National Water and Wastewater Benchmarking Initiative

Canadian National Water and Wastewater Benchmarking Initiative: Practice Makes Perfect

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Presentation Outline

1. Review of Project History and Milestone Achievements
2. Review of Case Studies showing the use of benchmarking
3. Introduction to Process Benchmarking
4. Conclusion and Questions

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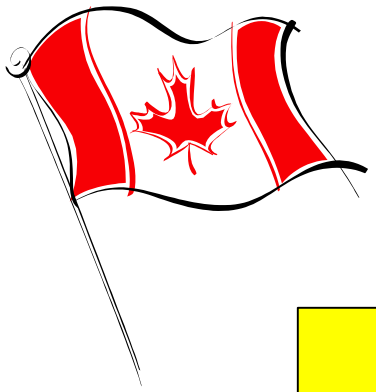
Meet our Typical Water/Wastewater Utility Manager in Canada



Financial Constraints

Aging Infrastructure

Rising Customer Expectations

Stringent Regulatory Standards

Do More with Less!

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What is Benchmarking?

How do we compare?

How well are we doing?

Are we providing value for money?

And then:

How can we improve?

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The Challenge in 1997:

- There are no common industry wide performance metrics.
- Public expectations for quality and service are increasing, but willingness to pay is actually decreasing.
- Fear of privatization.
- Understanding that improvement is possible and necessary, but where to begin?

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Canadian Wastewater Utility Pilot Scale Benchmarking: 1998

- Start very simply, and test only key high level metrics;
- Resist the temptation to drill into too much detail;
- Stay focused on the high level for now;
- Prove the methodology, before jumping to performance-based conclusions.

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Early Key Success Factors

- Very high level of cooperation amongst founding partners (4 municipalities, consultant, and NRC);
- Open sharing of information and ideas;
- Willingness to experiment, and pilot new ideas. Change on the fly if necessary;
- Patience: Prepared to make investment of time and energy.

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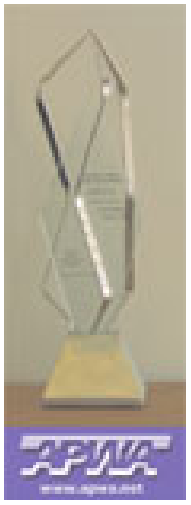
Key Early Project Milestones

- 1998: Pilot scale involving 4 major Canadian municipalities;
- 2001: Major expansion to include 35 Canadian cities in water, wastewater and stormwater benchmarking;
- 2003: Awarded American Public Works Association (APWA) Management Innovation Award;



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Key Recent Project Milestones

- 2005: Commencement of detailed process benchmarking;
- 2005: NWWBI Methodology adopted in South Africa (SALGA);
- 2006: NWWBI Methodology piloted in Malaysia;
- 2007: Commencement of International Comparator Benchmarking with OFWAT.

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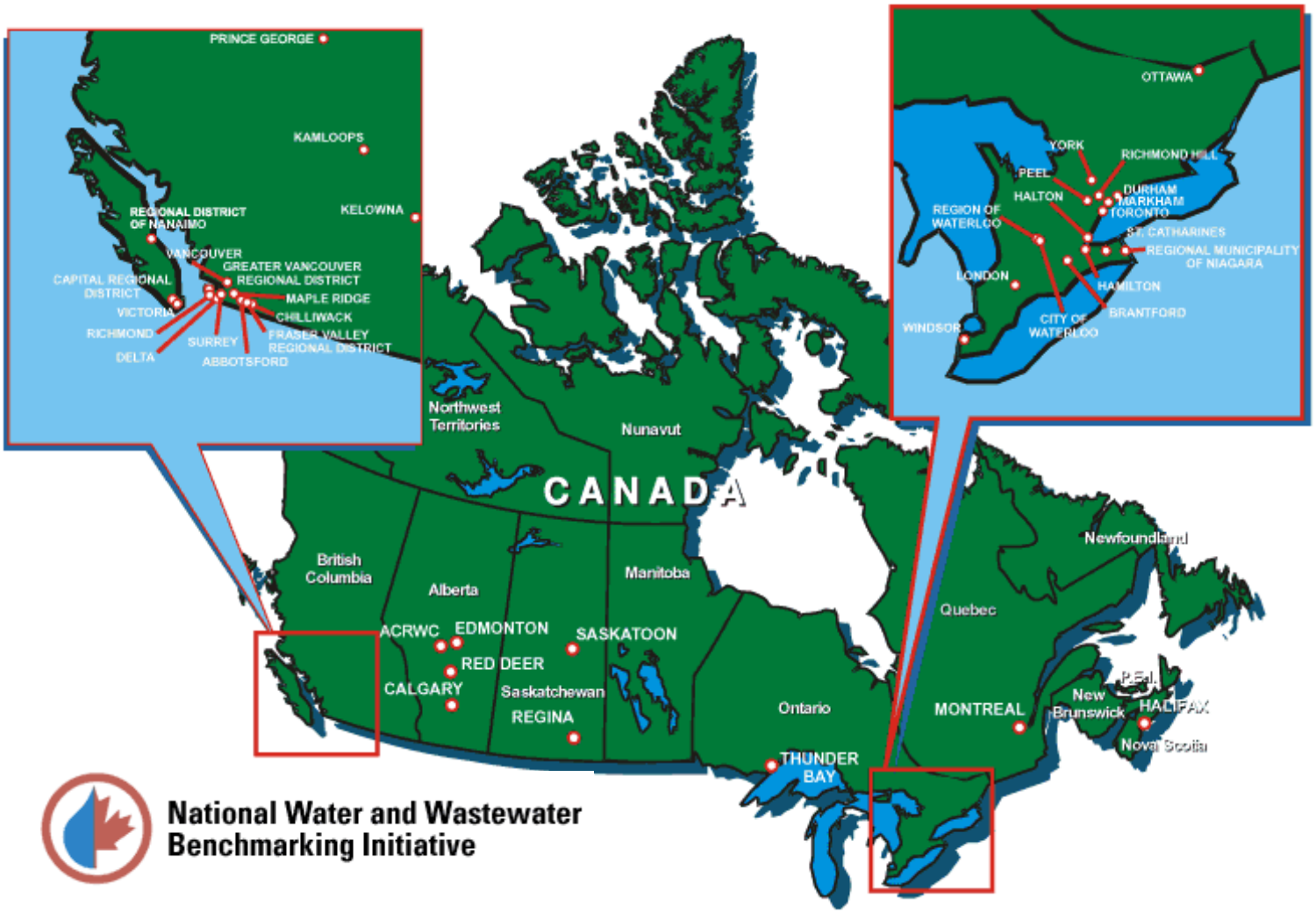
Canadian Benchmarking Initiative



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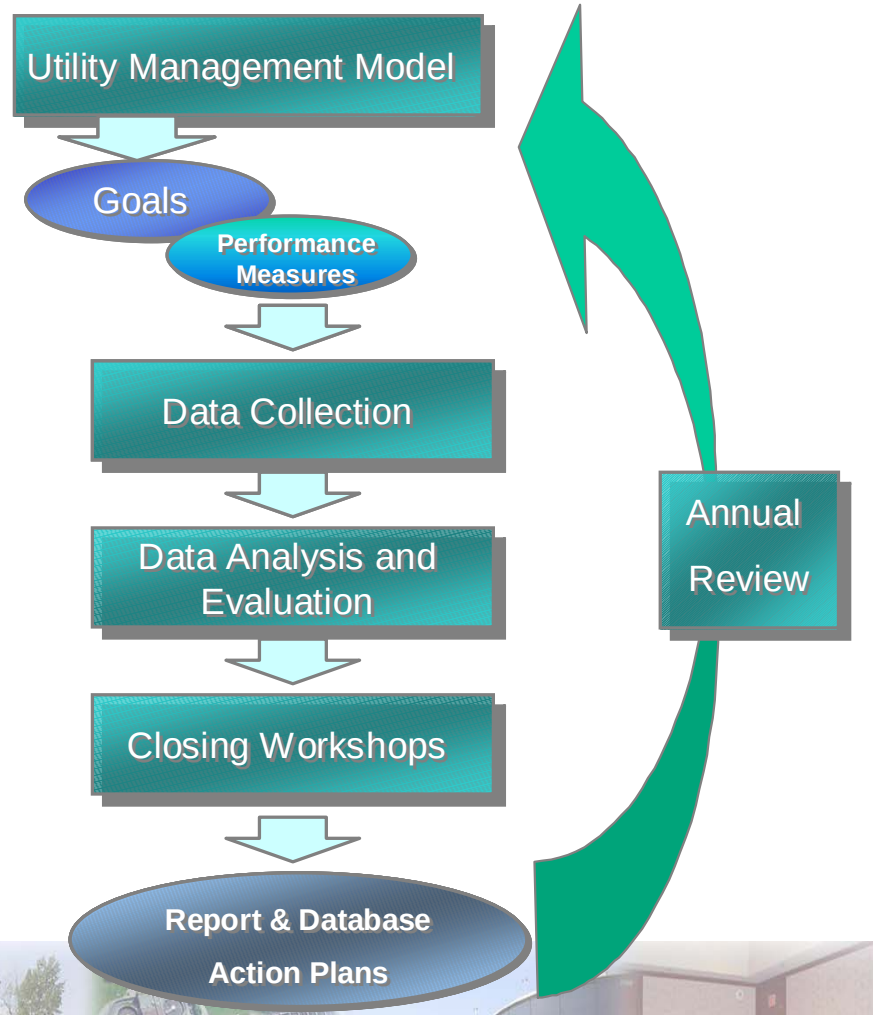
Annual Benchmarking Cycle



- Conventional methodology
- Annual cycle
- Great care taken to ensure each task is completed thoroughly
- Key milestone checkpoints

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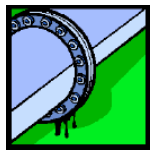
Benchmarking Module Structure

WATER

- Water treatment
  - Filtered
  - Unfiltered
- Water distribution
  - Transmission
  - Distribution



WASTEWATER

- Wastewater collection
  - Trunk
  - Collection
- Wastewater treatment
  - Primary
  - Secondary

STORMWATER & DRAINAGE

- Stormwater Drainage
- Stormwater Retention & Treatment

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Utility Management Model

- Critical Utility Reporting Levels: Most utilities have 4 including “Owners”

