

Capital Intensity on the Rise

Presented by
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What We'll Cover

- What is Capital Intensity and why Is It important?
- Comparative Capital Intensities in 2005
- Wastewater Growth in Capital Intensity in the Past 3 Years
- Drilling Deeper
- Why is This Happening?
- Some Solutions
- Closing Comments

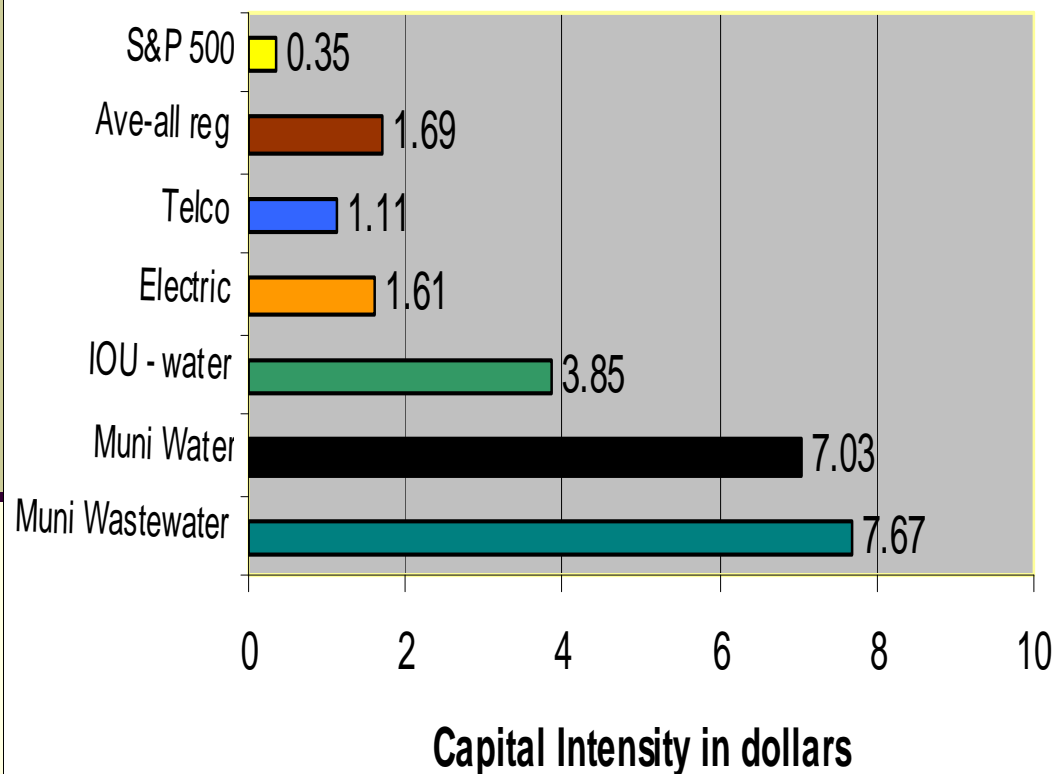
Capital Intensity

Capital intensity is the ratio of net asset value to operating revenues. Simply put it tells us – *How many dollars do we need in the ground to earn \$1 of revenues?*

Capital intensity is a good, but not perfect, measure of capital efficiency. It will vary from sector to sector and is affected by regulations, extent of vertical integration and other factors.

Wastewater is the Most Capital Intense Sector

2005 Comparative Capital Intensity



Sample sizes:

