

What's the Deal with Benchmarking?

CWWA National Water and Wastewater Conference

Leveraging & Communicating Performance Indicators & Benchmarking for Real Improvement

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Agenda

1. Some context from the National Water and Wastewater Benchmarking Initiative: What has changed and what has stayed the same over 20+ years.
2. Introduce a model to support Performance Improvement
3. Short case study to highlight how performance benchmarking should work
4. Some final observations about incorporating performance measurement and benchmarking into your utility

What is Benchmarking?

“Benchmarking is a process of measuring the performance of a company’s products, services, or processes against those of another business considered to be the best in the industry. The point of benchmarking is to identify internal opportunities for improvement. By studying companies with superior performance, breaking down what makes such superior performance possible, and then comparing those processes to how your business operates, you can implement changes that will yield improvements”.*

- Originated in the 1970’s and pioneered by Xerox (but had been used long before that)
- Successfully leveraged, it is a rigorous process that takes sustained effort to achieve benefits
- Worked well in the private sector due to the profit motive, Management Accounting and the wide use of Activity-Based Costing
- Like many management fads, it also has been watered down and misapplied.

*(<https://www.shopify.com/encyclopedia/benchmarking>)

Origins of the National Water and Wastewater Benchmarking Initiative

Water sector issues in the late 1990s:

- Privatization was being introduced in the Canadian water sector as a mechanism to potentially reduce the cost of providing water services
- The specter of infrastructure deterioration and renewal was looming but not understood
- Wastewater effluent and drinking water regulations were on the rise
- Municipal water/wastewater utilities had no accepted industry specific performance metrics in use
- Most accounting systems were designed to support Municipal cash-based budgeting processes only. No level of activity-based costing (ABC).
- Lack of ability to speak as a unified industry about challenges using facts and data

Defined Need for Benchmarking in the Canadian Municipal Water Sector

Needed the ability to discuss utility challenges with facts, numbers, statistic and to bridge the commonalities that exist across Canada.



1) How well are we doing?

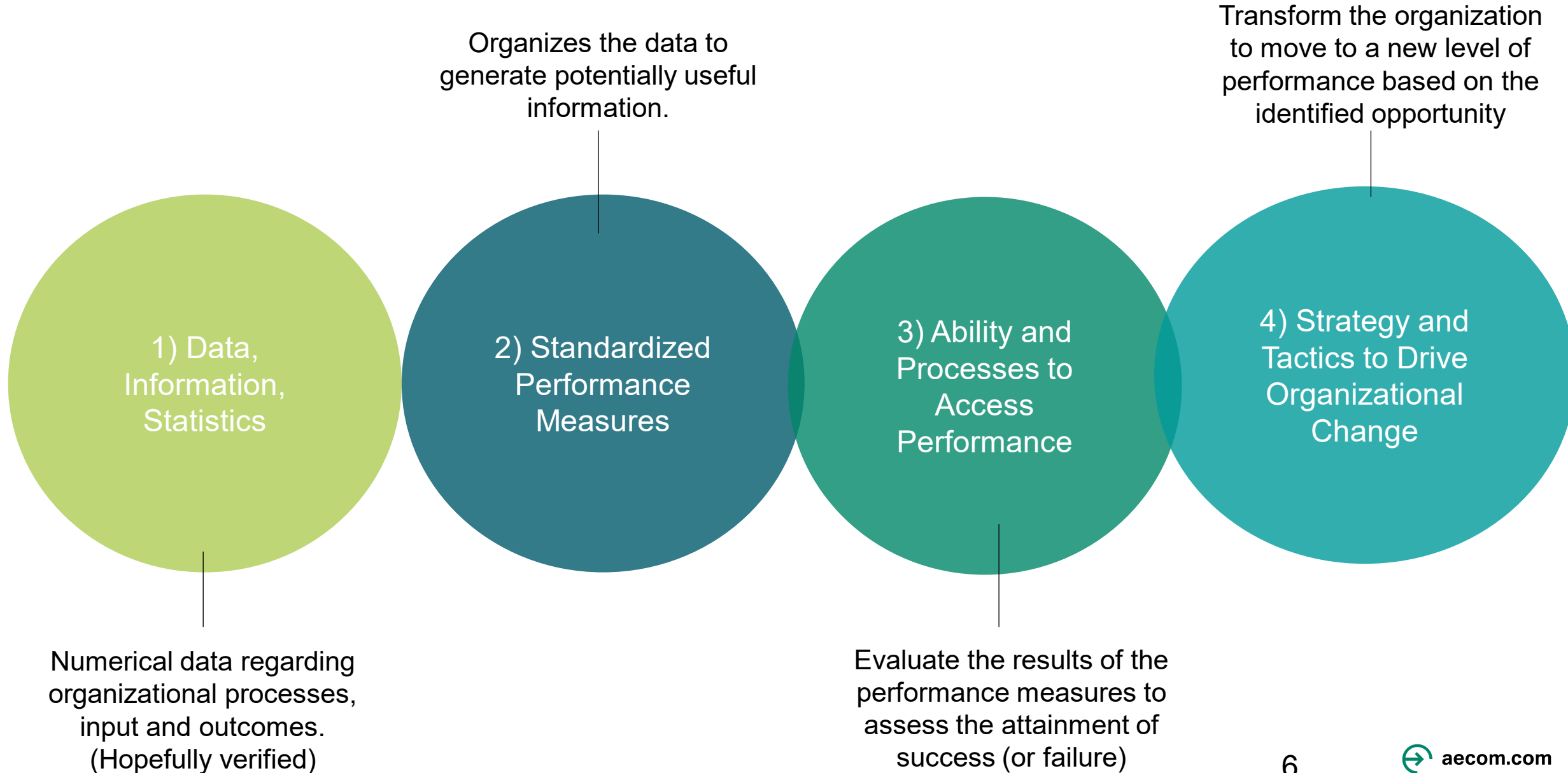
2) How do we compare?