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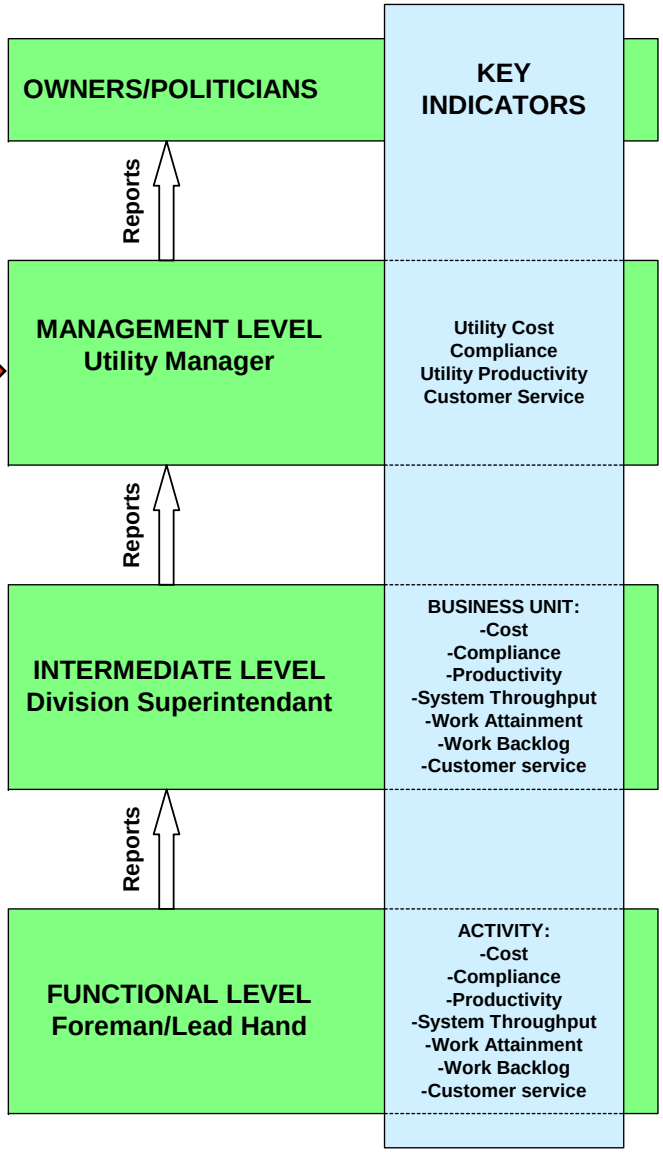
- We focus on the “Managers Level”
- This allows us to drill into lower levels for Process Benchmarking



Canadian Water/ Wastewater Utility “Goals”

1. Reliable and sustainable infrastructure
2. Provide sufficient capacity
3. Meet service requirements at sustainable cost
4. Protect public health and safety
5. Provide a safe and productive workplace
6. Have satisfied and informed customers
7. Protect the environment and minimize environmental impacts

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Good Performance Measures:

- Focus on a result: The result of the PM should provide you with information;
- Must measure attainment of one or more of the utility goals;
- Must be practical and data must be obtainable
- Accuracy must be tested over time;
- Scalable to utilities of different sizes and/or local conditions;
- Resistant to misrepresentation (cheating!).

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Example PM: Definition Detail

Total Operations & Maintenance Cost / km Length of Distribution system

- **Sum of the actual O&M costs** incurred in the operation of the distribution/transmission/ integrated system (excludes capital costs, indirect costs, transfers to reserves and debt/interest charges). Includes O&M costs for both linear (pipes, meters etc) and non-linear (pump stations, reservoirs etc) infrastructure. Revenues are only included where they are recoveries for work done by water distribution staff that is extraneous to the utility (for example, lab tests for other utilities).

- **Total length of mains** in the distribution system (i.e. excluding length of service connections). For the distribution system length include all connecting pipes between pump stations, rechlorination facilities and storage facilities if these are located within the distribution system. For the transmission system length include all connecting pipes between pump stations, rechlorination facilities and storage facilities when located between the source and the treatment plant or between the treatment plant and the distribution system.

Detailed definitions are vital to ensure valid comparisons

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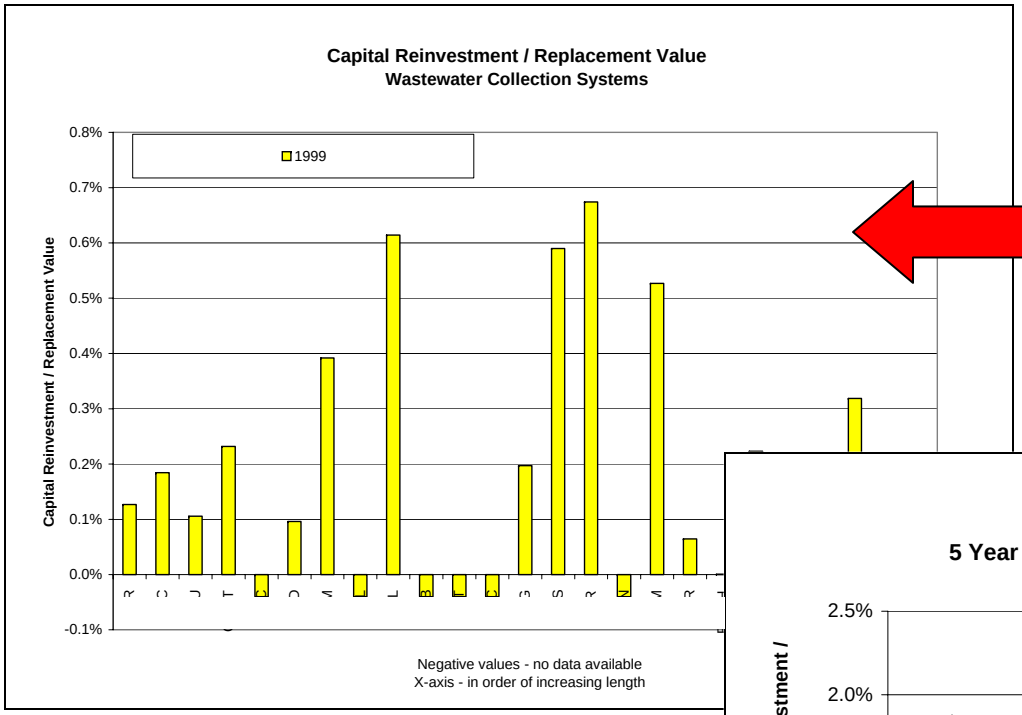
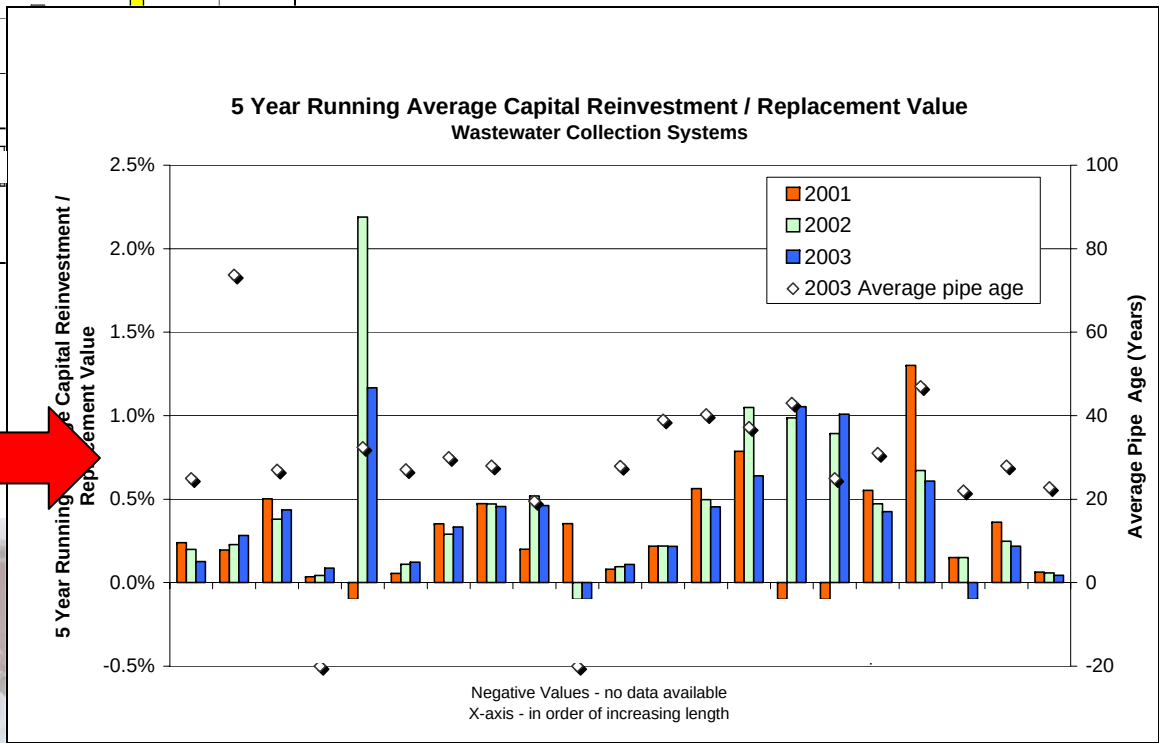
Data Quality Improves with Repetition

