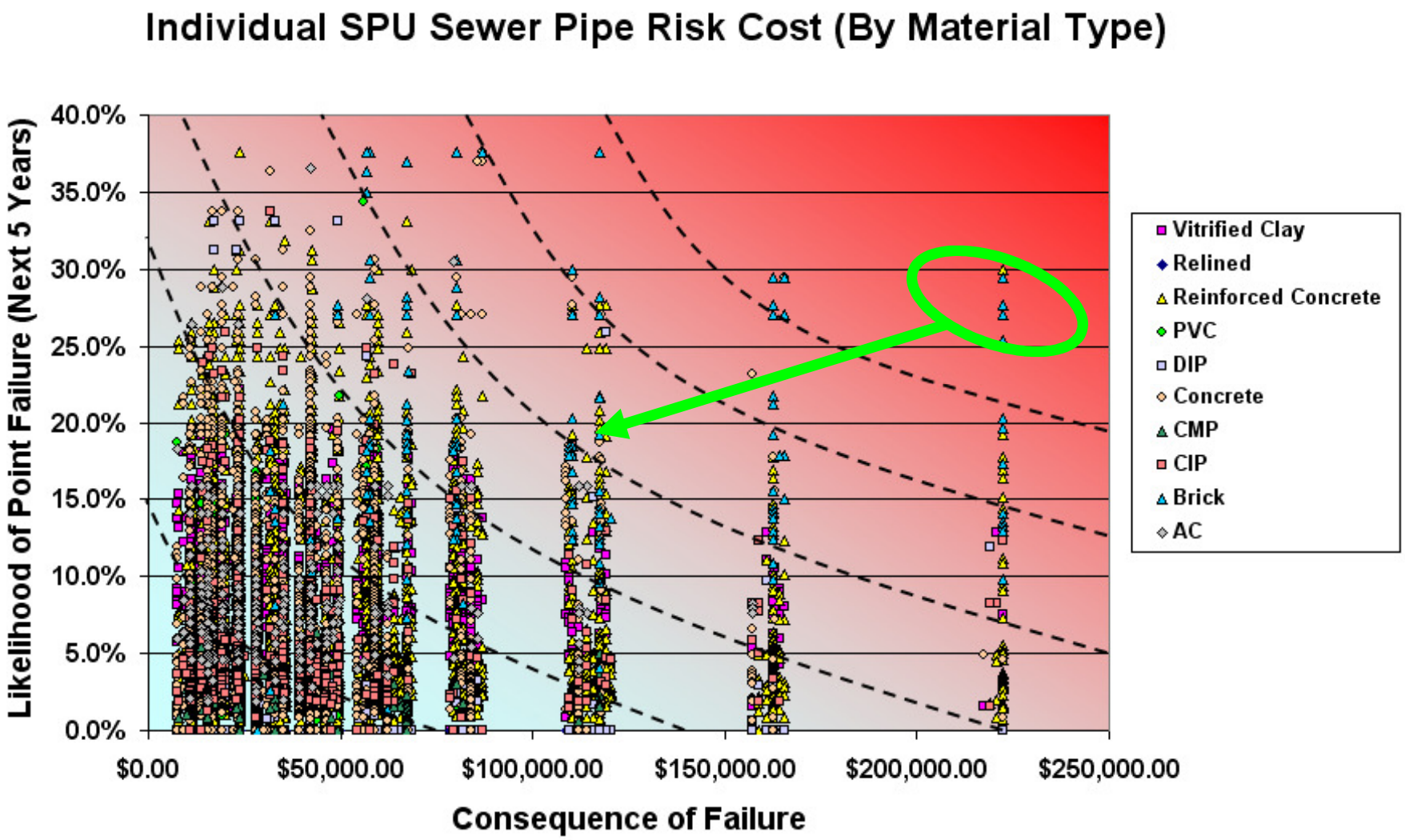

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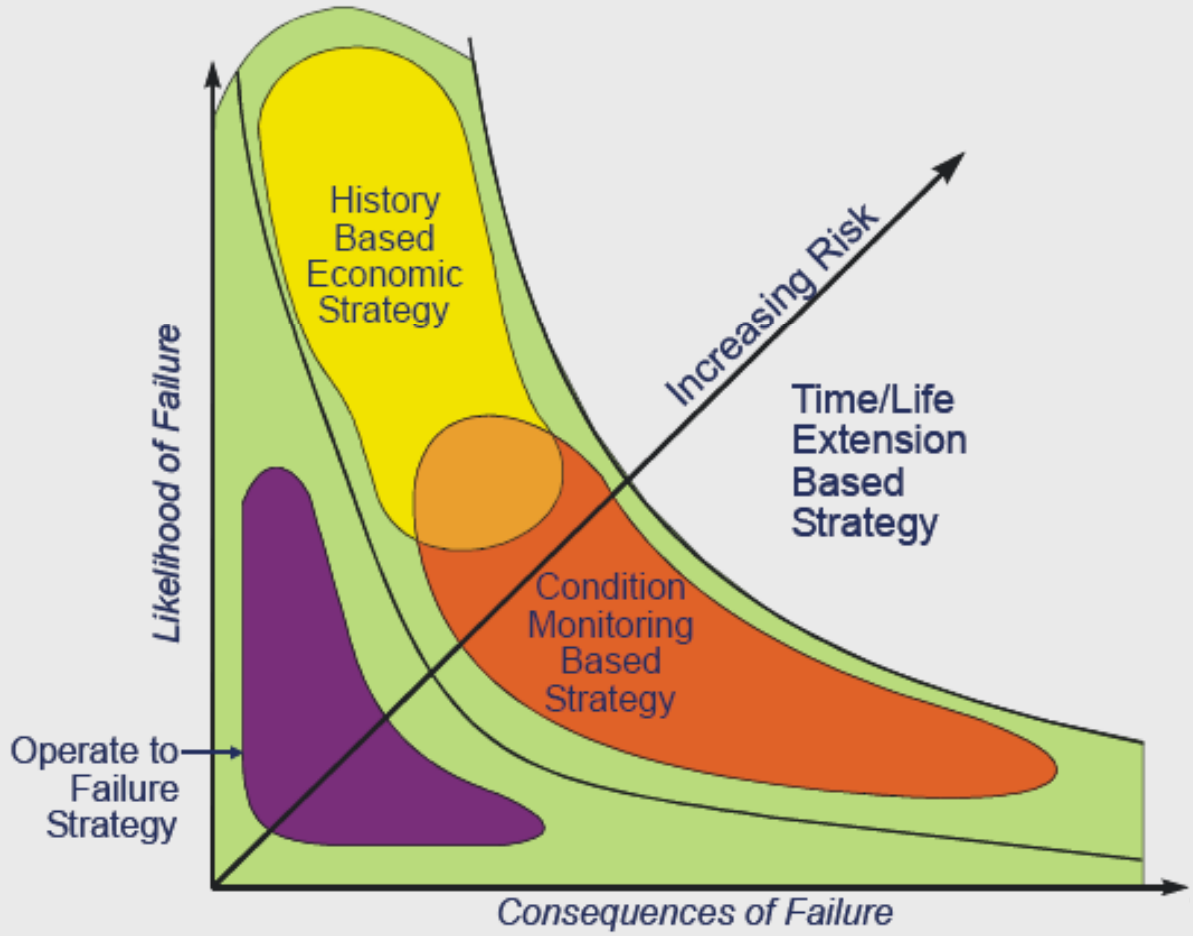
Asset Risk Assessment

Risk Helps to Define Strategy for Management of Assets



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To Create This We Are Working to

Define

Learn

Focus On Life Cycle Costs

Make investment decisions – large and small – based on understanding of life cycle costs and benefits.

- Initial Capital Investment
- Expected Life
- Maintenance and Operation Costs
- Other Asset Costs such as Electricity
- Salvage Value
- Disposal Costs

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To Create This We Are Working to