3) Are we providing value for money?

4) How do we improve?

- Designed as a Water Utility Manager's Strategic Management Tool Kit.
- Not designed to be used as a "report card" for the public or political level

Process for Achieving Performance Improvement from Raw Data




Basis for Performance Measures and Performance Management

- **In 1997, Water, Wastewater and Stormwater standardized performance measures that could be used to support benchmarking or even internal process analysis were non-existent.**
 - This meant that any water utility interested in this type of activity had to start from scratch
- It took the NWWBI, the municipal partners and the National Research Council of Canada **about five years to document, test, and publish** our comprehensive library of standardized performance measures that can be used industry wide to support benchmarking and internal performance improvement
- **Why so hard?**

Why? Because Canadian Municipalities had (and still have) non-standard definitions for almost everything except regulatory compliance

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).

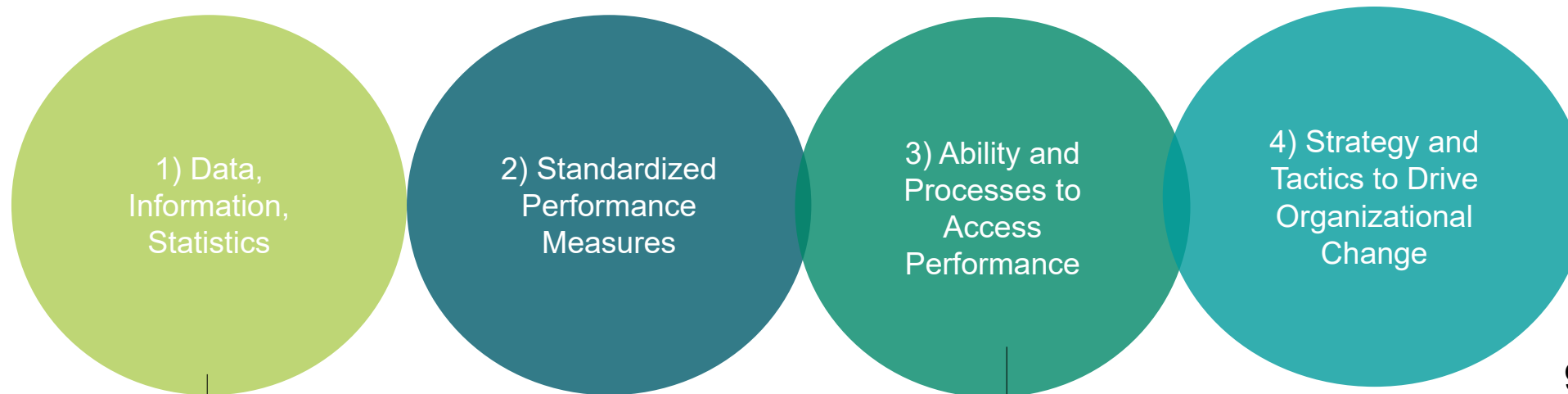


Detailed definitions
are vital to ensure
valid comparisons

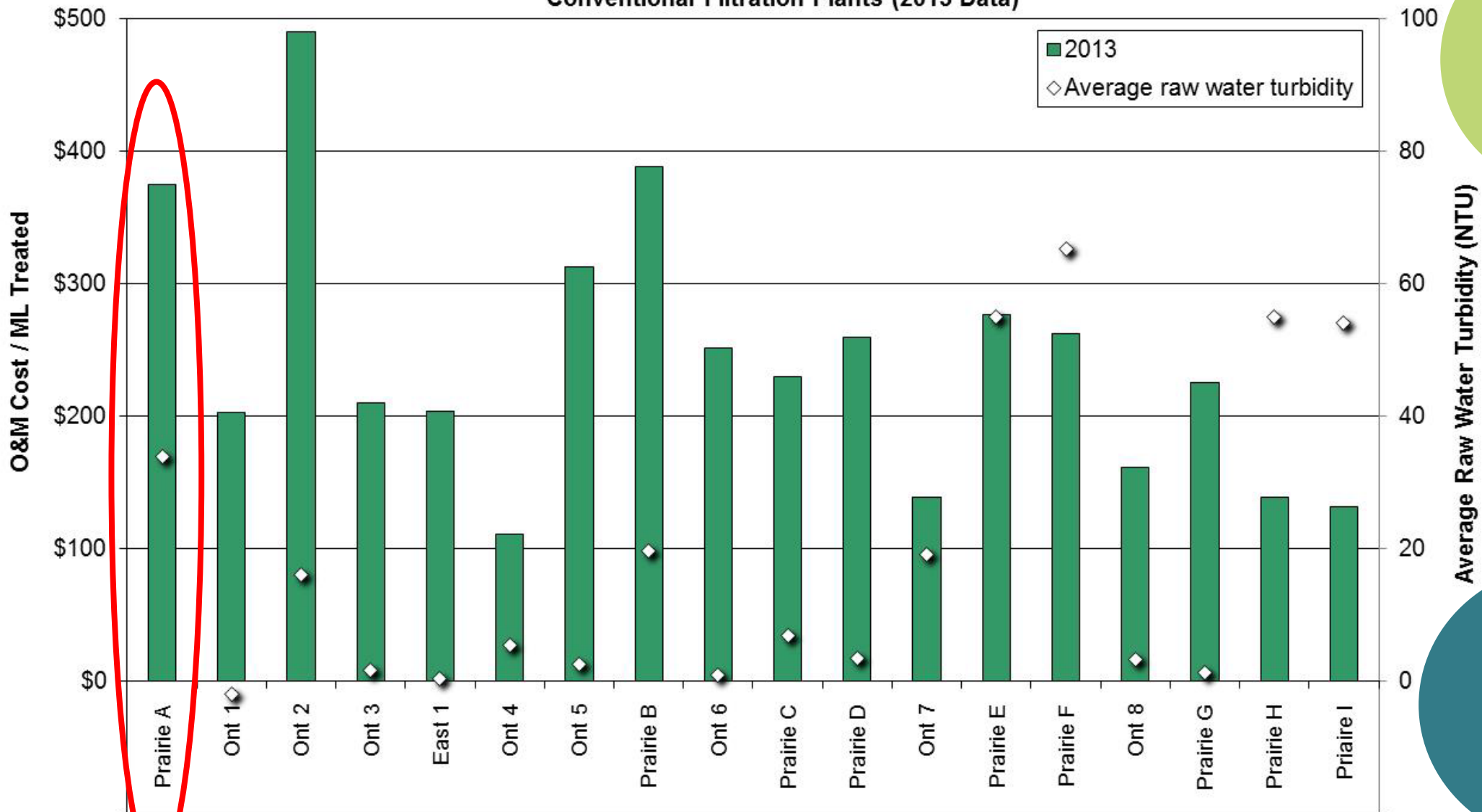
Total length of mains in the distribution system (i.e. excluding length of service connections). For the distribution system length include all connecting pipes between pump stations, rechlorination facilities and storage facilities if these are located within the distribution system. For the transmission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

Case Study Example of Benchmarking In Action

- We will look at a range of conventional water filtration water treatment plants from across Canada
- We will focus on one water treatment plant and investigate the nature of our performance observations
- Benchmarking should direct and focus our continuous improvement efforts (which will take considerable effort)
- Illustrates the linkages of our process models



O&M Cost / ML Treated Conventional Filtration Plants (2013 Data)