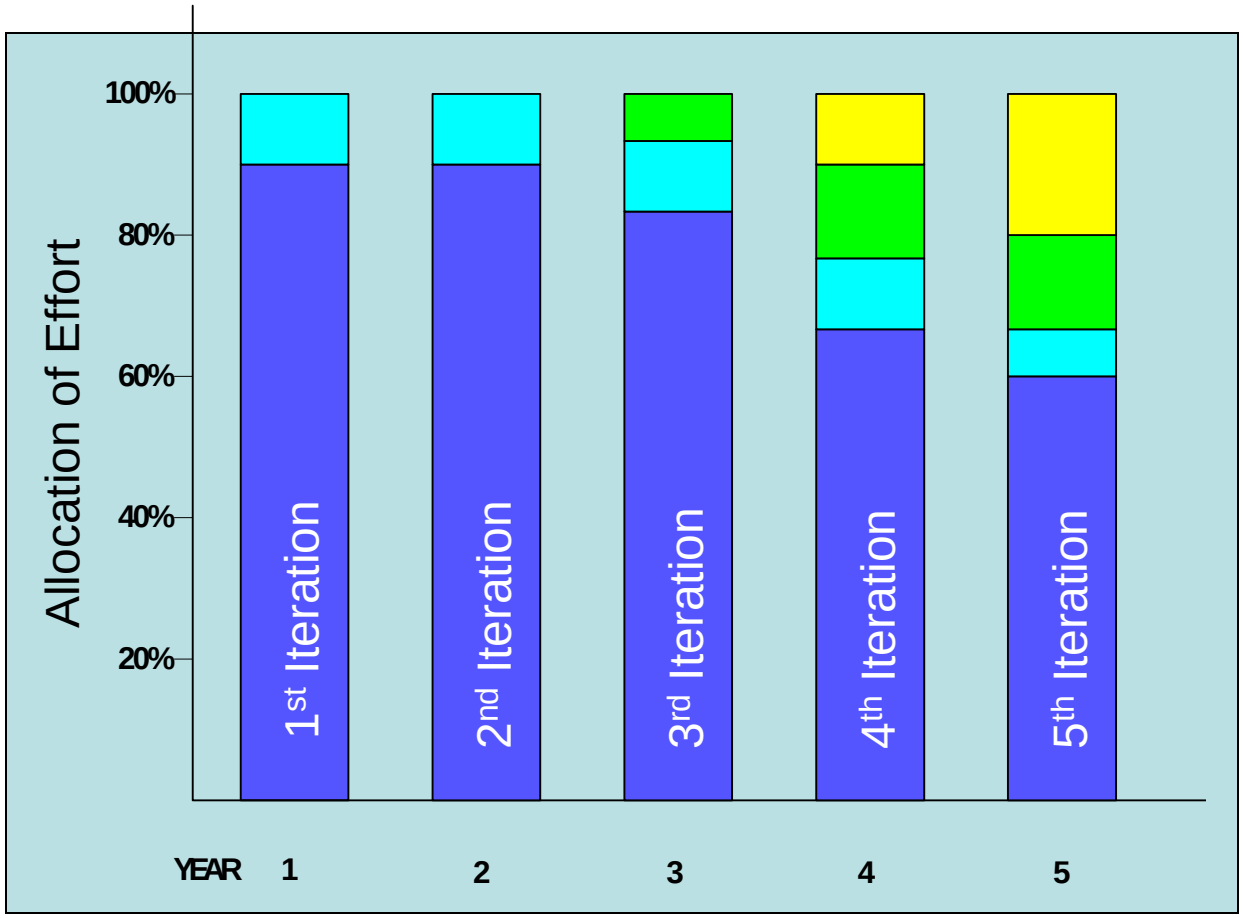


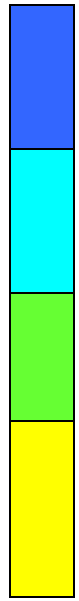
1999: Data is vague, and incomplete

2004: Data is clear, and accurate



Results and Payback Takes Time





Data Collection

Data Analysis

Process Benchmarking

Best Practice Implementation

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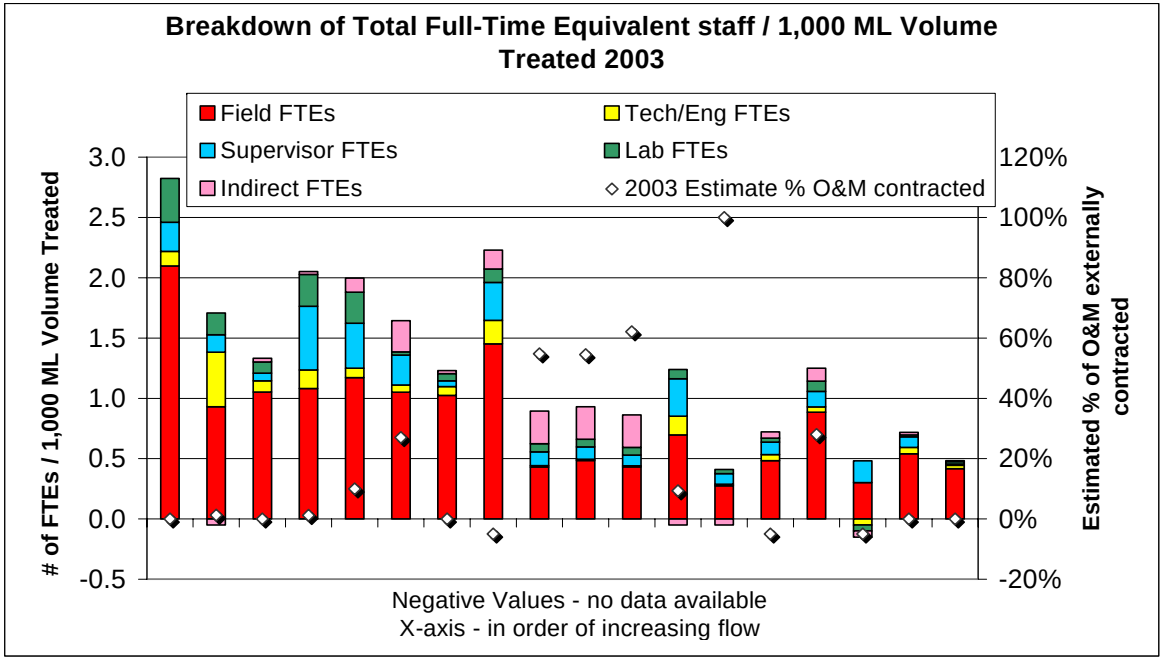
Example Output Chart: "Target Group" Graph



- Shows detail regarding the entire group
- Useful for making quick multi-agency comparisons

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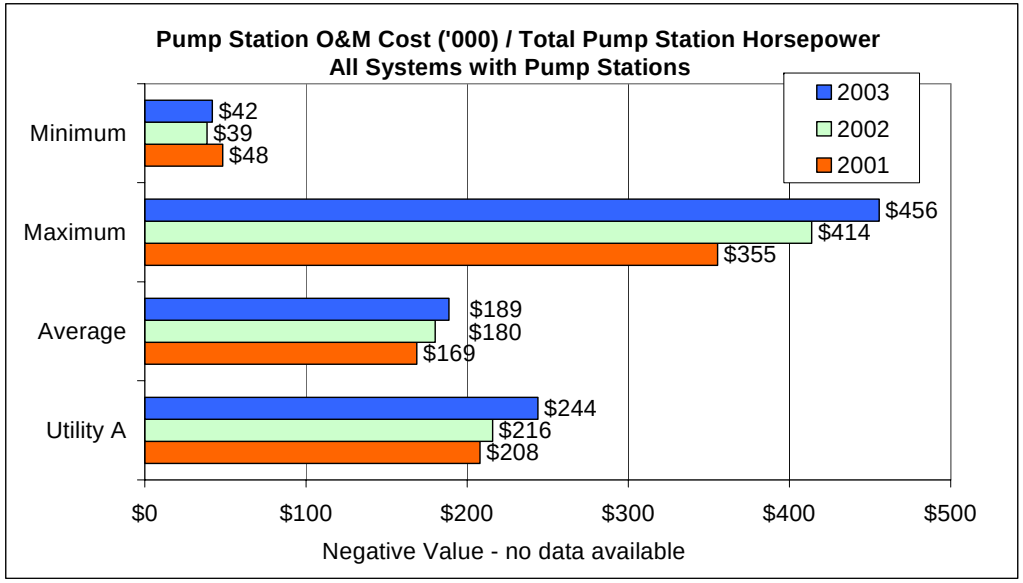
Example Output Chart: Min, Max, Average Graph



- Useful for examining one agency's result in more detail
- Multi-year trend line is of key importance
- Tends to grade against the "average", instead of a target.

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In All Cases:

- Benchmarking “results” are only a start;
- You need to look “behind the graph”;
- NWWBI graphs are not blinded, so you can clearly see which utility is leading;
- Only by discussing the results and getting more information can you begin to identify specific process changes.

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Annual Benchmarking Workshop

- Debrief results; affirm/modify methodology annually; set future project objectives;
- Critical peer to peer networking;
- Involve other Best Practice agencies;
- Not a conference: hard work, but fun;
- CRITICAL FOR LONG TERM SUCCESS!

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Annual Workshop: Fun, but Hard Work

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Finally: Performance Improvement

- Performance Measure or Benchmarking means nothing if you don't do something with the results.
- To improve, you have to change, and change is always hard.
- Strategy: Start with some quick wins to get buy in, then move to more ambitious improvement programs.