Define

Learn

Focus

Use Triple Bottom Line

Assess projects and initiatives based on the Triple Bottom Line

- *Social*
- *Environmental*
- *Financial*

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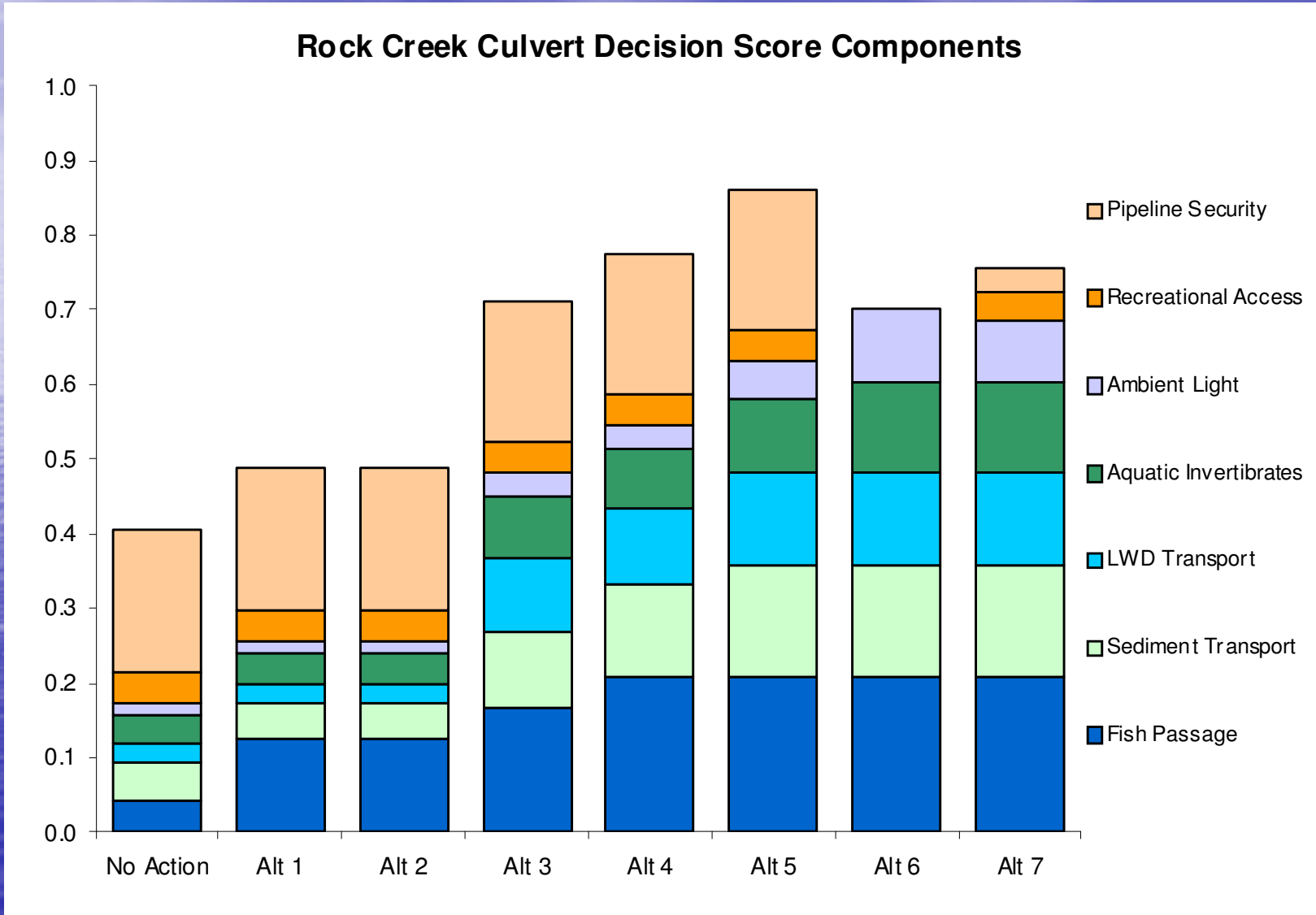
Triple Bottom Line Costing: An Example



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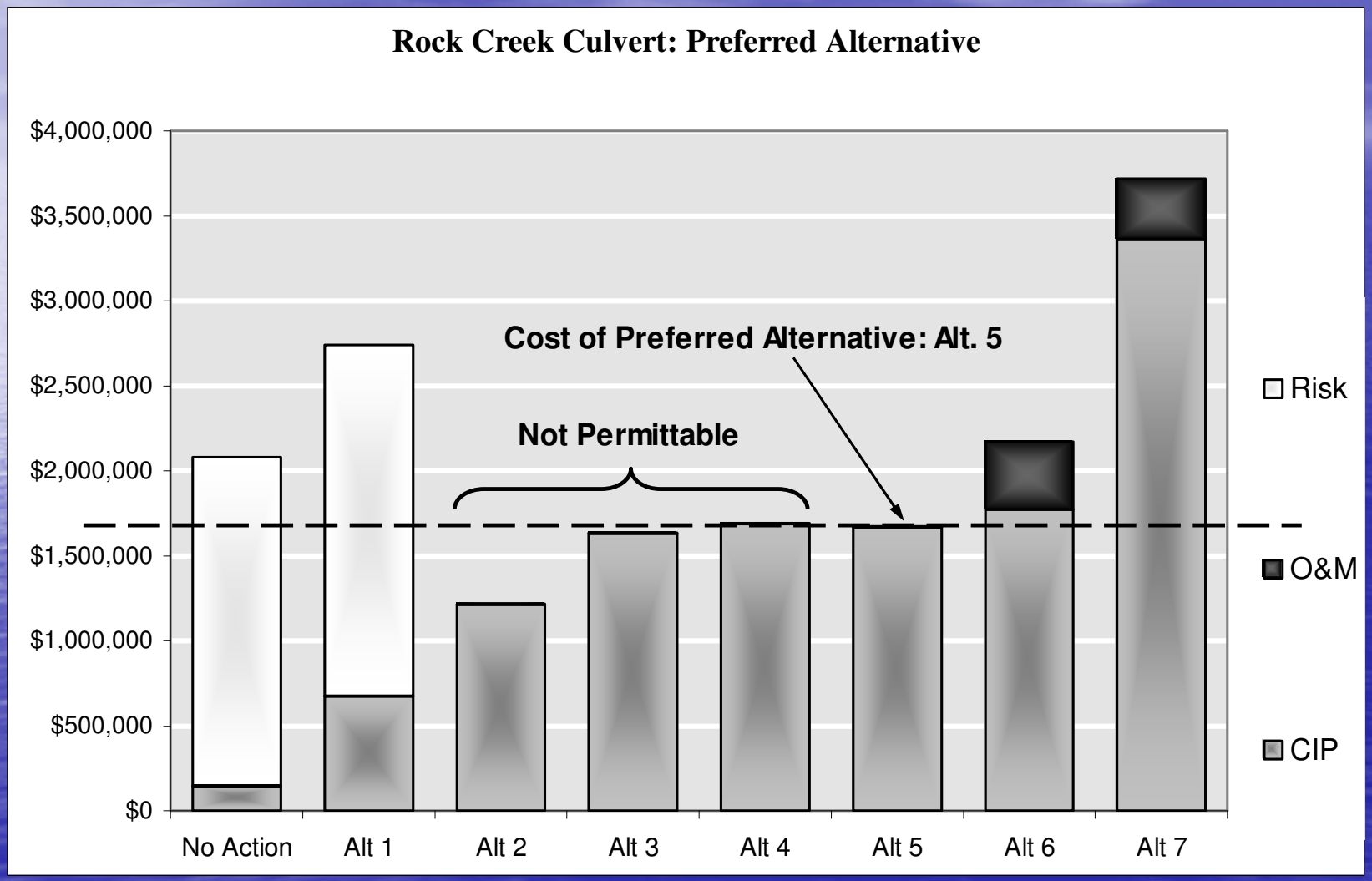

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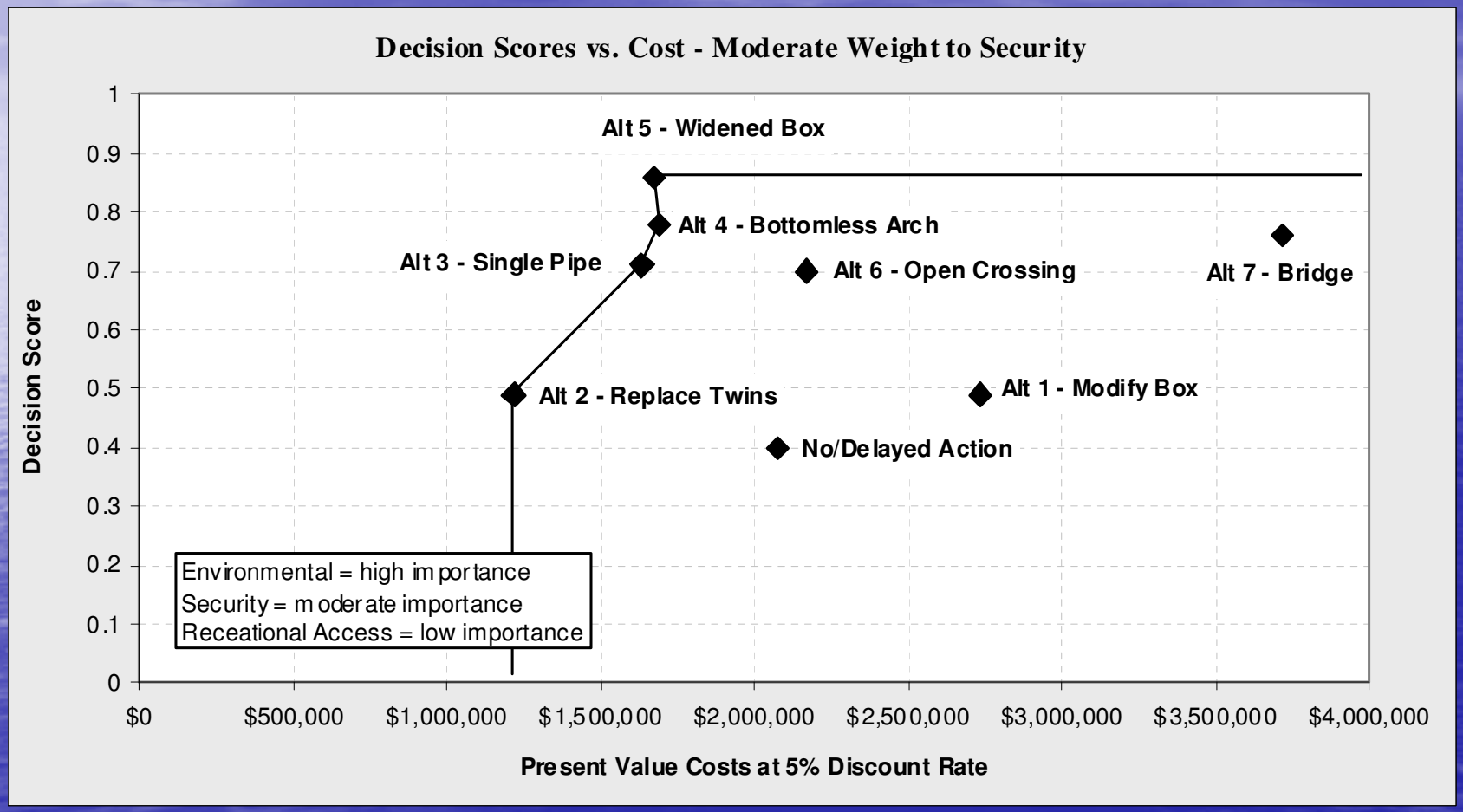