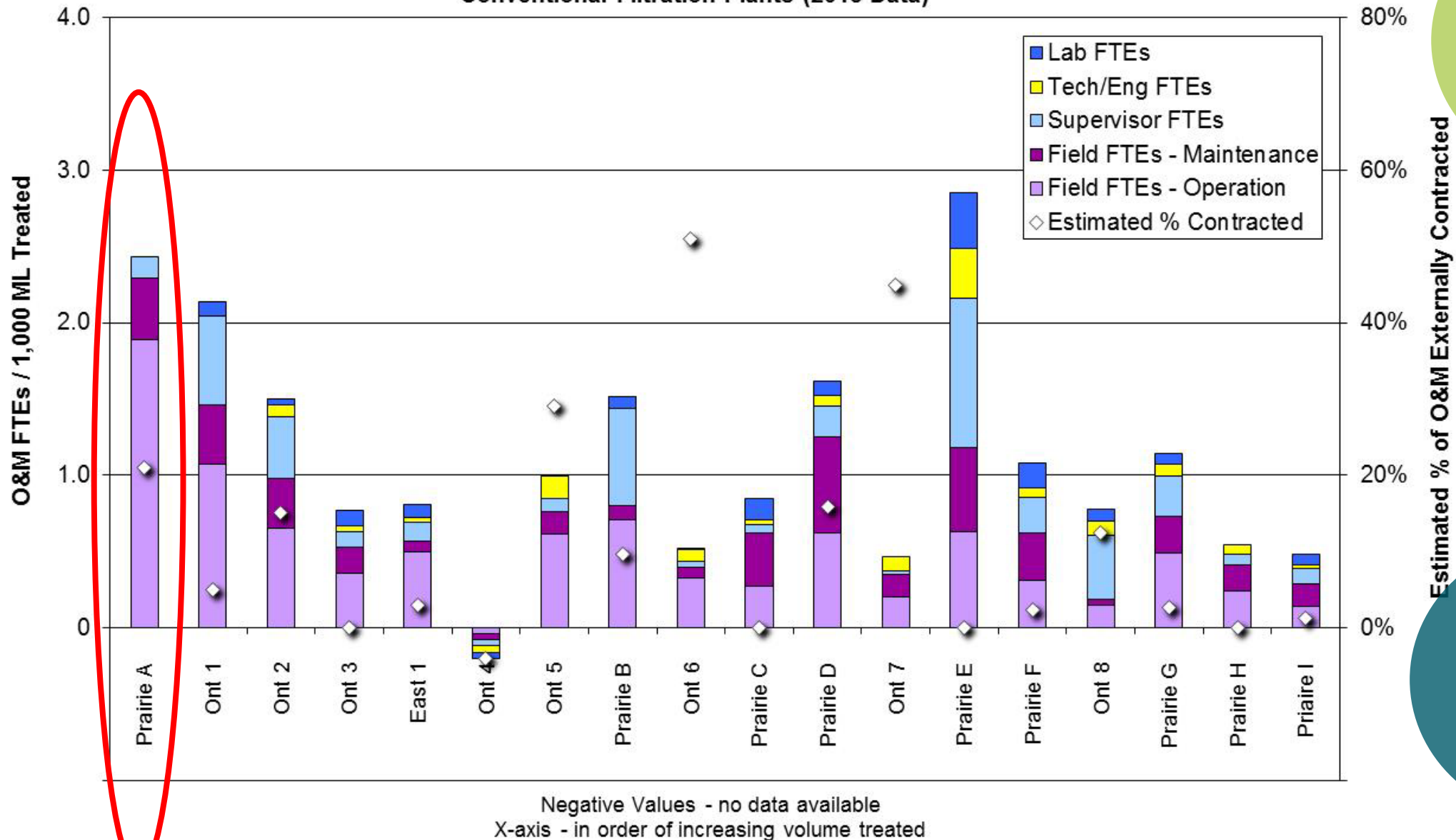


Negative Values - no data available
X-axis - in order of increasing volume treated