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Some Examples of Progress

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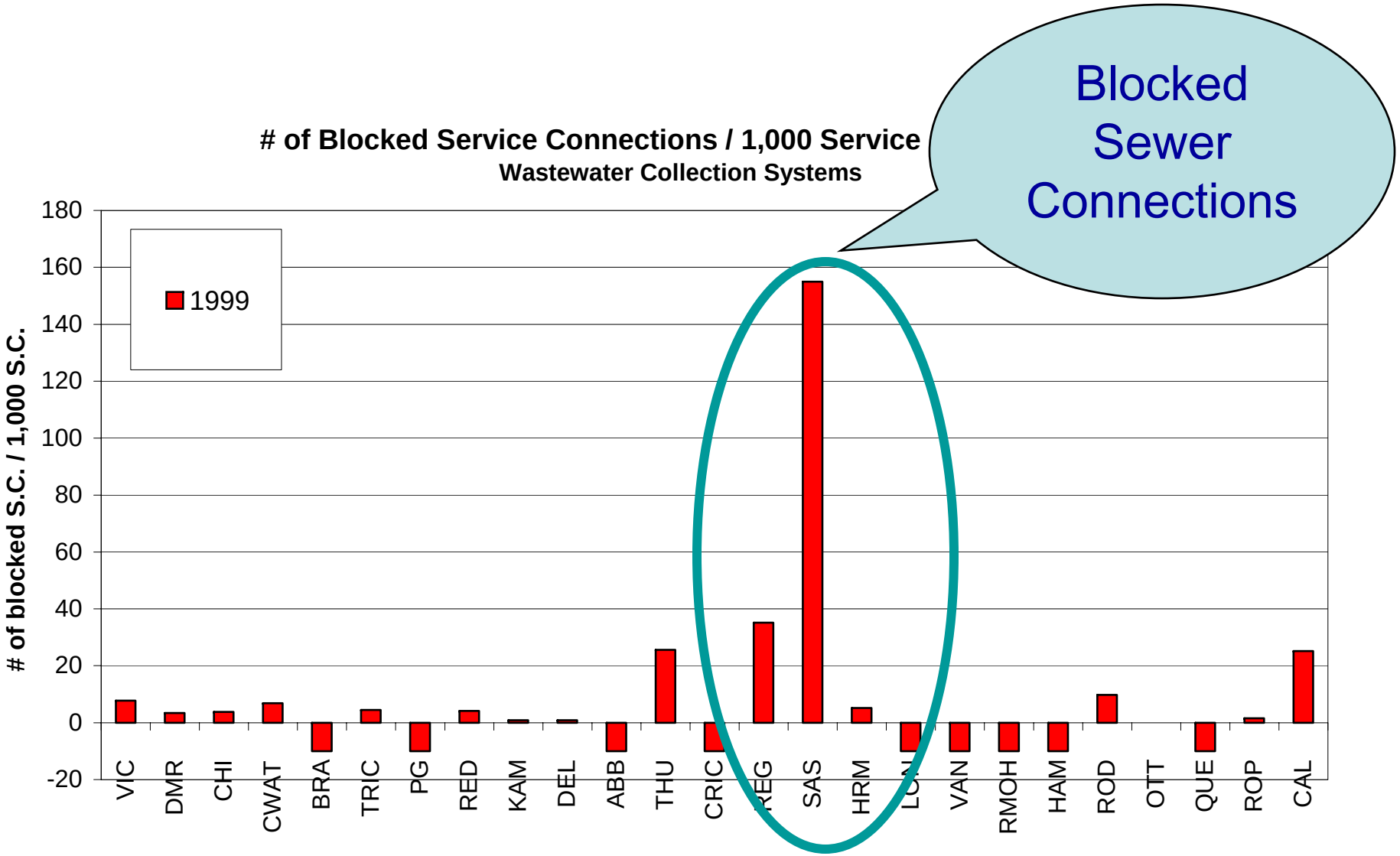
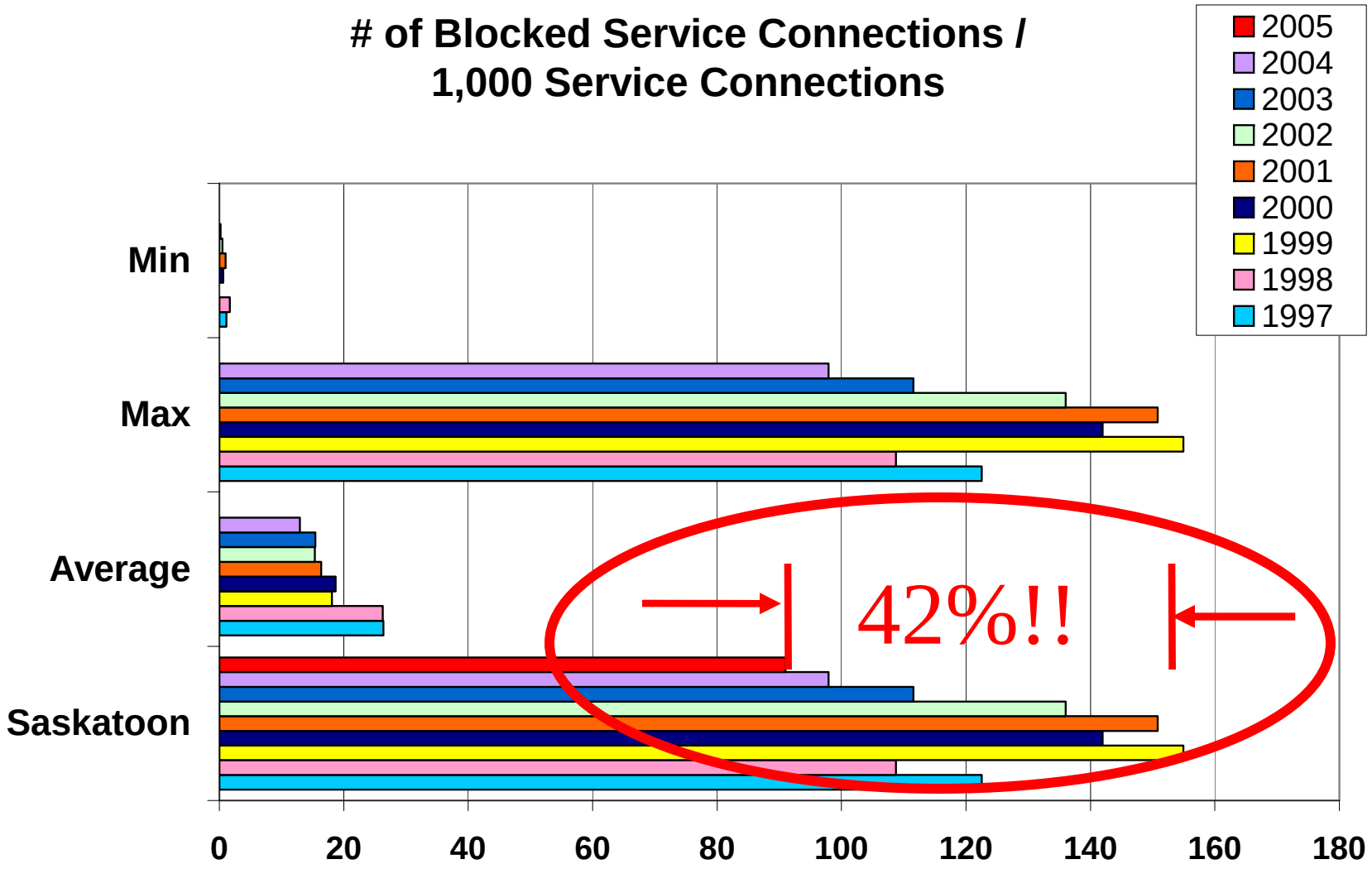
City of Saskatoon: Connections



Major Strategic Initiative



Conclusion (so far)

- Huge improvement: 42% reduction;
- Still a problem, but the problem now is well quantified, and has context both locally and nationally;
- Stakeholders now have a clear idea of the magnitude of the problem, and the benefit of making improvements;
- Still a major challenge for the City.