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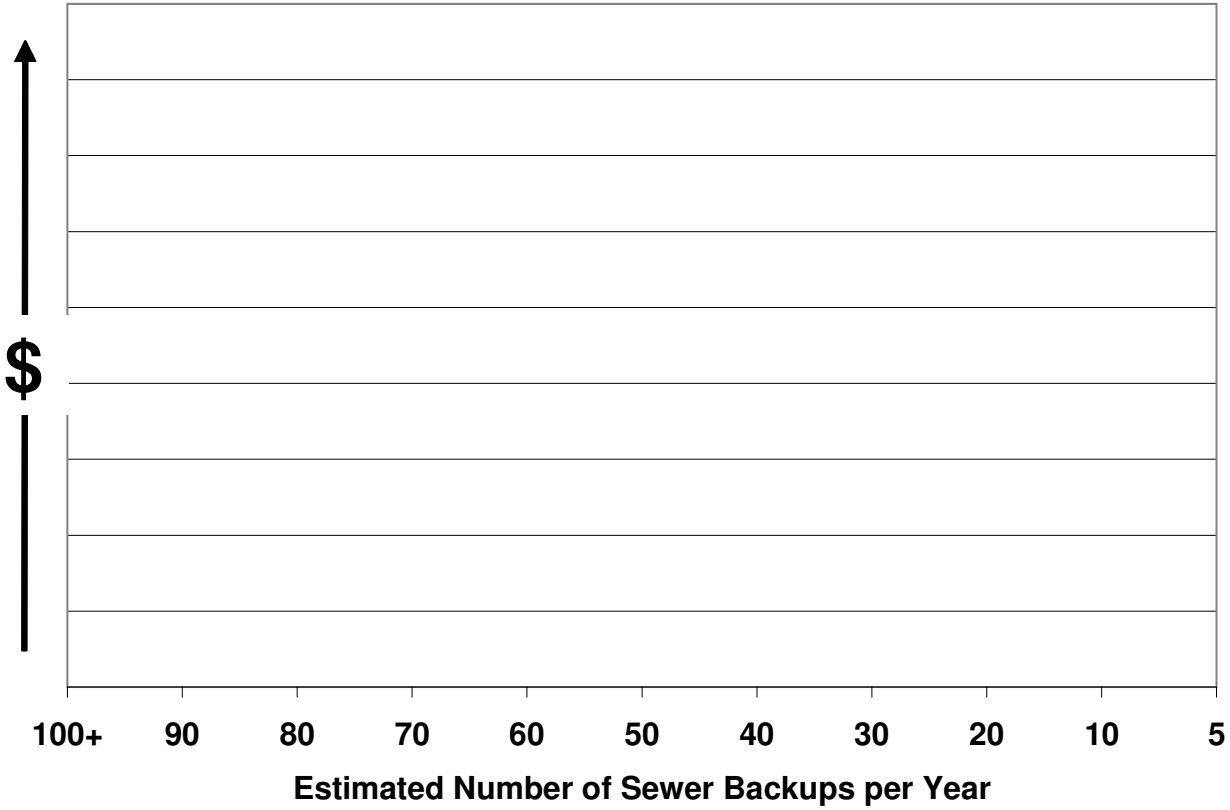
An Example: Tying Together Service Levels, Lifecycle Costing, and the Triple Bottom Line



A Sample "Bathtub Curve" for the Sewer Maintenance Program

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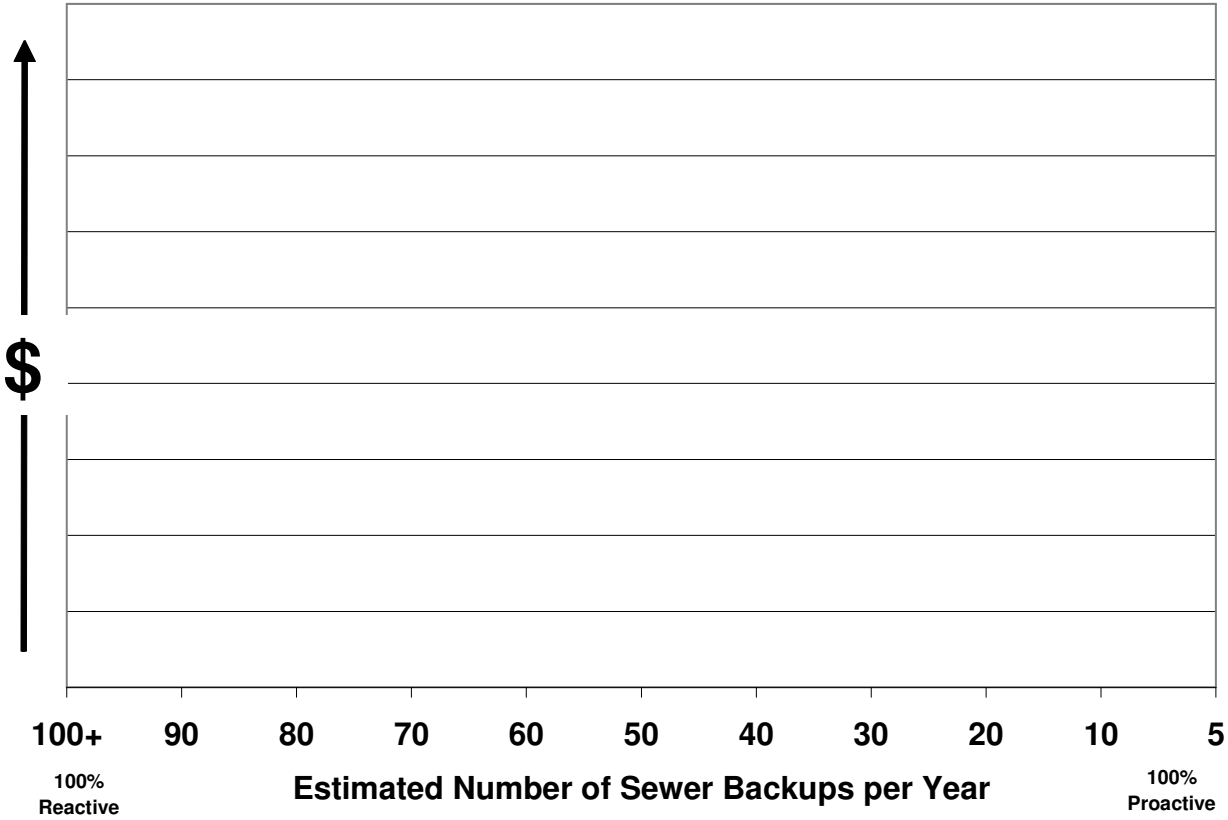