1) Data, Information, Statistics

2) Standardized Performance Measures

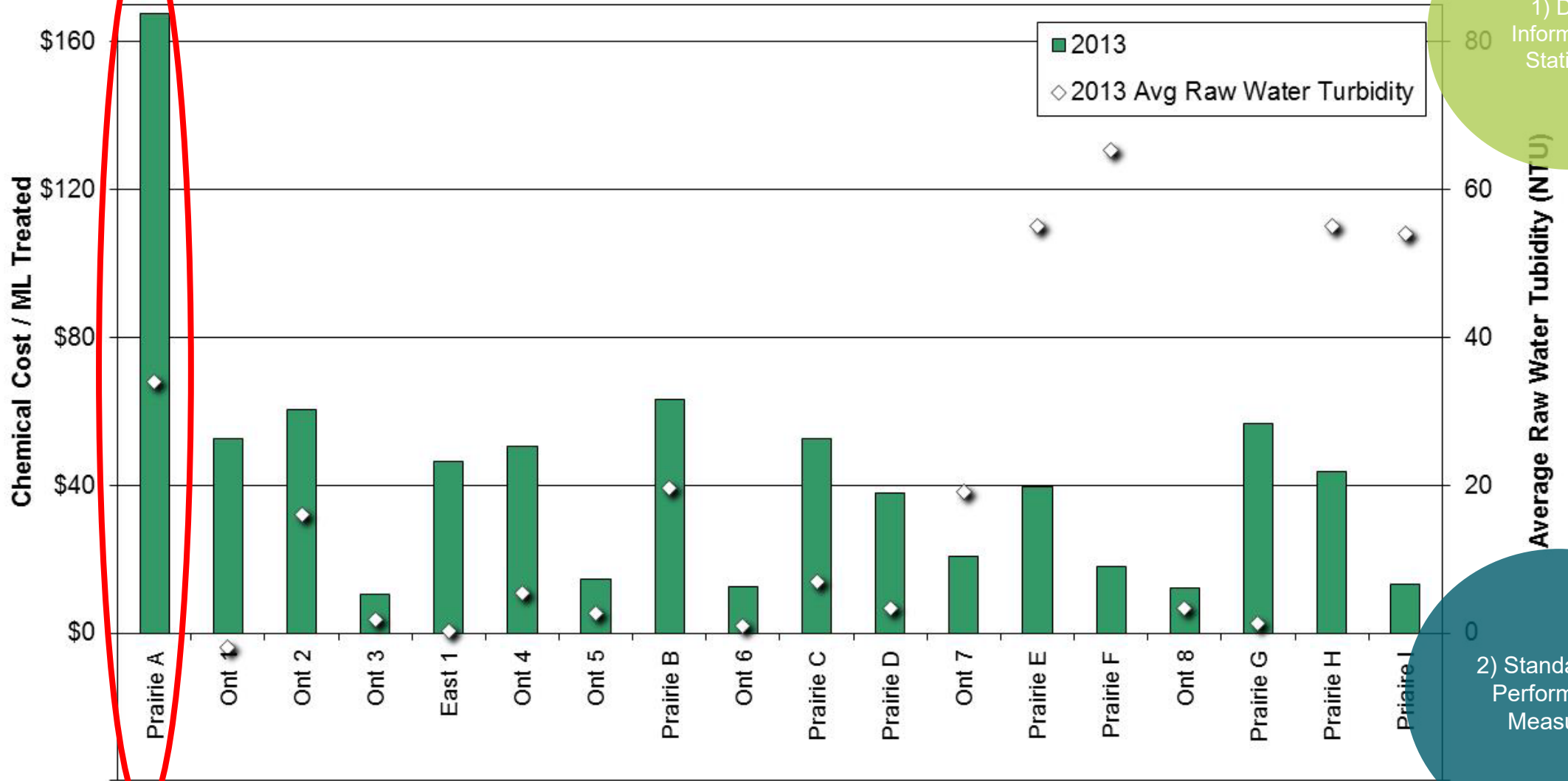
Conventional Filtration Plants (2013 Data)