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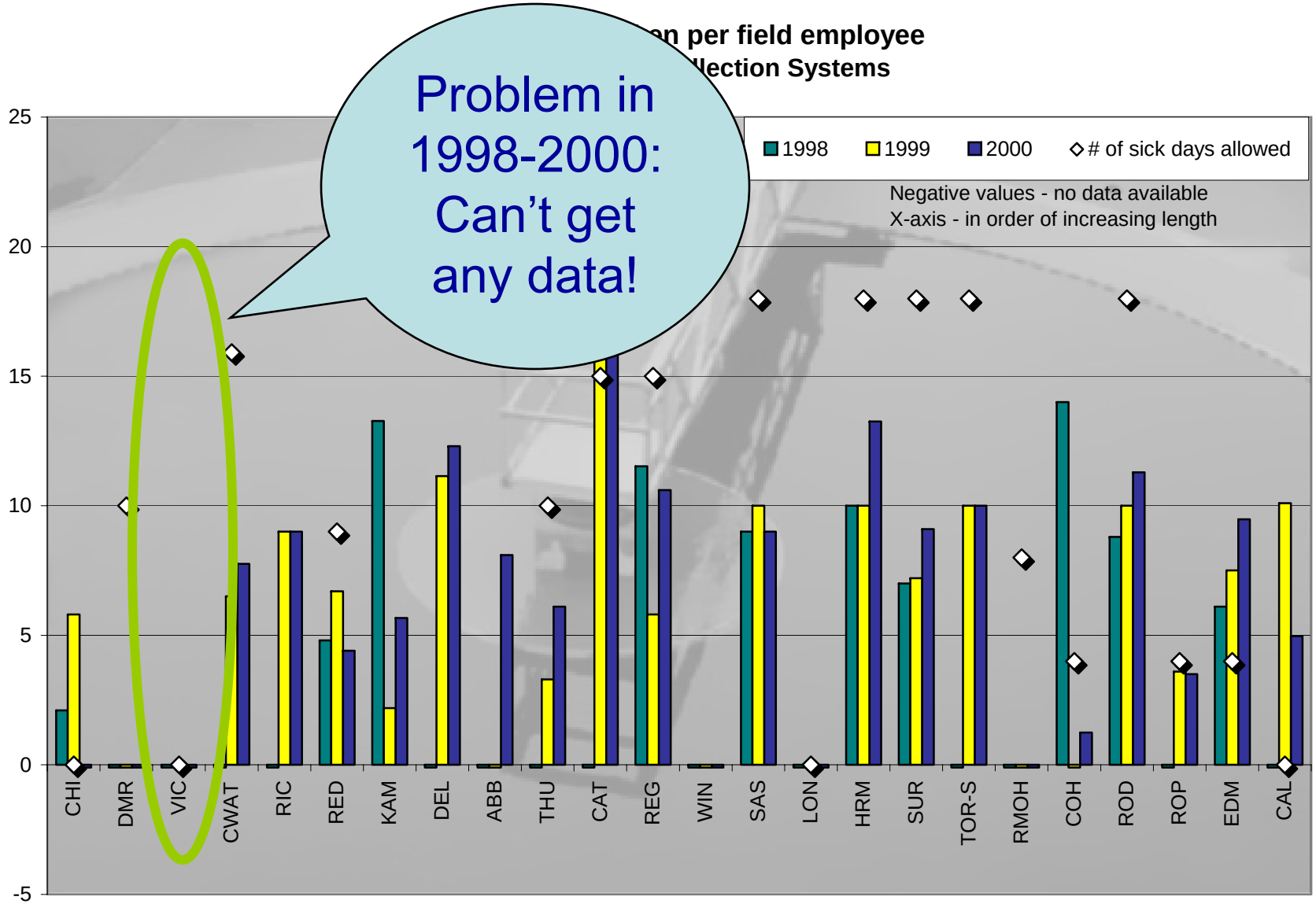
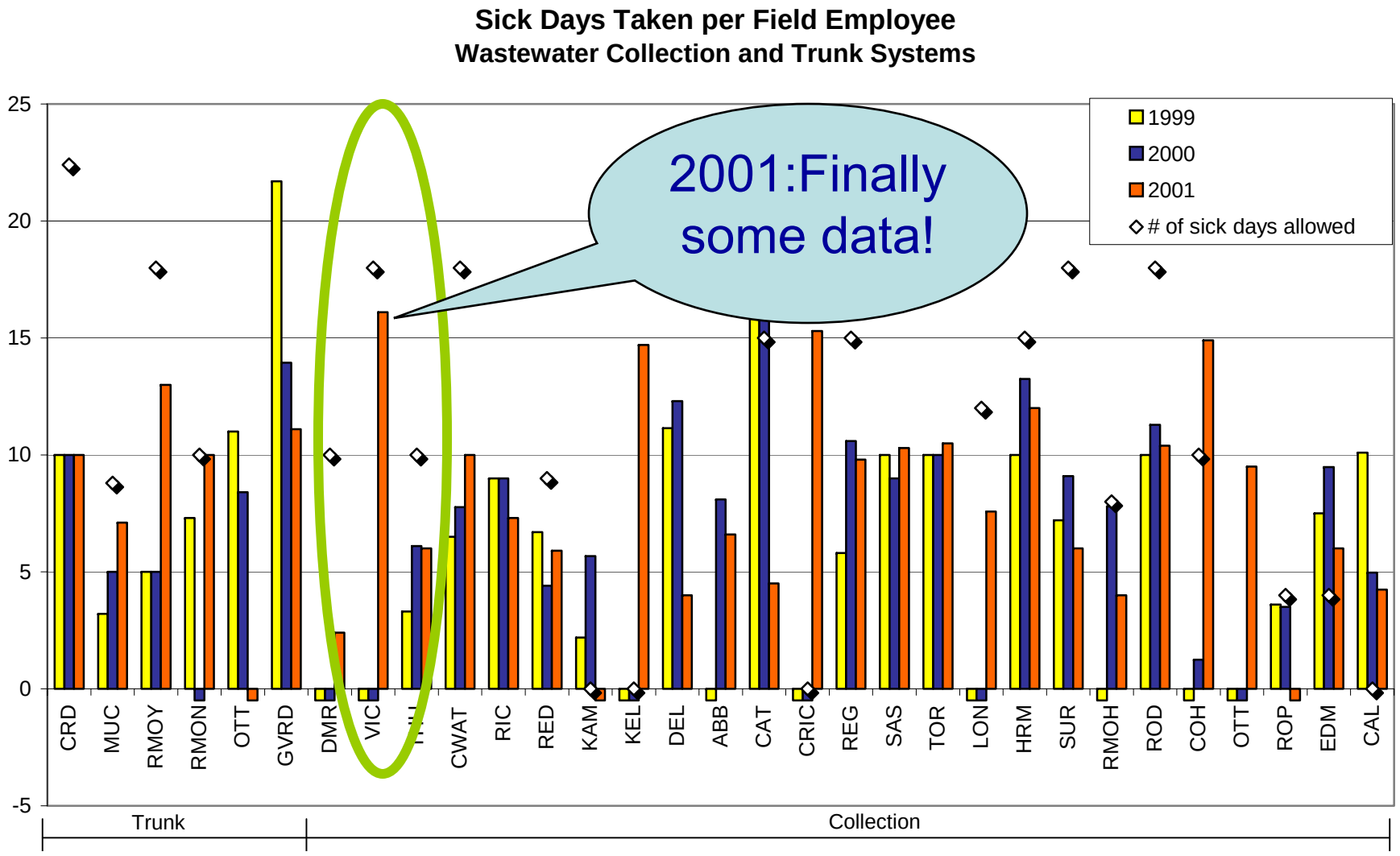
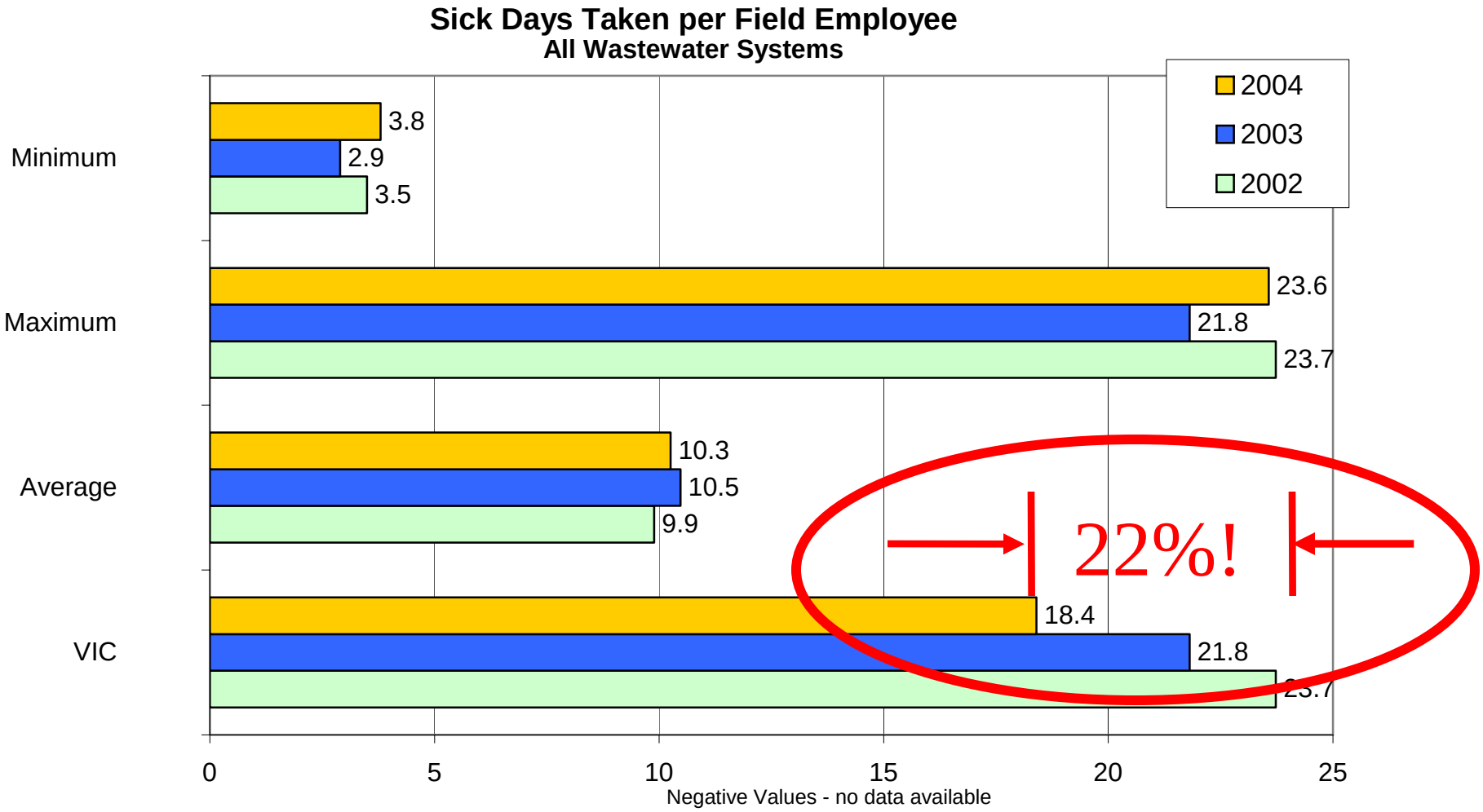
City of Victoria: Sick Days



Begin to quantify the problem



Design a strategy and measure the results



In other words:

- City of Victoria wastewater collection operations employs about O&M 19 FTEs
  - Total absent time 2002: 450 days
  - Total absent time 2004: 350 days
- **Found Productivity: 100 extra days per year (so far)**

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In Summary:

- Many of these problems were known prior to benchmarking;
- Benchmarking adds context and tangibility;
- The problem can now be business cased against a strategy;
- How much would you be willing to spend to rectify the problem?