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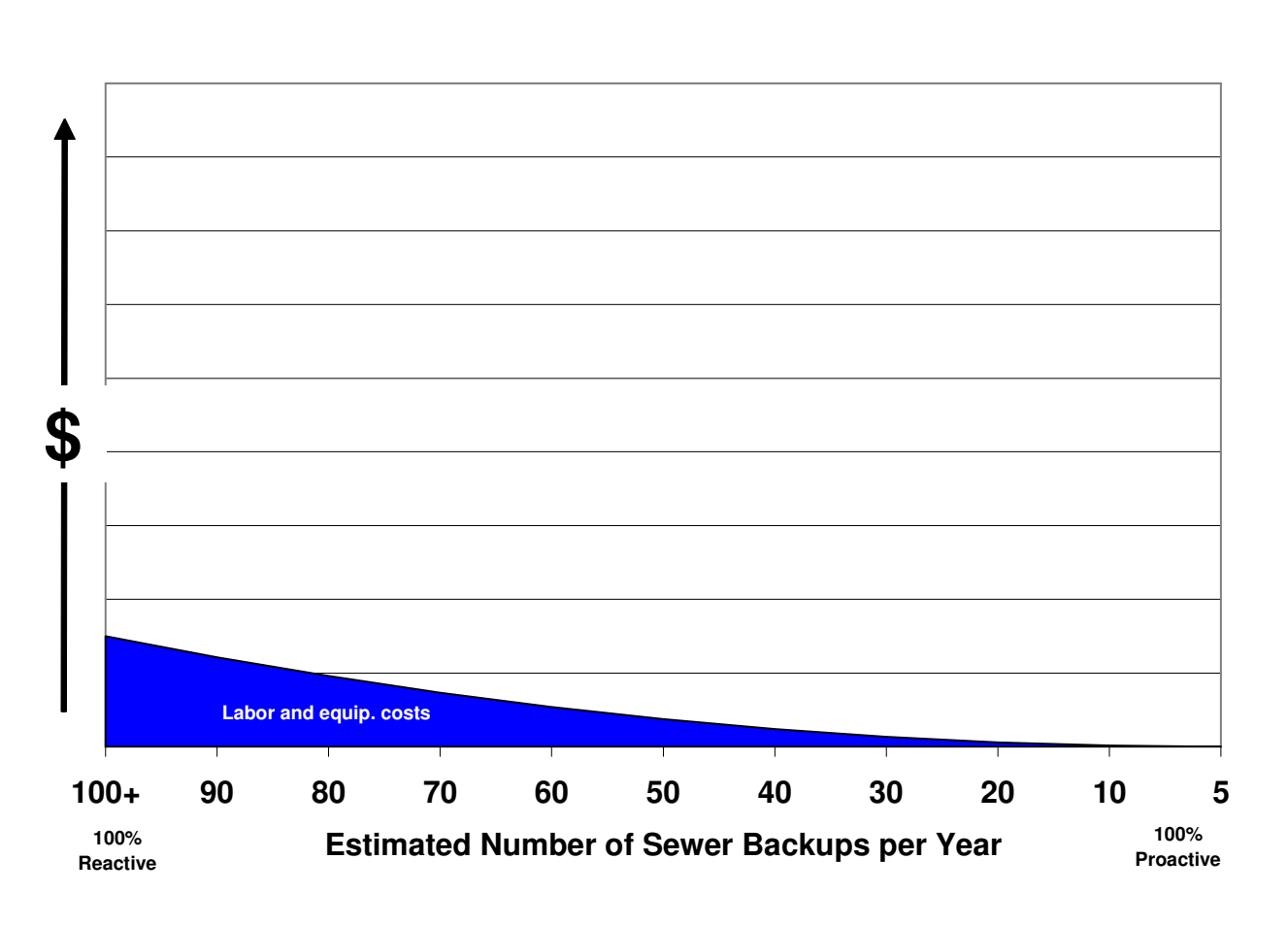

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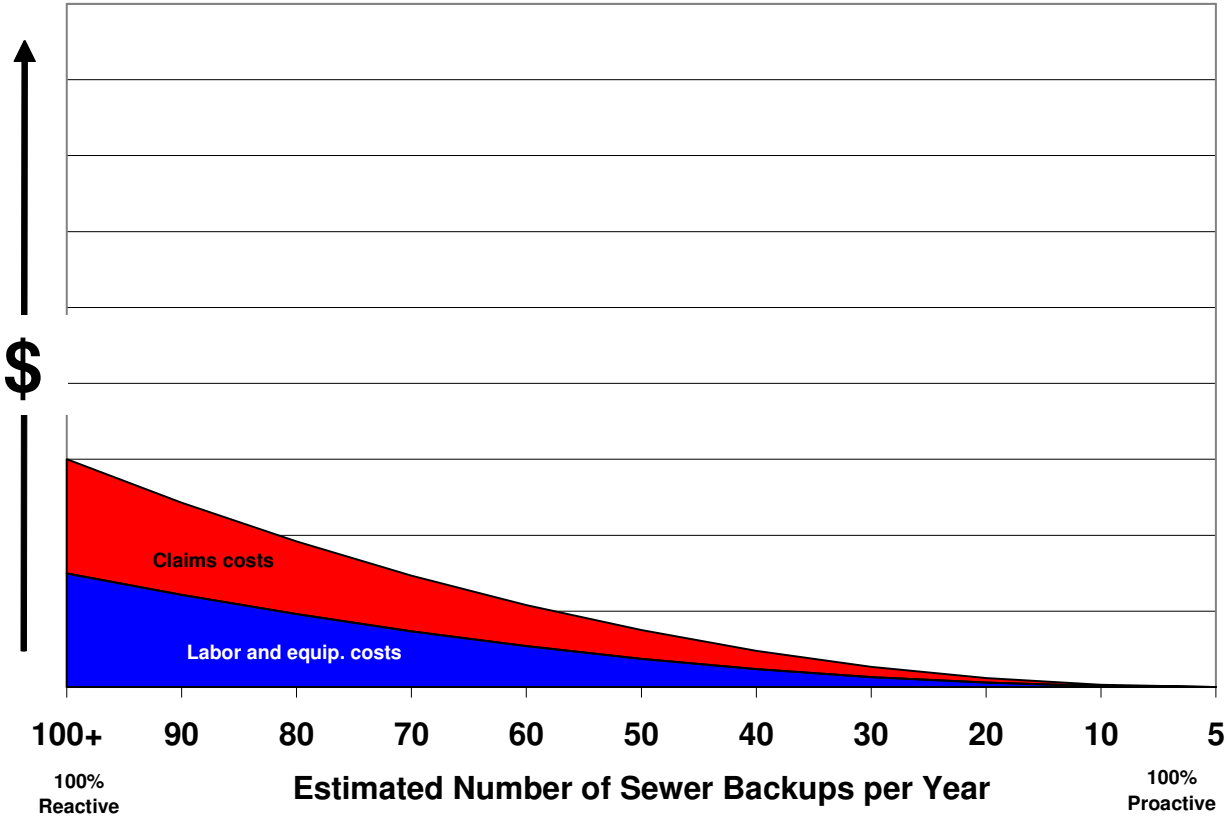

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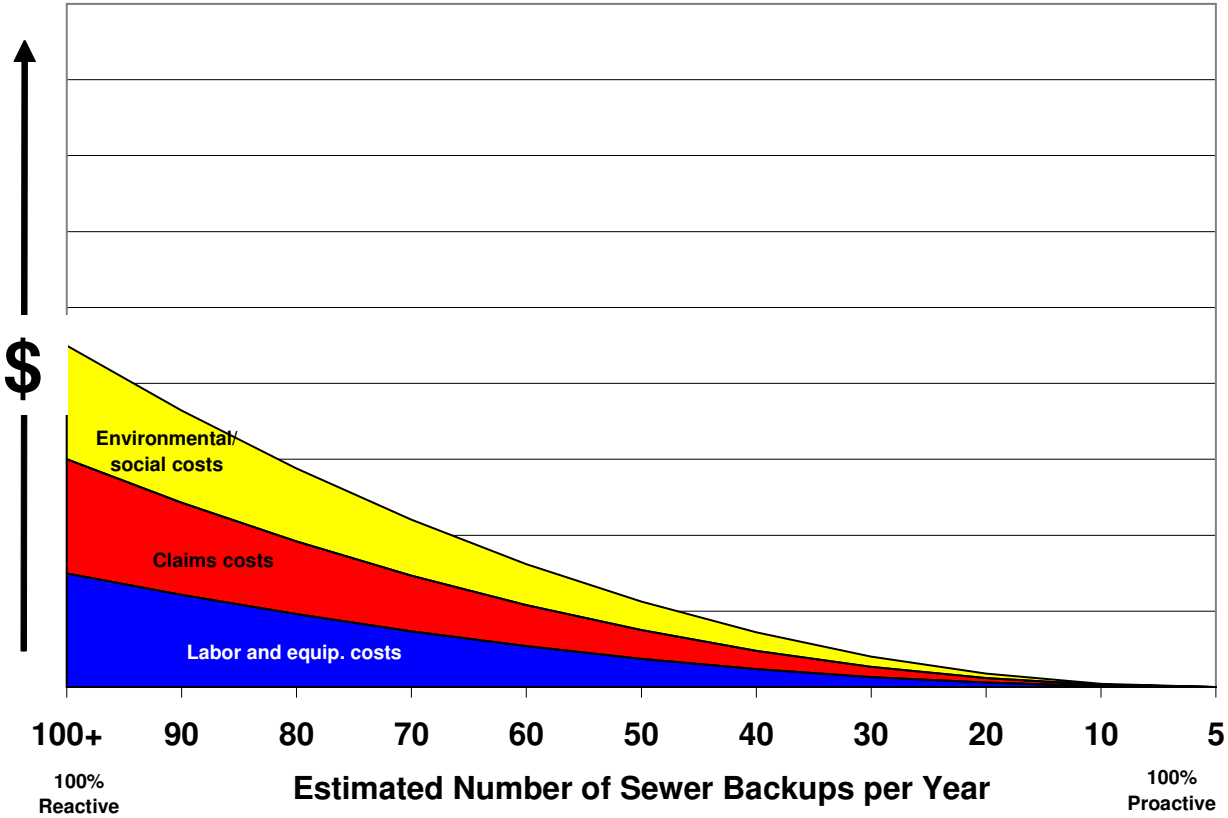