1) Data, Information, Statistics

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Conventional Filtration Plants (2013 Data)



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X-axis - in order of increasing volume treated

Time to get into details, but we have a trail to follow:

- Local source water is particularly hard
- Use a lot of lime to soften water
- Last lime tender received only one bid
- Chemical cost is an outlier



3) Ability and Processes to Access Performance

Action Plan (This is the most important part)

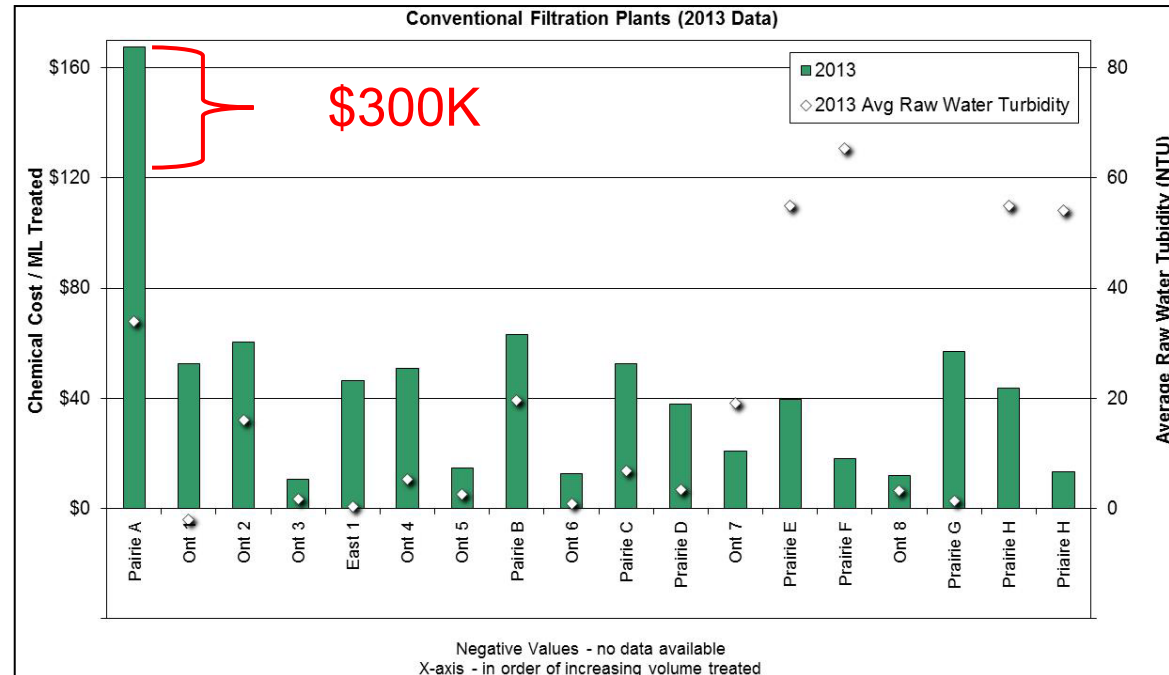
- Poll other utilities regarding lime suppliers and contract pricing
- Investigate opportunities for alternative lime suppliers or better contract terms