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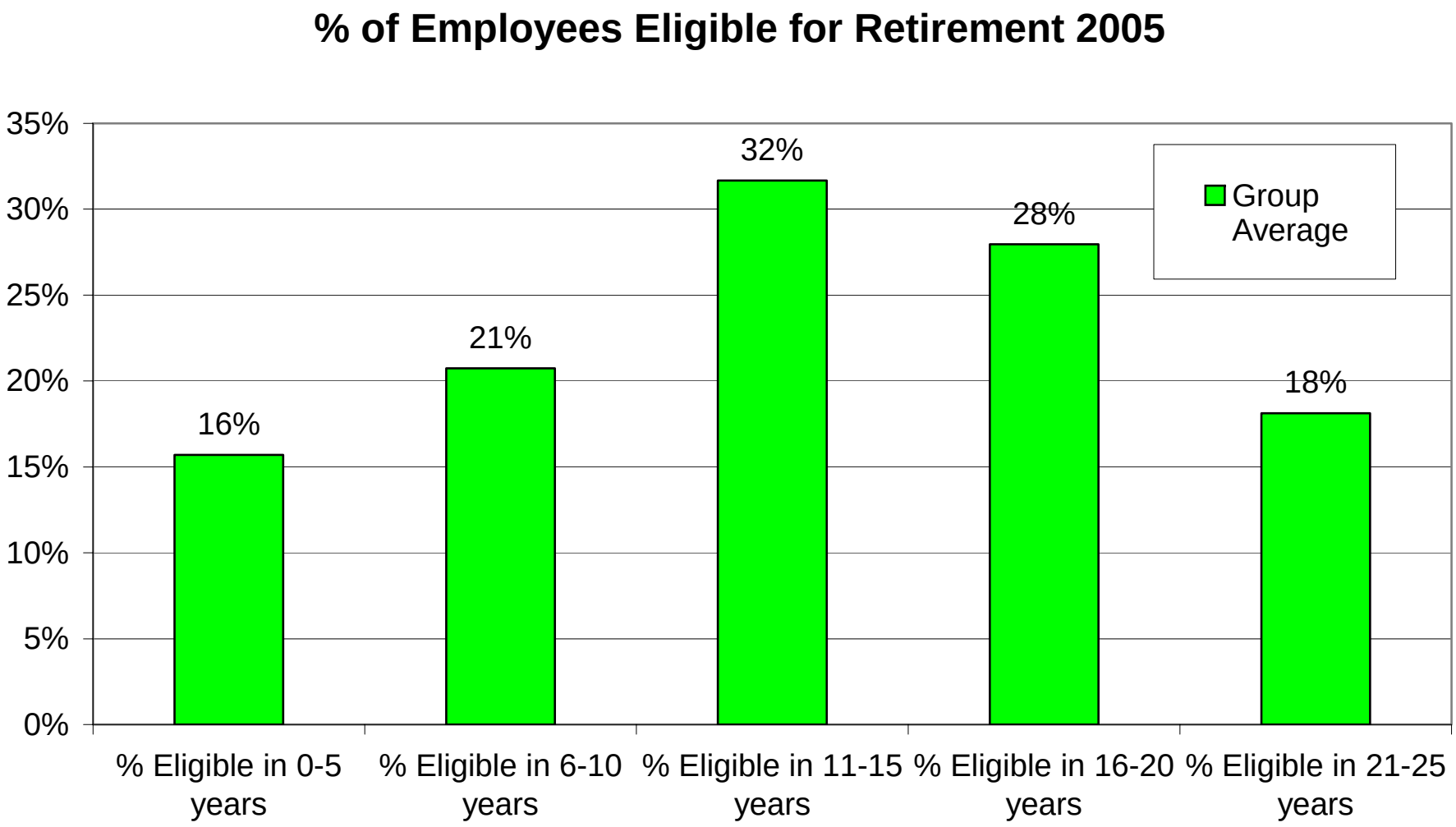
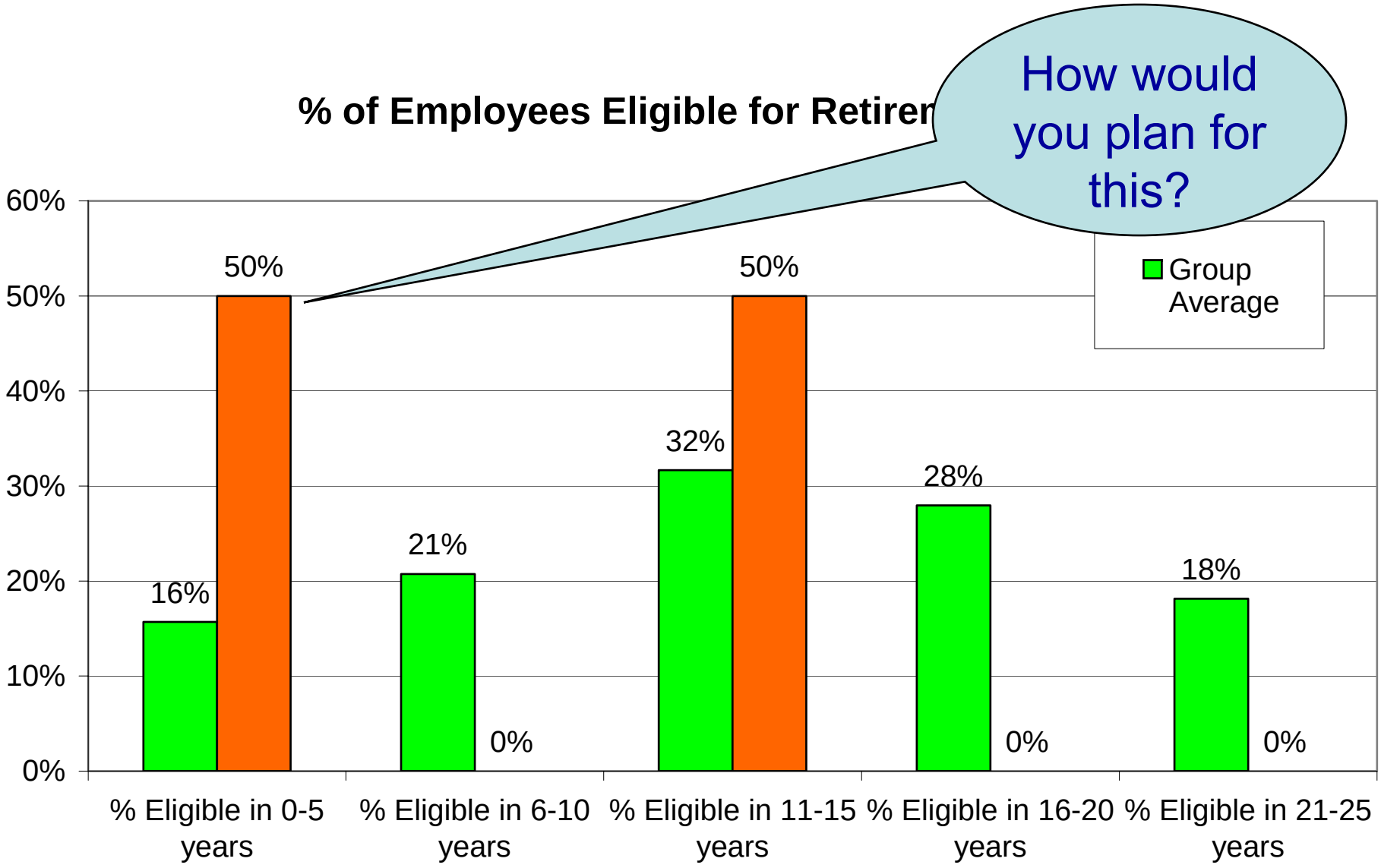
Succession Planning:



Management Challenge



Infrastructure Reinvestment

- Awareness has increased;
- Most participants are responding with significant planning efforts;
- Many good Best Practice standards and documentation now readily available;
- Cost implications are beginning to be understood.

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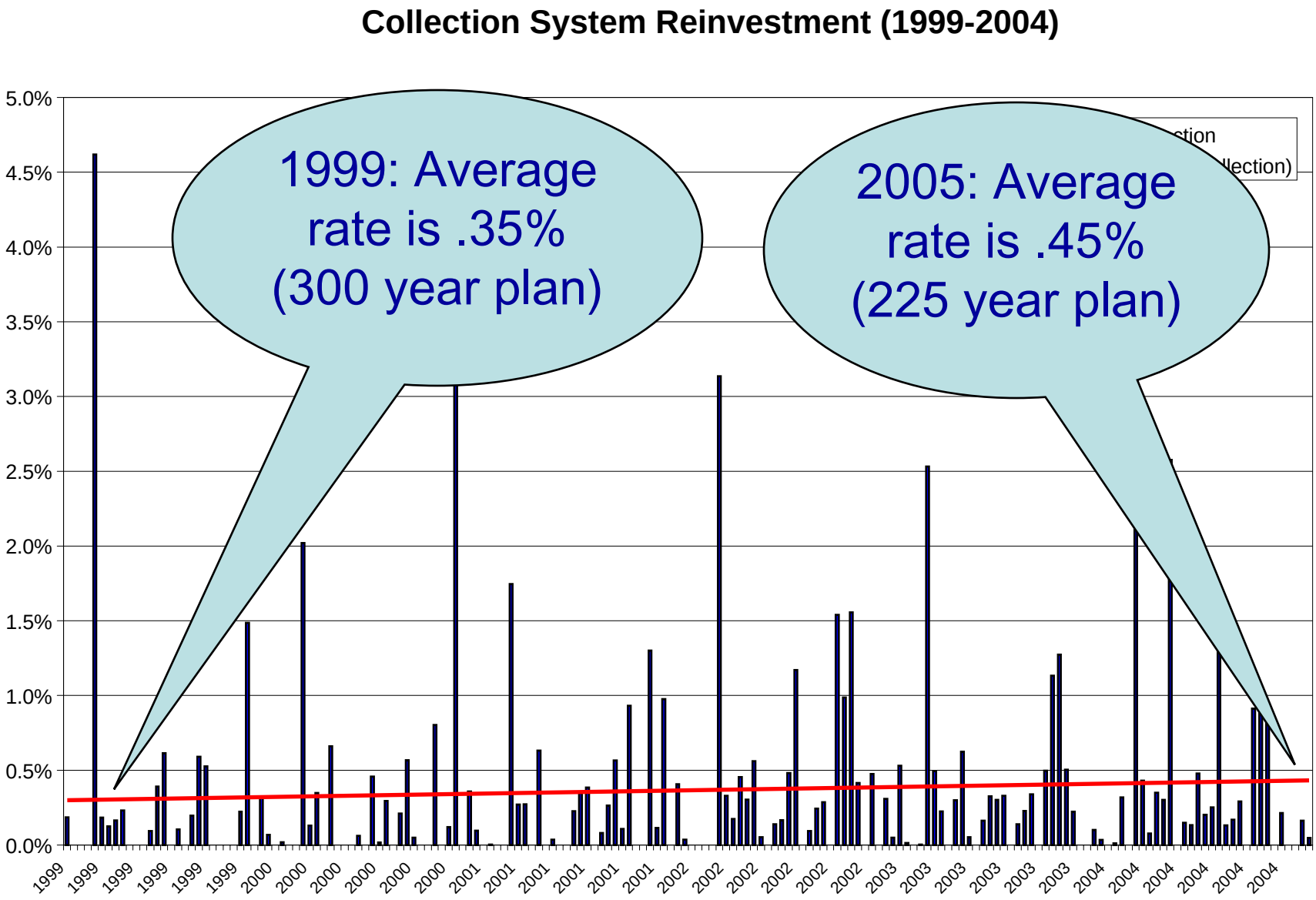
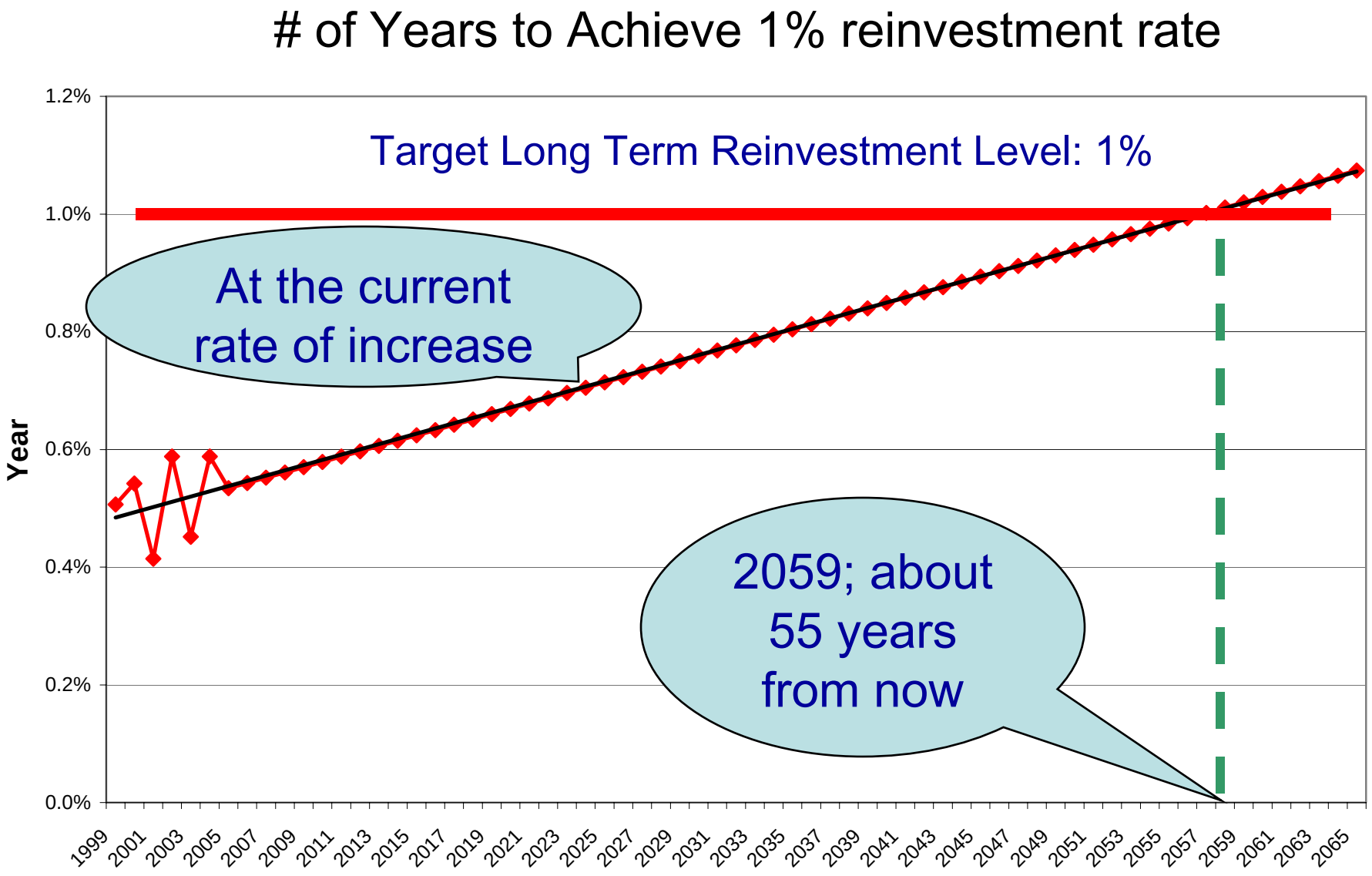
Has the rubber hit the road?