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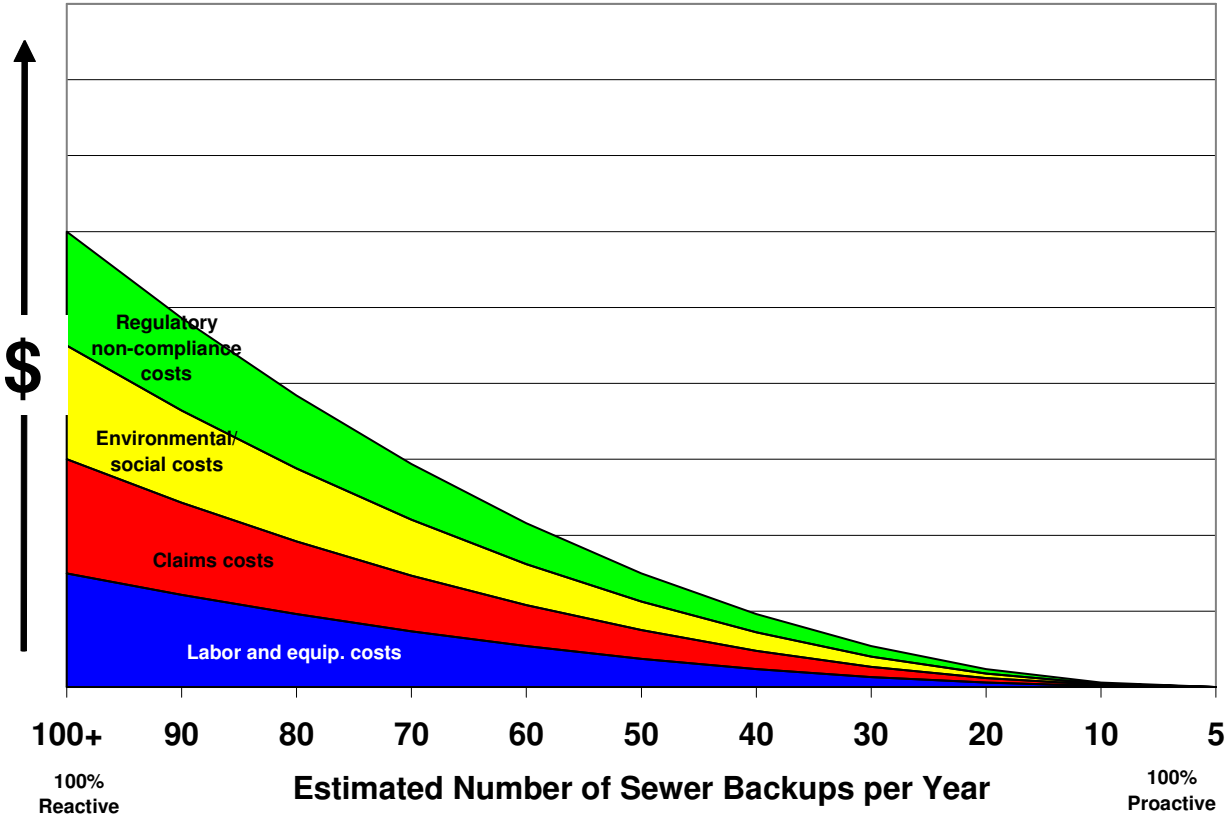

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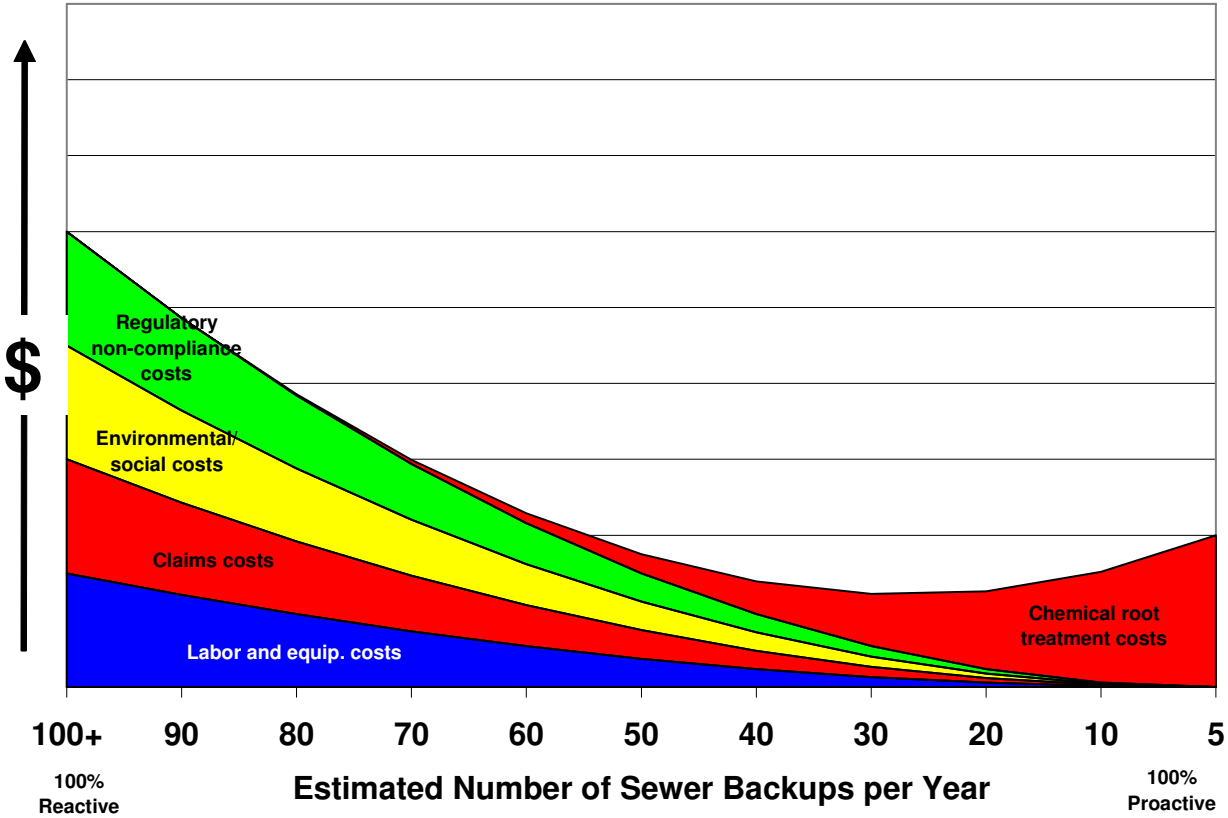

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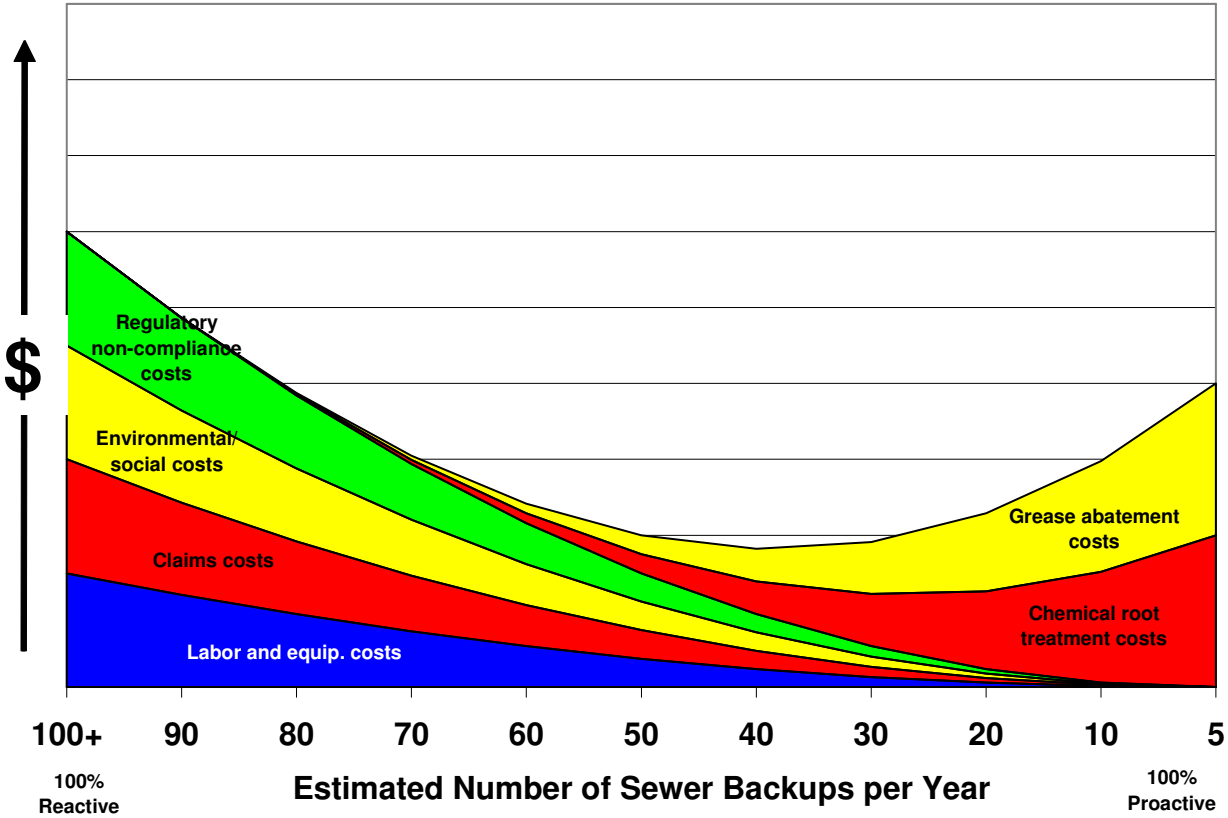