4) Strategy and Tactics to Drive Organizational Change

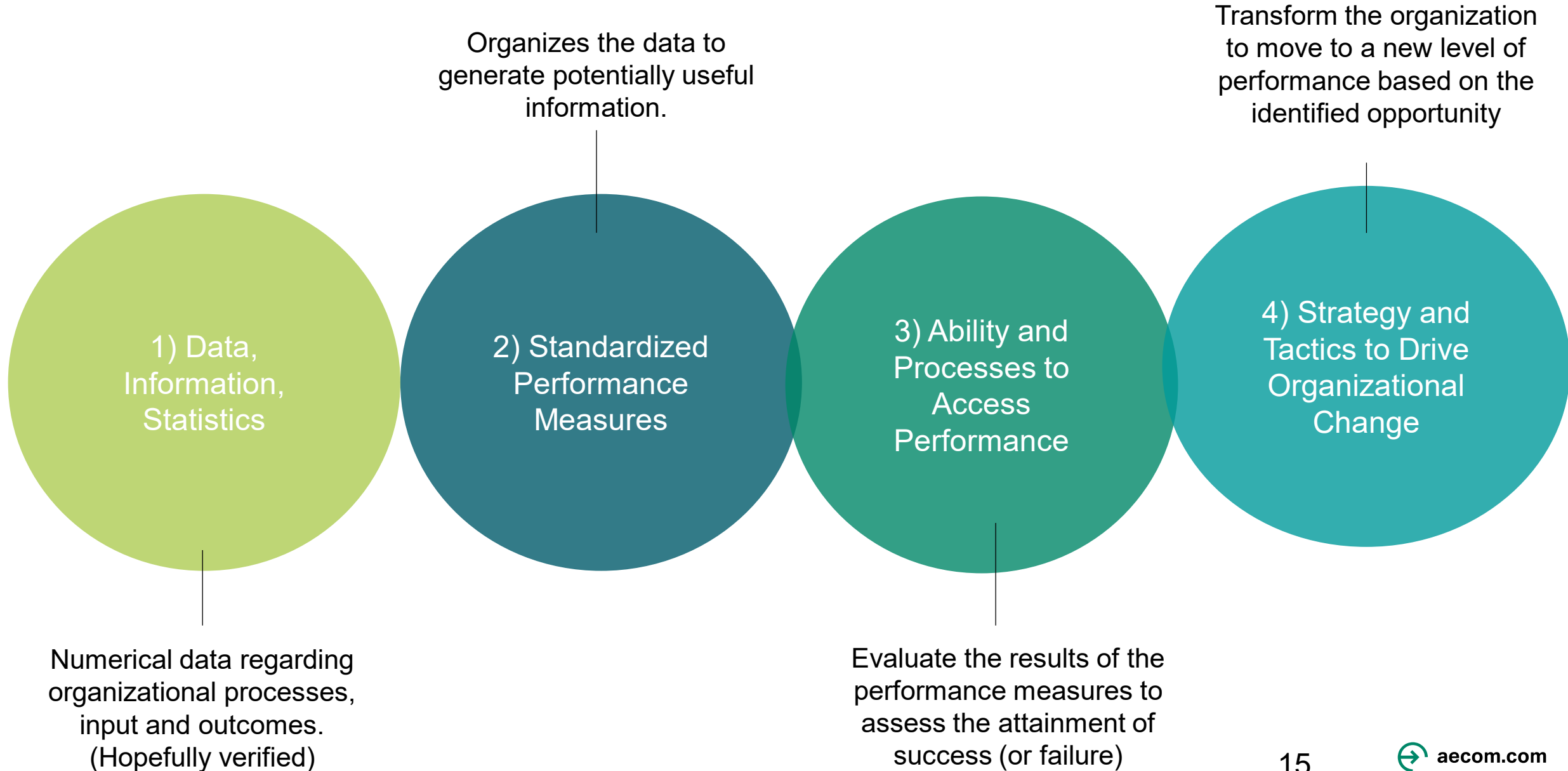
Finally, some math to build the business case:

- Current Chemical Costs: \$167/ML
- WTP treated 7,407 ML that year
- Utility spent \$1.24 Million on water treatment chemicals
- **Even a 25% savings would result in \$300K per year saved**

3) Ability and Processes to Access Performance



Let's Review the Process Model:



2021-22: What's Changed Since 2003 (when we had agreed on KPIs)?



1) Data,
Information,
Statistics

- We are swimming in data. Data quantity has grown exponentially in 20 years. Unfortunately, in many cases this data remains isolated and often unconnected.
- We are still challenged by rouge Excel spreadsheets and paper-based log books because they often have potentially useful information if only we could get our hands on it.
- Enterprise-wide computerized applications are still difficult to configure and implement.

- Its funny, but I recall thinking that by 2010, we would have solved the data quagmire. It remains a challenge.

2021-22: What's Changed Since 2003?




2) Standardized
Performance
Measures

- The good news? We basically nailed the individual performance measures (and definitions).
- Some KPIs have been added over time
- But more have been culled. Not surprisingly, we went a bit overboard in the early days.