Sort of:


# of Years to Achieve 1% reinvestment rate
Target Long Term Reinvestment Level: 1%
At the current rate of increase
2059; about 55 years from now
Year
1.2%
1.0%
0.8%
0.6%
0.4%
0.2%
0.0%
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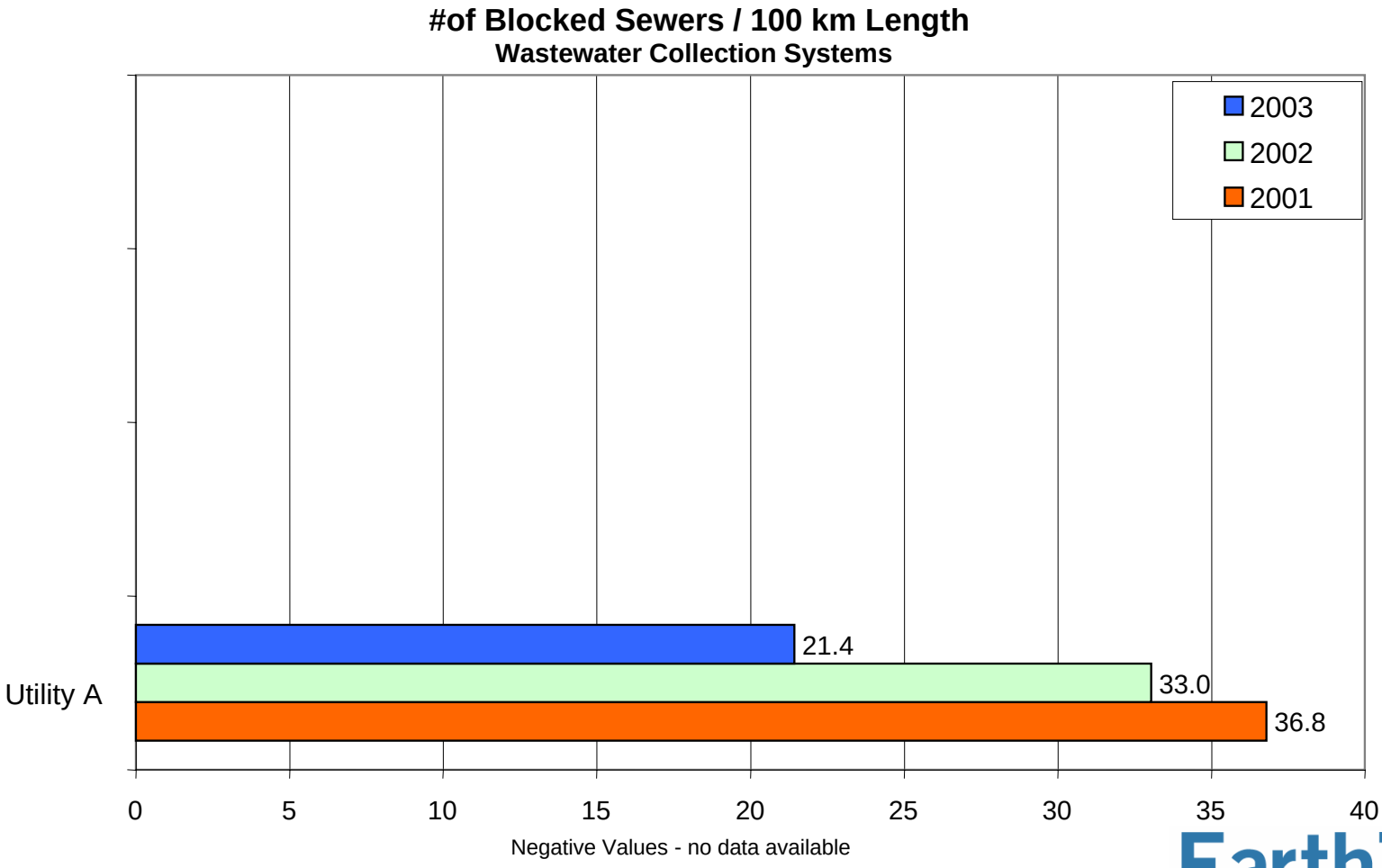
Case Study: 3 Year Improvement Trend in Reducing Blocked Sewers



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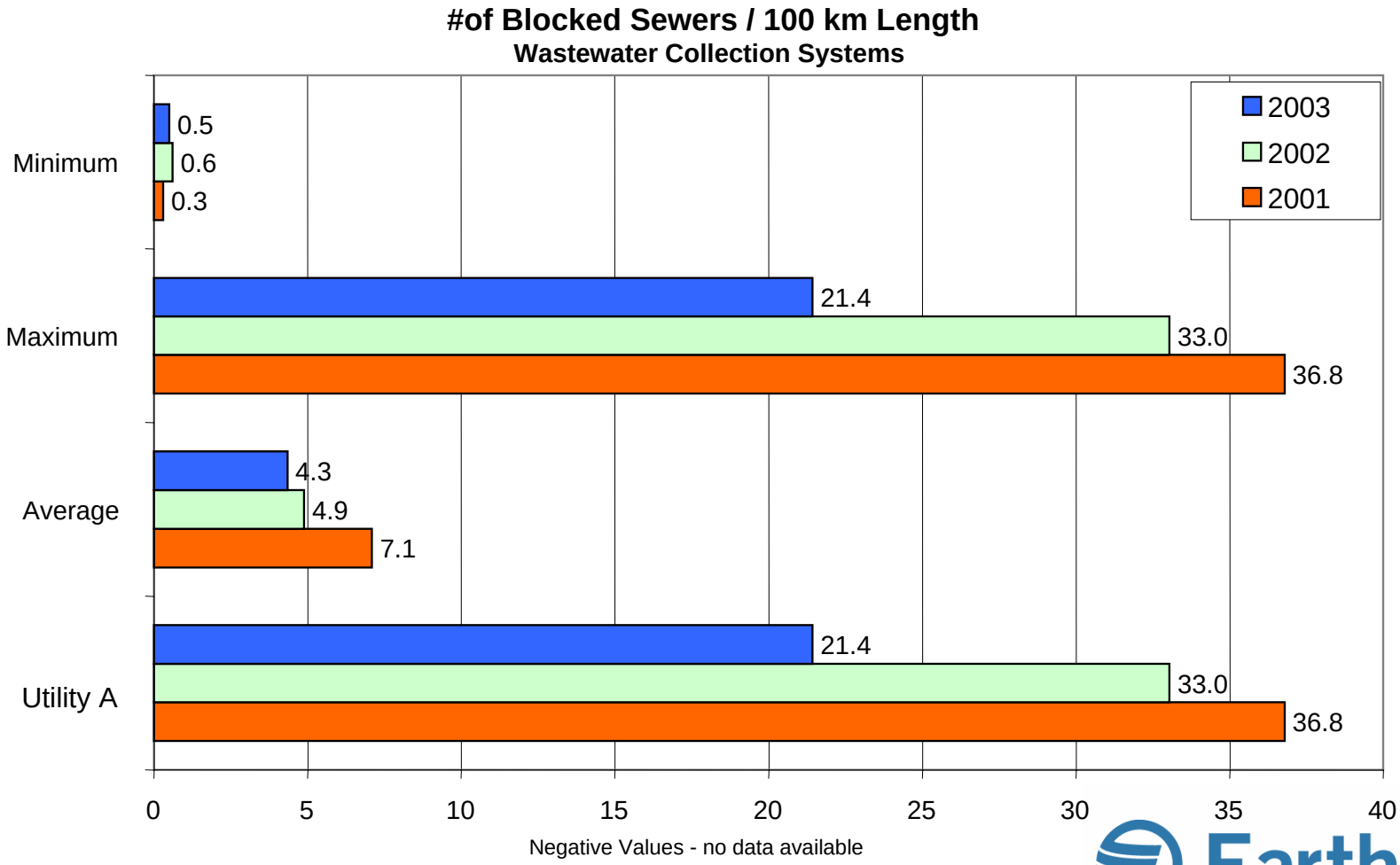
Same Utility in the Context of Benchmarking: Improving, but Progress Still Needed