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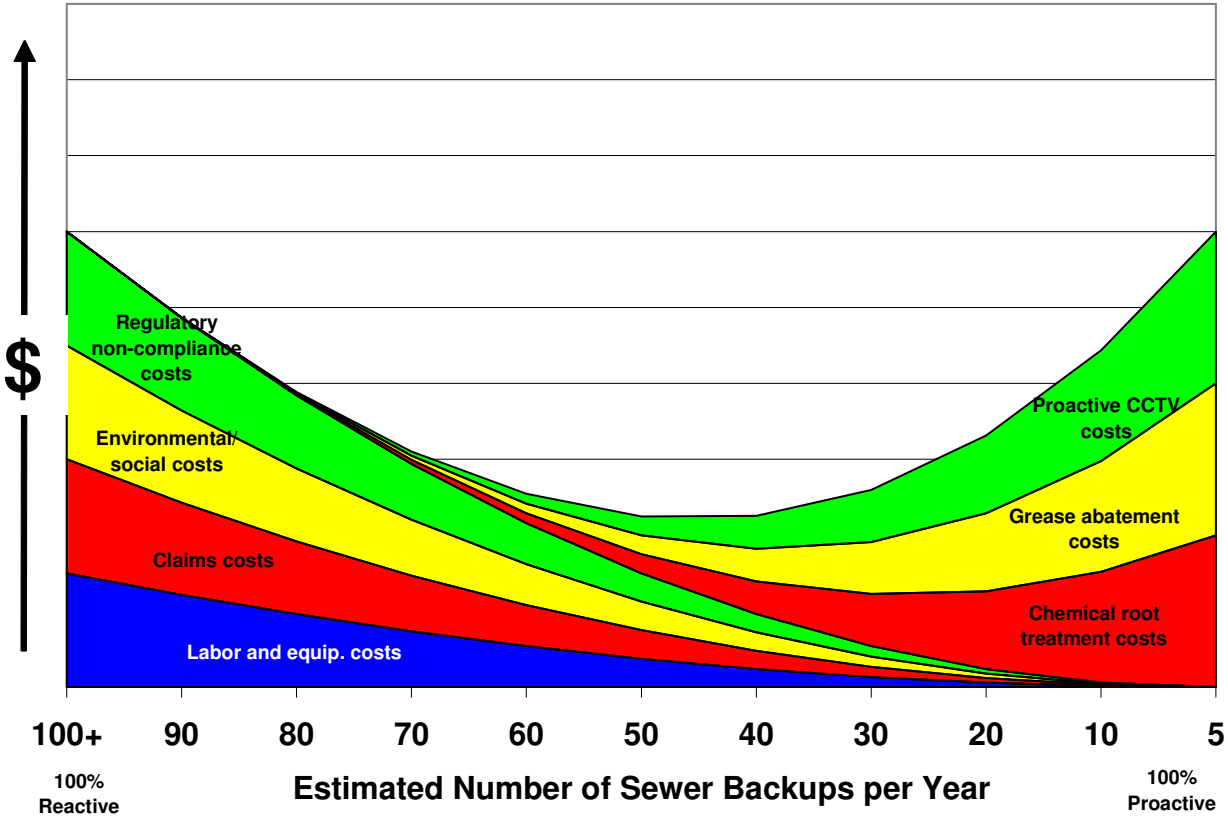

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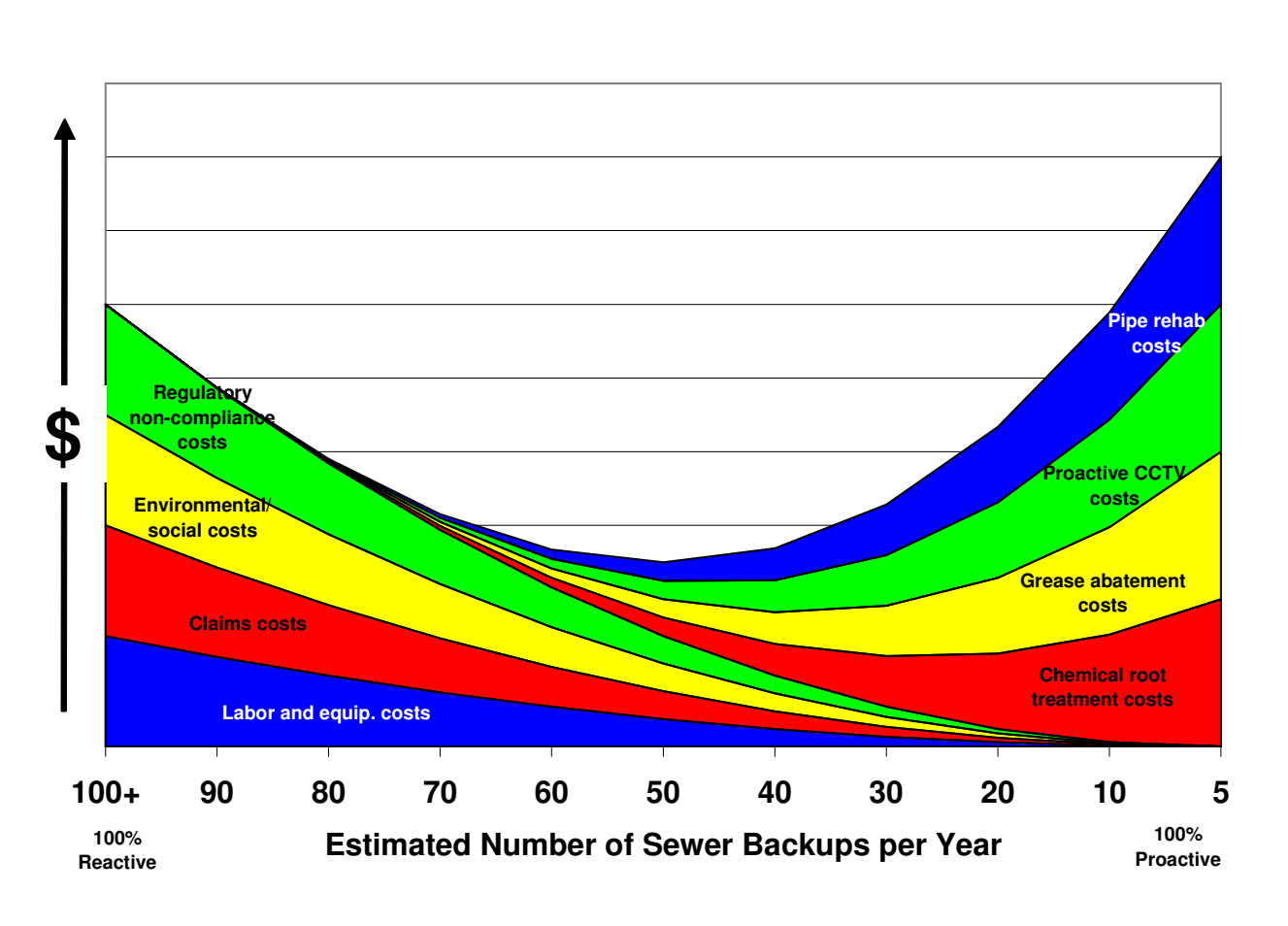