- Have since been endorsed and/or adopted by Canadian Standards Association, IWA, and “Americanized” by AWWA

2021-22: What's Changed Since 2003?



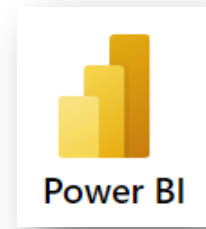
3) Ability and Processes to Access Performance

- New Business Intelligence tools are becoming wider in use and have immense potential to make sense out of “data”.
- Microsoft Power BI now in full use as part of the NWWBI
- BI tools have dramatically reduced the cost of generating useful information from the database of NWWBI performance outcomes

- But (and this is a big but), the raw data needs to be of quality. Garbage in = Garbage out totally applies.

- We have only scratched the surface regarding the potential of Business Intelligence tools to link useful data both within NWWBI and utility internal data sources.

Instantly Customizable Power BI Dashboard: Transform NWWBI Performance Assessment



Organization: select all, Muni A, Muni AA, Muni AB, Muni AC, Muni AD, Muni AE, Muni AF, Muni AK, Muni AM, Muni AN, Muni AQ, Muni AR, Muni AS, Muni AT, Muni AU, Muni AV, Muni AW, Muni AY, Muni B, Muni C, Muni D, Muni E, Muni F, Muni G, Muni I, Muni K, Muni L, Muni M, Muni N, Muni O, Muni P, Muni Q, Muni R, Muni T, Muni U

Region: All (Org. Value = Prairies)

Province: All (Org. Value = AB)

Filtration Category: All (Org. Value = filtered)

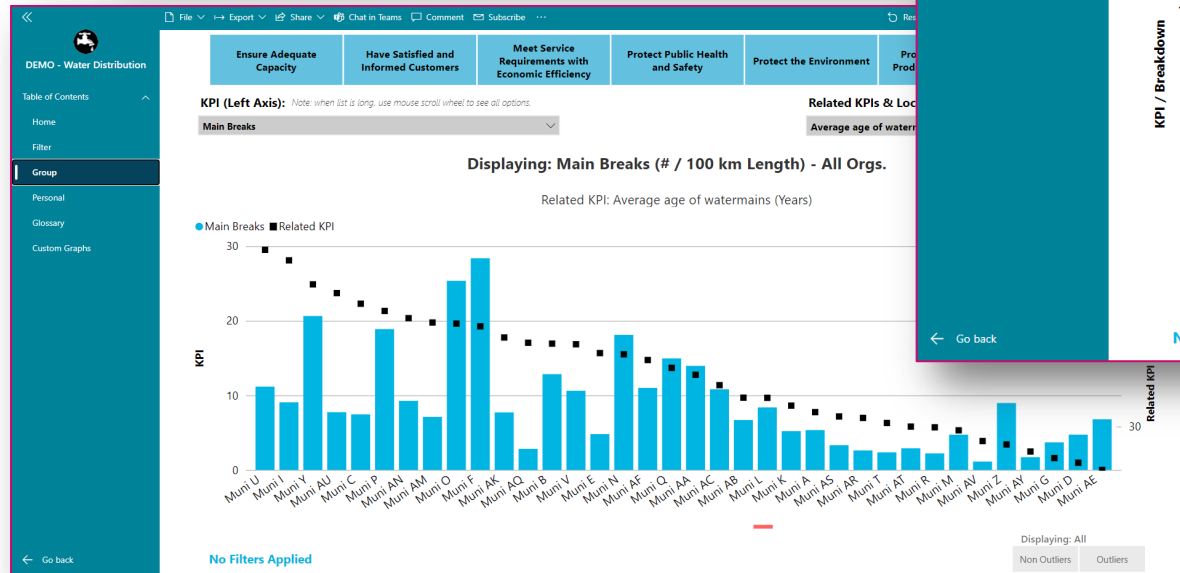
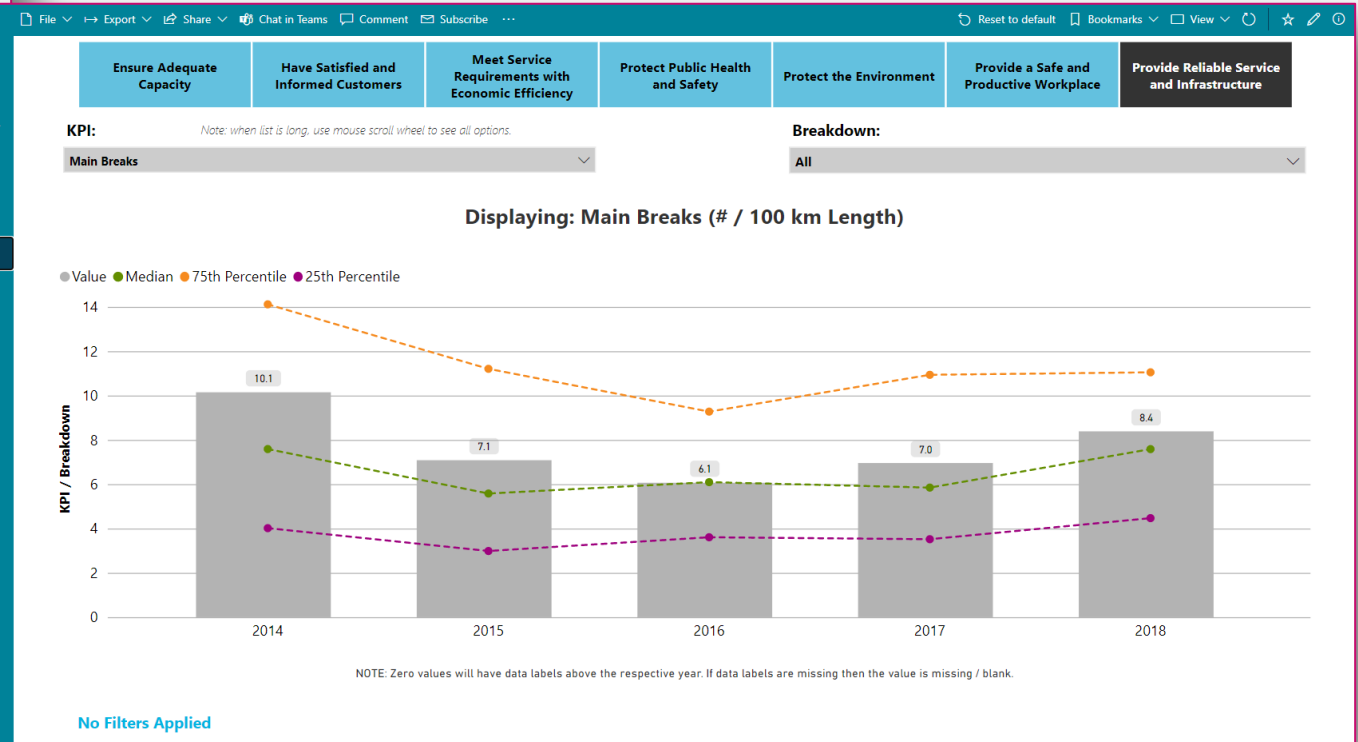
% Metered: 1% to 100% (Org. Value = 100%)