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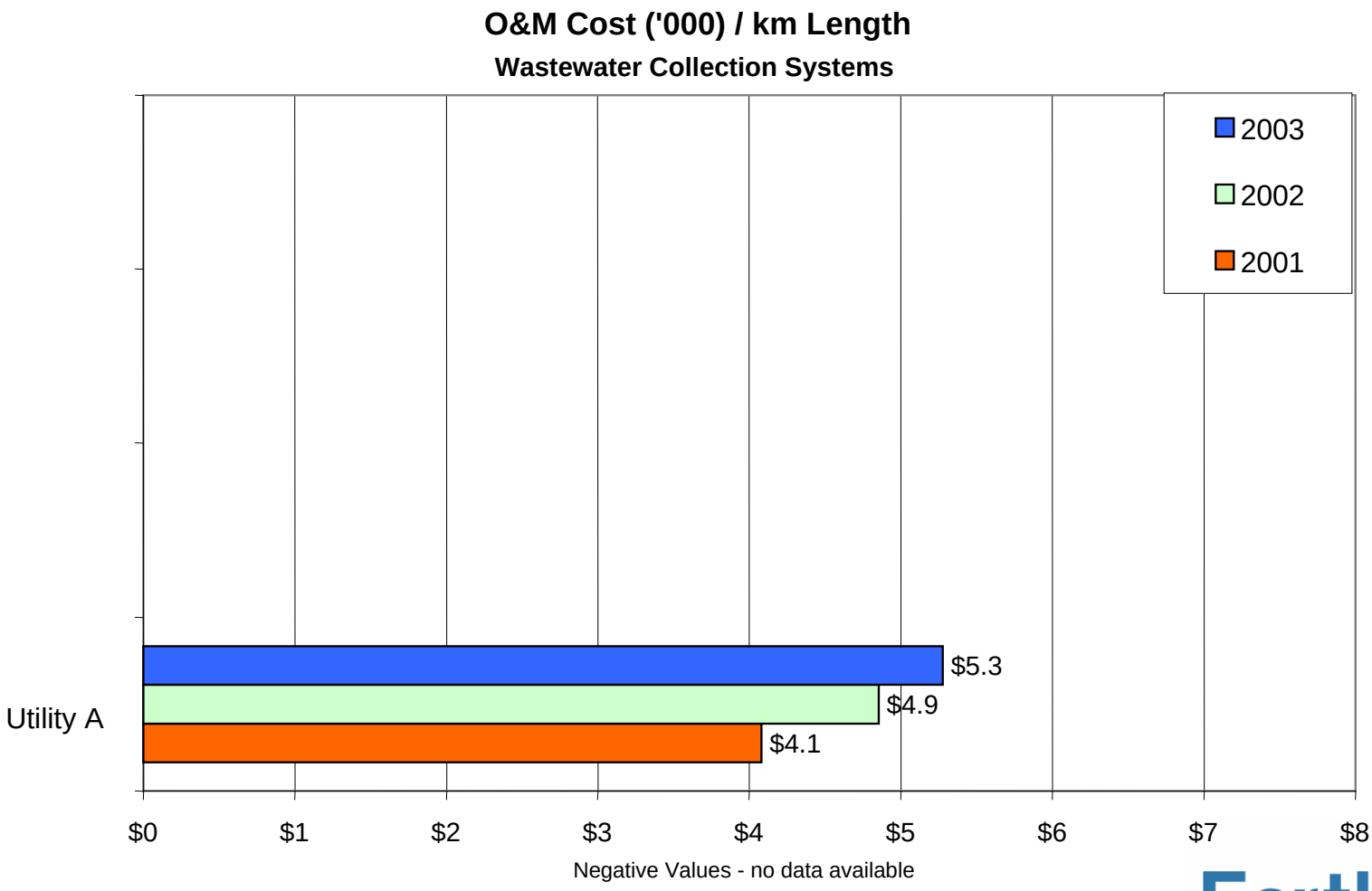
Improvement, But At a Cost:



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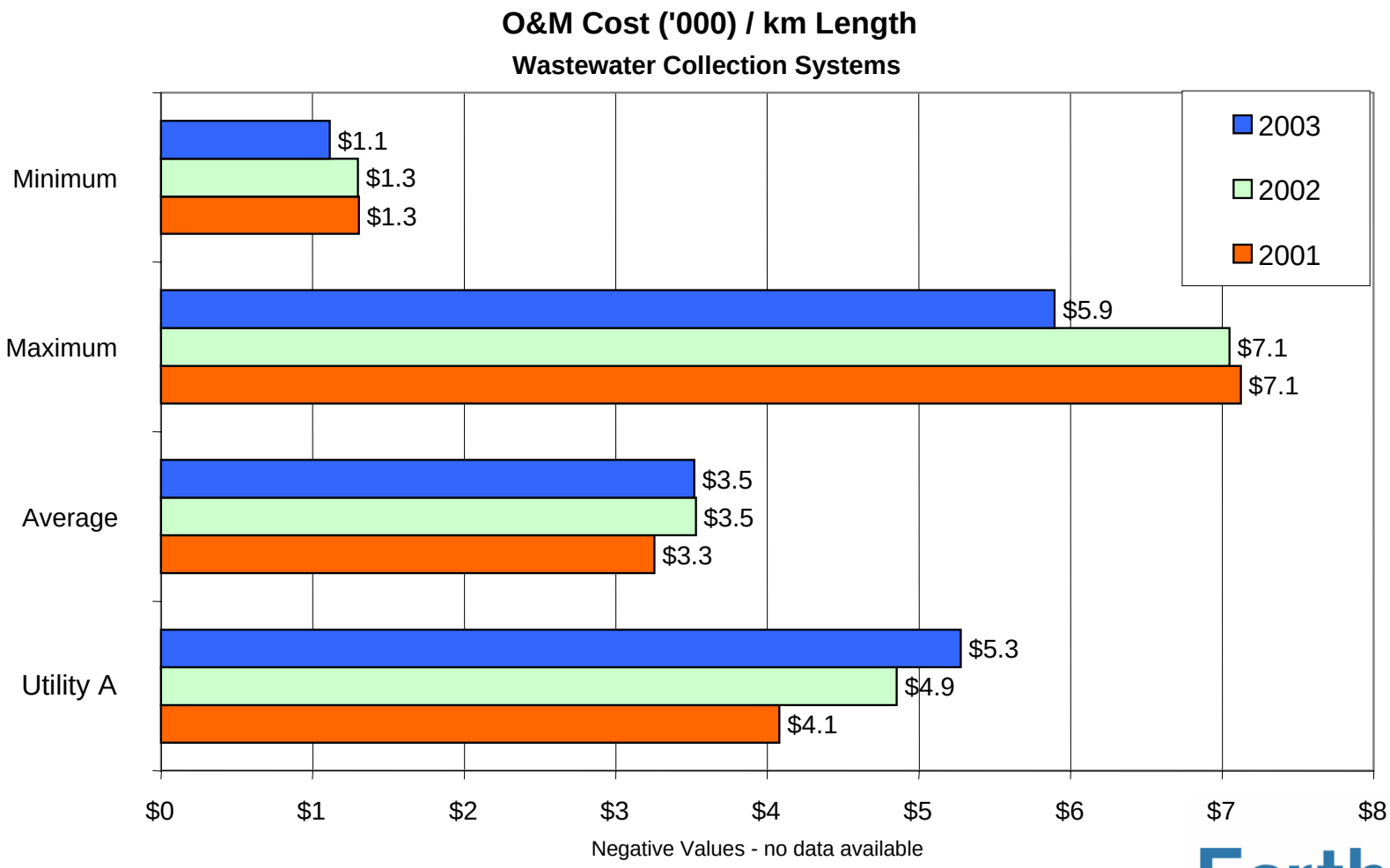
And In The Context of Peers



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The Keys to Success:

- Communication at all stages:
  - Data collection: Site visits
  - Process Improvement: Task forces, conference calls, information exchanges
  - Annual workshop to debrief all results: Hard work!
- Trust and teamwork essential:
  - Participants have gotten to know each other very well

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Bridging the Gap

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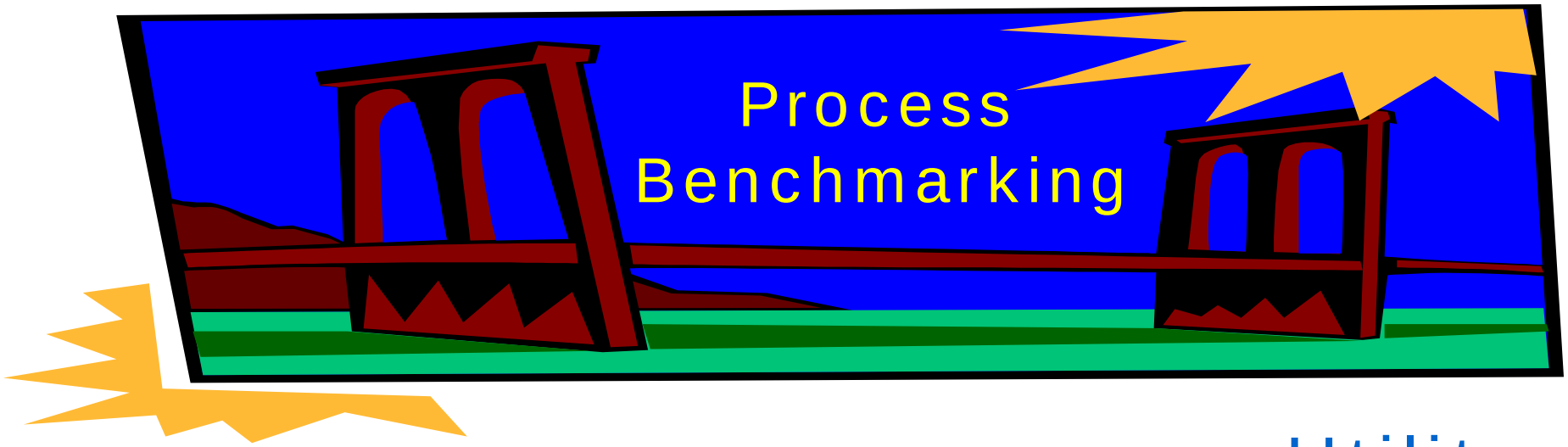

Metrics

Utility Goals

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Continuous Improvement: Process Task Forces

1. Identify process related issues
2. Refine performance measures
3. Identify related “Best Practice “ sources
4. Set a specific “Action Plan”.
5. Network with experts and peers

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Current Process Benchmarking Examples

- Water Loss Management;
- Maintenance Planning (Collection, Distribution, Drainage);
- Sustainable funding (Asset Management);
- Wastewater Treatment Plant Optimization
- Energy Management.

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The Way Forward

- Benchmarking is becoming a part of standard practices (improved data management processes);
- Set realistic targets, with specific work plans. Focus on best opportunities first.
- Need to document tangible savings through improvements (as opposed to hearsay);
- Communication is more important than ever.

MISSION: PERFORMANCE IMPROVEMENT

Collaborate and Leverage with other Agencies

NRC·CNRC
From Discovery to Innovation
De la découverte à l'innovation

National Guide to Sustainable Municipal Infrastructure
Guide national pour des infrastructures municipales durables

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water & forestry
Department:
Water Affairs & Forestry
REPUBLIC OF SOUTH AFRICA

AMERICAN PUBLIC WORKS ASSOCIATION

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Questions?

This presentation is available for downloading at:

www.nationalbenchmarking.ca

Public Report, Performance Measures Index, and detailed glossaries are available at

http://www.nationalbenchmarking.ca/public/about/methodology.htm

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