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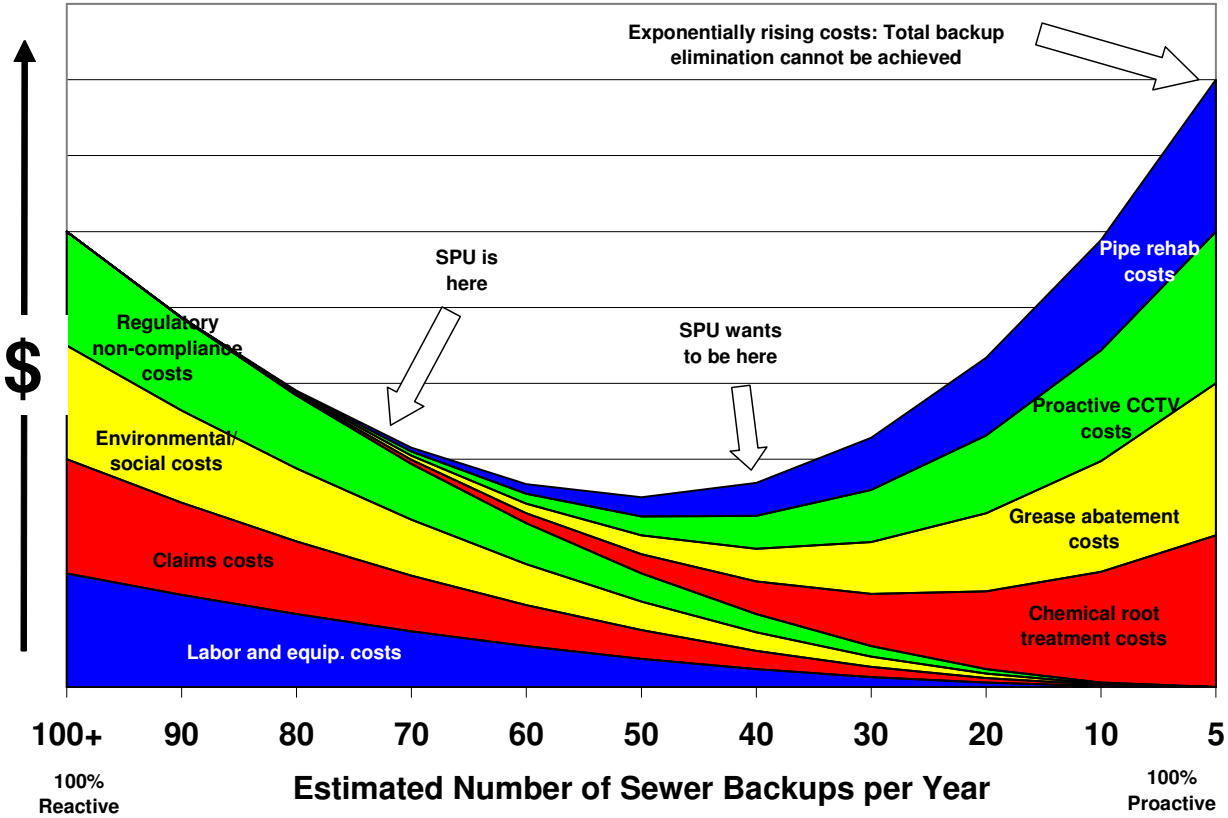

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To Create This We Are Working to

- *Gather more asset attribute information, such as….*
  - *Size, material, age*
  - *Condition*

- *Needed for tools such as risk models*
- *We have also created a corporate specifier for asset data systems in order to ensure that they are well coordinated and that investments make good business sense*

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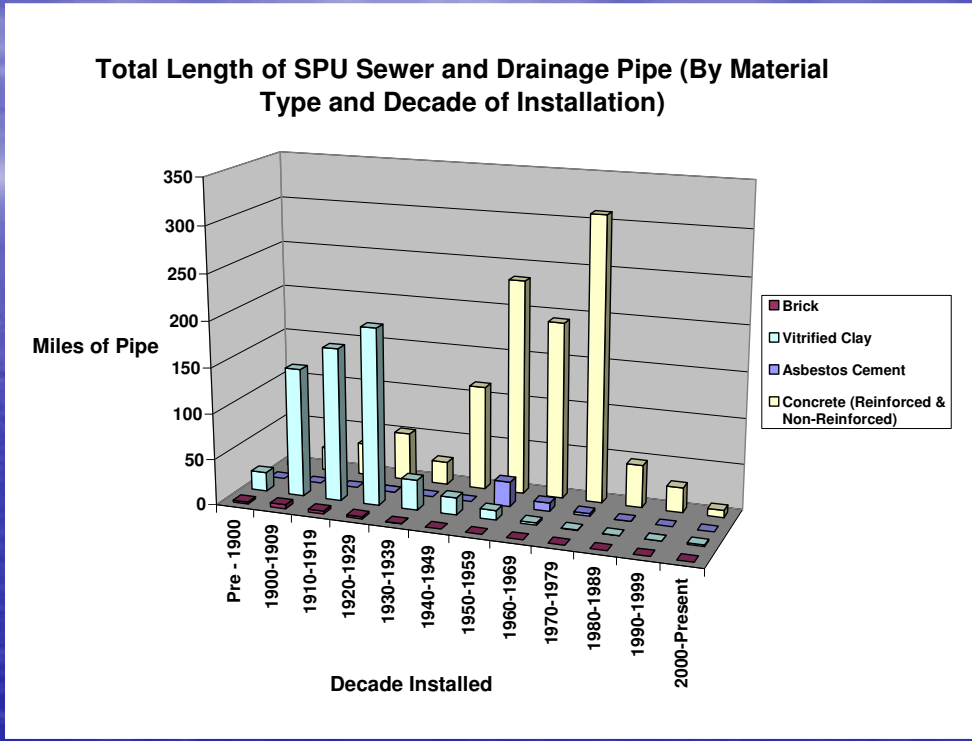
Data and Data Systems

Asset Data

- Age, material, location, etc
- History (problem history, maintenance history, etc)
- Condition
- Consequence of failure

Data Systems

- Provide for analysis
- Mobile systems
- Asset costing



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To Create This We Are Working to

- *Develop planning documents for each asset category*
- *These allow us to better understand the assets and risks associated with them in order to develop renewal plans and maintenance strategies*

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Strategic Asset Management Plans

- Planning documents for asset categories
- Allow us to better understand the assets in order to develop Action Plans as well as renewal & maintenance strategies

Action Plan Examples:

Analyze and update mainline maintenance strategy

Develop Annual O&M Workplan

Develop Performance Targets for CIP Replacement and Renewal Projects

Action Plan Number	O&M	CIP	Involved Parties (Responsible Party in Red)	Estimated Date of Completion
1	X	X	WW, CPP, SAM	Ongoing
2		X	WW, SAM	Ongoing
3		X	WW, SAM	Q3 2006
4		X	SAM, WW	Q2 2006
5	X		WW, SAM, O&M, SC	Q2 2006
6	X		O&M, WW, SAM	Q1 2006
7	X	X	WW, O&M	Q3 2006
8	X	X	WW, SAM, Tech	Q4 2006
9	X		O&M, WW	Q3 2006
10	X	X	WW	Ongoing
11		X	WW, SAM	Q3 2006
12		X	WW	Q4 2006
13		X	WW, SAM	Q3 2006
14		X	WW, Tech	Q4 2006
15	X		O&M, WW	Q4 2006
16		X	WW	To Be Determined

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To Create This We Are Working to

We are working to clarify roles, responsibilities, accountabilities, and decision making authority throughout the organization

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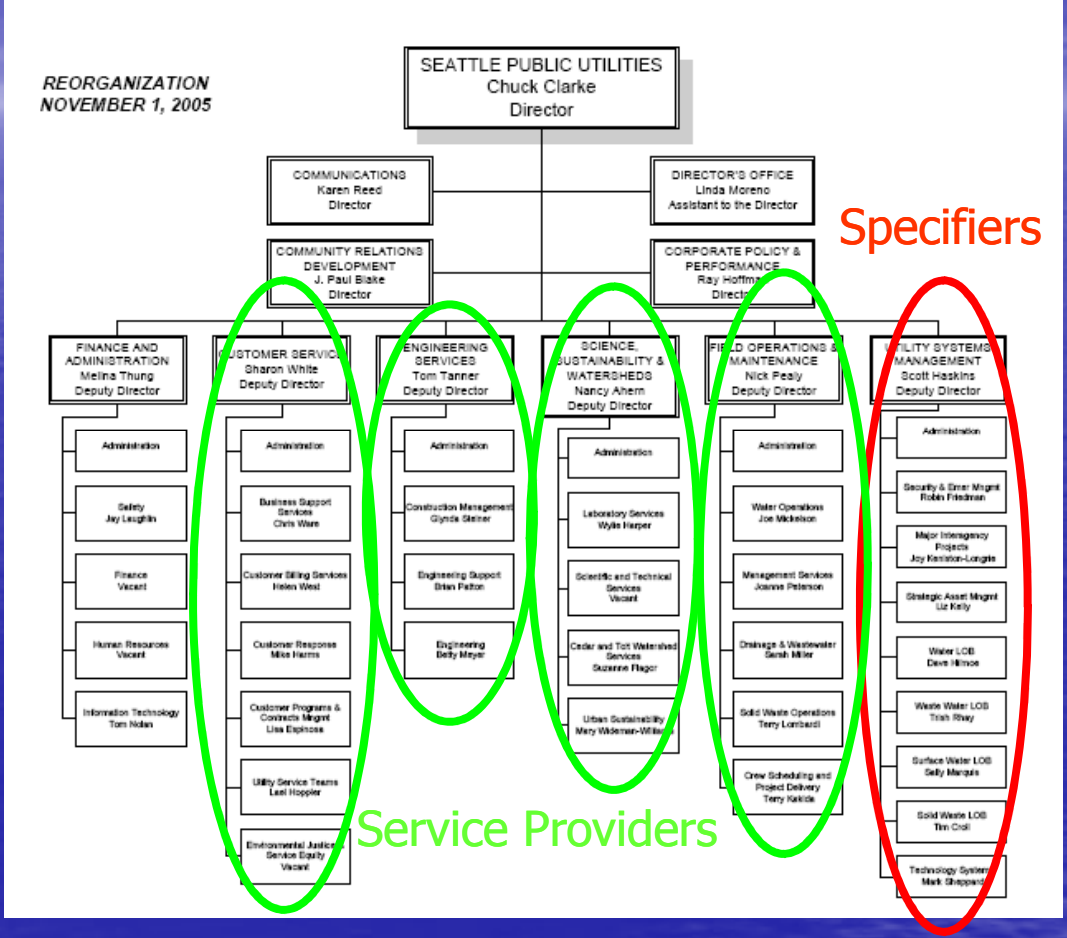
Roles & Responsibilities

Clarify Roles, Responsibilities, & Accountability

- Decision-making
- Distinguish between specifiers and service providers within the utility



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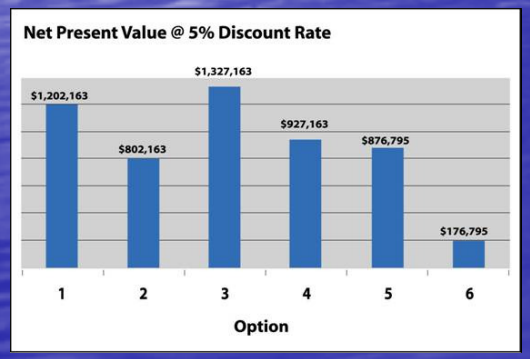

- *We have created a more explicit decision making body at SPU*
- *Major decisions are made based on asset management concepts*
- *In a transparent manner*

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Asset Management Committee

Create a more explicit capital resource decision making body where decisions are made based asset management concepts and in a transparent manner.