Average Pipe Age: 24 to 54 (Org. Value = 34)


No Filters Applied

DEMO - Water Distribution

- Table of Contents
- Home
- Filter
- Group
- Personal
- Glossary
- Custom Graphs



1997- 2022: It is all pointless if we miss the last step



4) Strategy and
Tactics to Drive
Organizational
Change

- This where we make changes to our work practices, our organizational structure and even our job descriptions in order complete the improvement cycle (take the saving off the table)
- “Low hanging fruit” is gone now. Gains require work.
- Real improvement opportunities almost always affect people's jobs and habits, and people resist change
- Change Management and job transition planning are vital disciplines to successfully complete this
- If you don't complete this final step, previous efforts are wasted

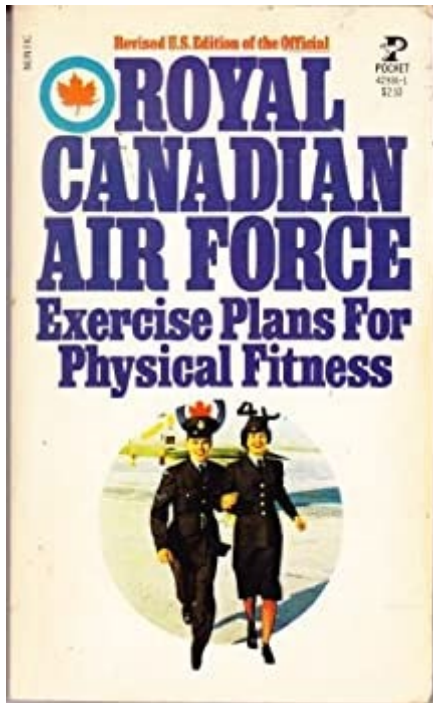
Examples: Good and Bad



4) Strategy and
Tactics to Drive
Organizational
Change

- Budget Forecasting (taking infrastructure renewal into account)
- Workplace Safety
- Real improvement opportunities almost always affect people's jobs and habits, and people resist change
- Change Management and job transition planning are vital disciplines to successfully complete this
- If you don't complete this final step, previous efforts are wasted

Organizational Change/Getting Fit: It's Hard; It's Always Been Hard



1962



1986



2020

Conclusions/Observation

- Its true: you can't improve what you don't measure. You already know this
- If you believe this, then you must include performance measurement in your strategic and tactical planning processes
- Its not a one-time event and yes, it takes hard work and dedication over time
- If you are not prepared to undergo organizational change, and to challenge the status quo, your potential benefits are limited
- But if you are prepared, programs like the Canadian Infrastructure Benchmarking Initiative can help you share your journey with your Canadian peers.



Thank you.

<https://nationalbenchmarking.com/>

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better world