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To Create This We Are Benchmarking

- *We have participated in various industry benchmarking efforts*
- *Our goal is to understand how we're doing relative to other similar organizations*

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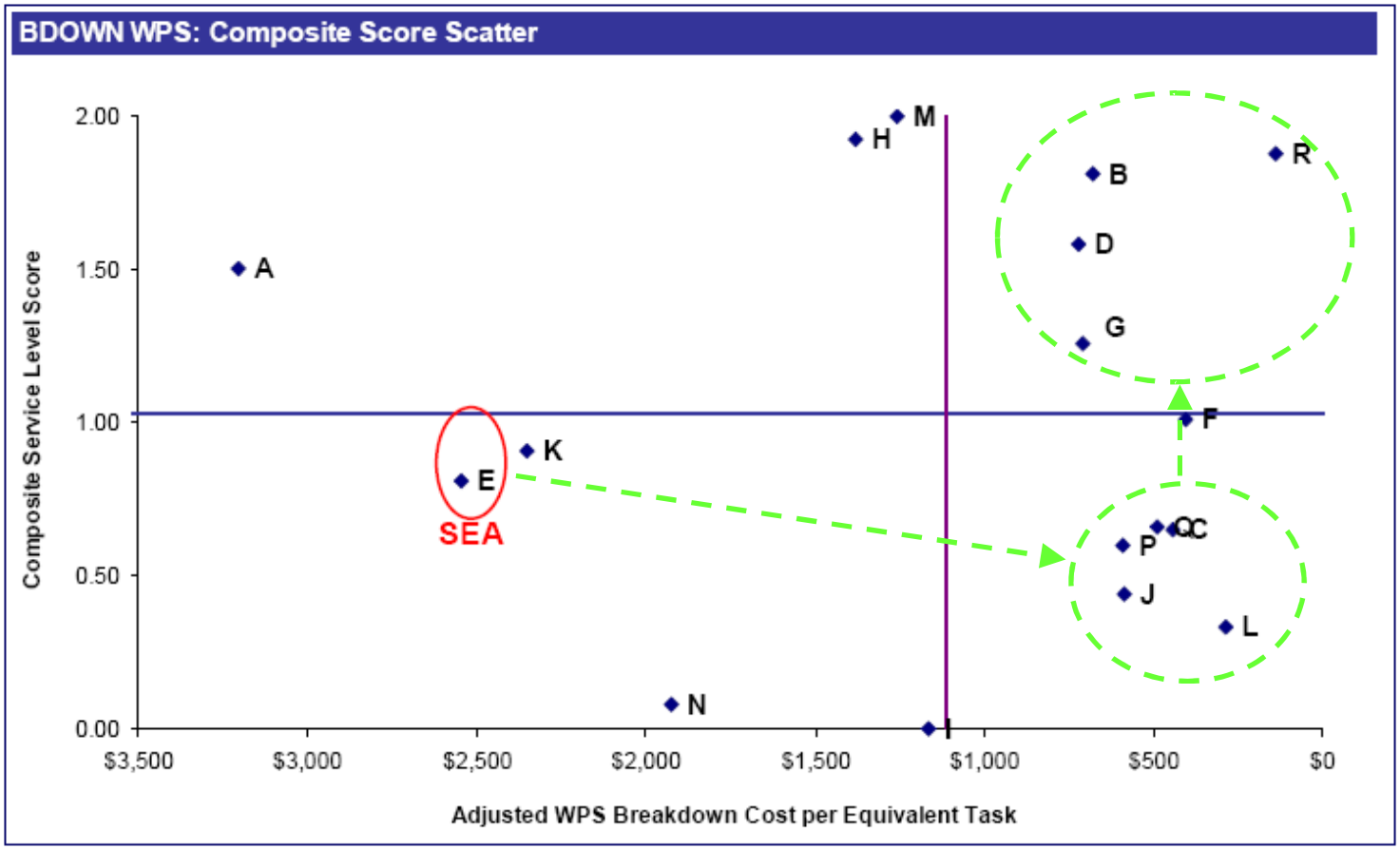
Benchmarking

Water Services Association of Australia
SPU Benchmarking Results



Service Level vs. Cost

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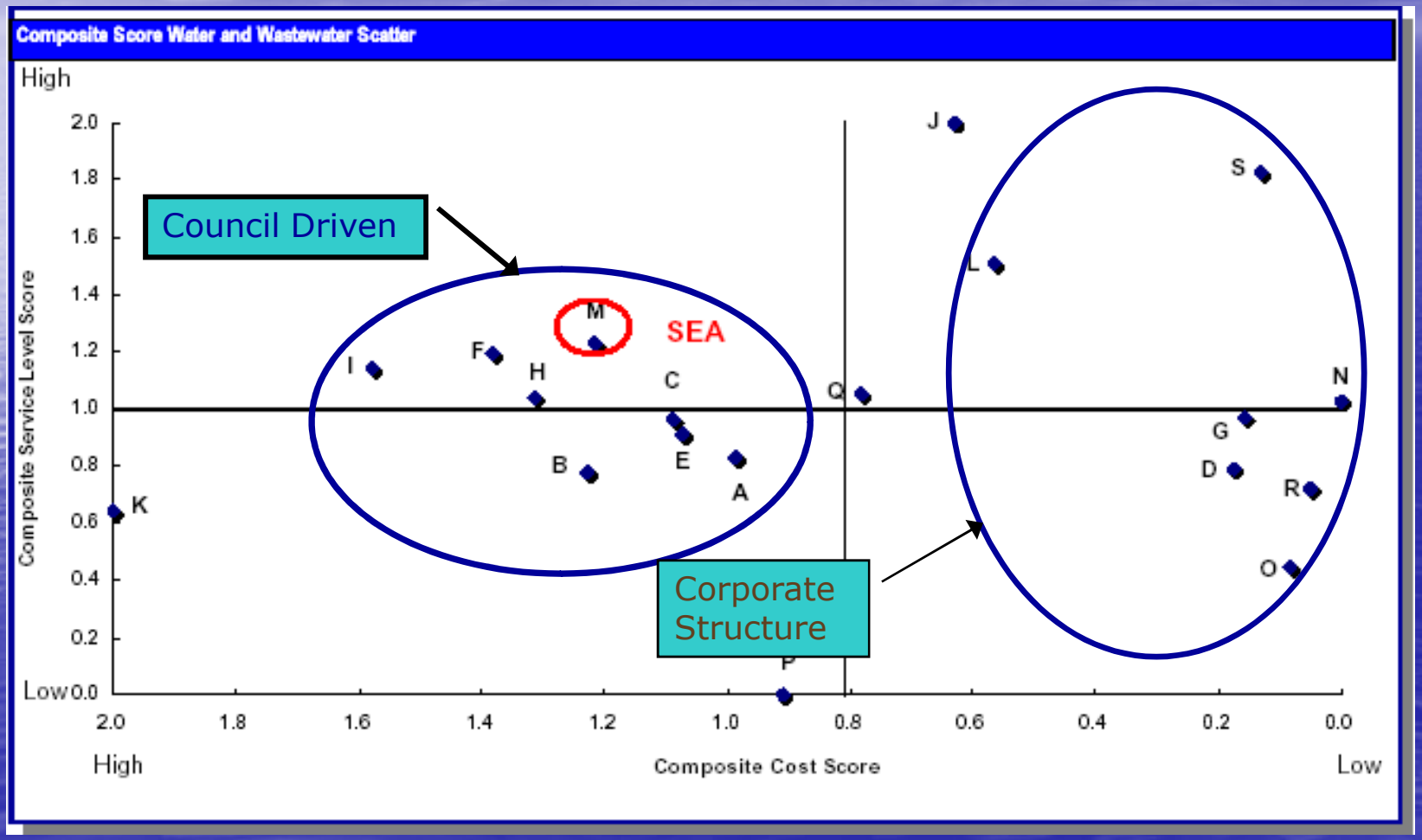
Benchmarking

Service Level vs. Cost



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How Far Have we Come?

Questions & Discussion

Contact Information:
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206-615-1744

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