S&P – 498

Electric – 25

Gas – 28

Combined electric

And gas – 40

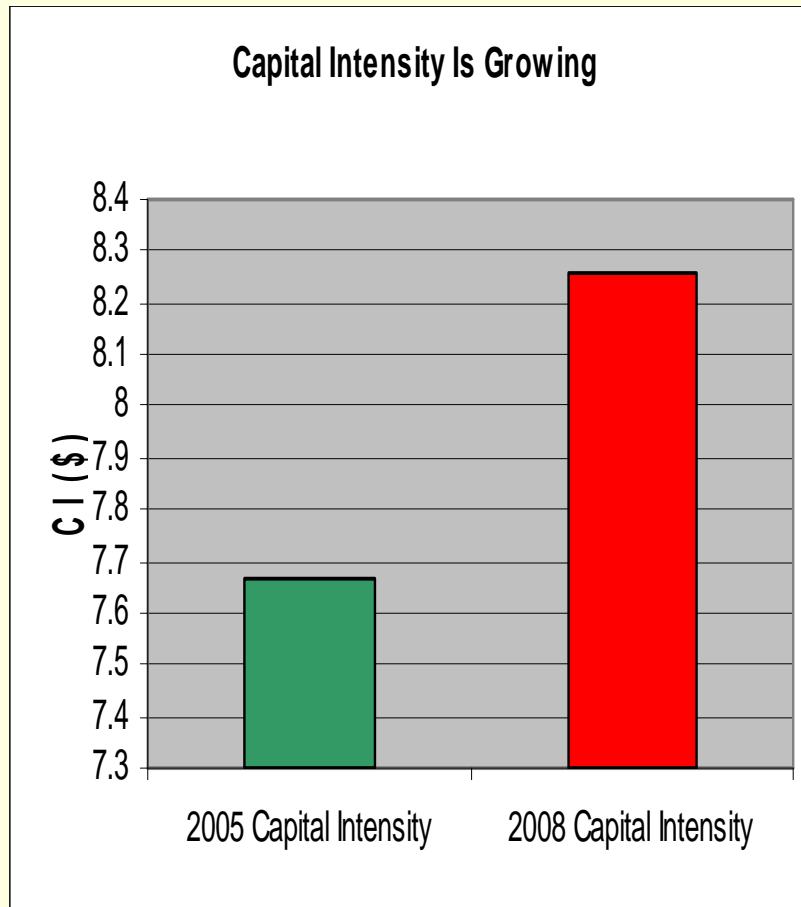
IOU water- all NAWC

Muni water – 265/180

Muni wastewater - 98

Difference between IOU and muni water interesting but IOUs have higher per capita rates and are less vertically integrated

Capital Intensity Trends



Three year growth in wastewater capital Intensity is 8% - a big move for what should be a slow moving ratio. Sample sizes are different – 98 in 2005 and 71 in 2008 so these are not same Agency values.

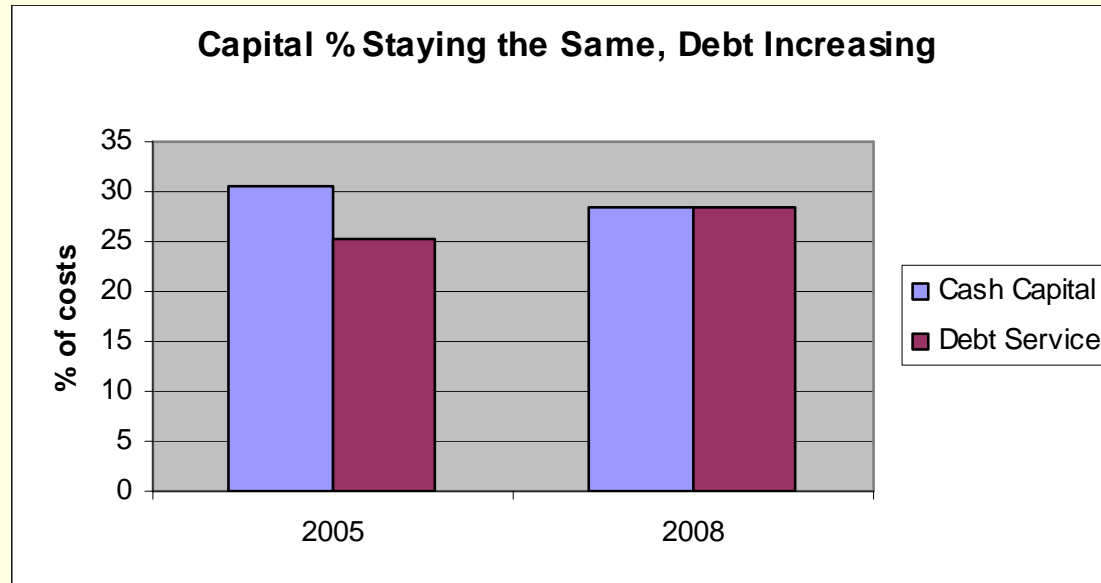
From 2004 to 2006, muni water Capital Intensity increased 3.8% (same agencies)

The driving forces for these increases are similar. Water Research Foundation Study – Improving Water Utility Capital Efficiency identified the following factors:

- Supply-demand factors
- Risk aversion by bidders and sureties
- Rising raw materials costs
- Shortage of skilled workers
- Petroleum and power costs
- Regulations

From 2005-07 rise in material costs ate up all of the spending increase. Although spending was increasing close to 20% we weren't putting more plant in the ground.

Higher Capital Intensity is Increasing the Reliance on Debt



In the past 3 years capital cost increases have outpaced O&M cost increases. NACWA agencies have moved from replace/rehab to growth/Regulation as CIP drivers. Although capital spending as % of costs is staying the same, debt is increasingly being used to moderate rate increases (12% higher in 2008 compared to 2005). In the 2002 and 2005 surveys debt increased at twice the rate of Inflation. In 2008 survey increase was 2.7 times the rate of inflation. Total long term debt has increased 27%. Median per capita debt has increased 18%. Compared to EPA 20 year needs, NACWA respondents have lower CIPs for CSO and more for treatment plants.

Some Implications for the Future

- Economic downturn will provide a temporary respite – reduced growth demands, bid premiums reduced or maybe down to zero.
- Stimulus programs can put us back where we were before – domestic supply-demand issues and foreign competition for raw materials driving prices up
- Financial and insurance problems will make life difficult. Tougher to sell bonds, sureties driving prices up.
- Wastewater will need to demonstrate capital efficiency, green construction and shorten project implementation periods

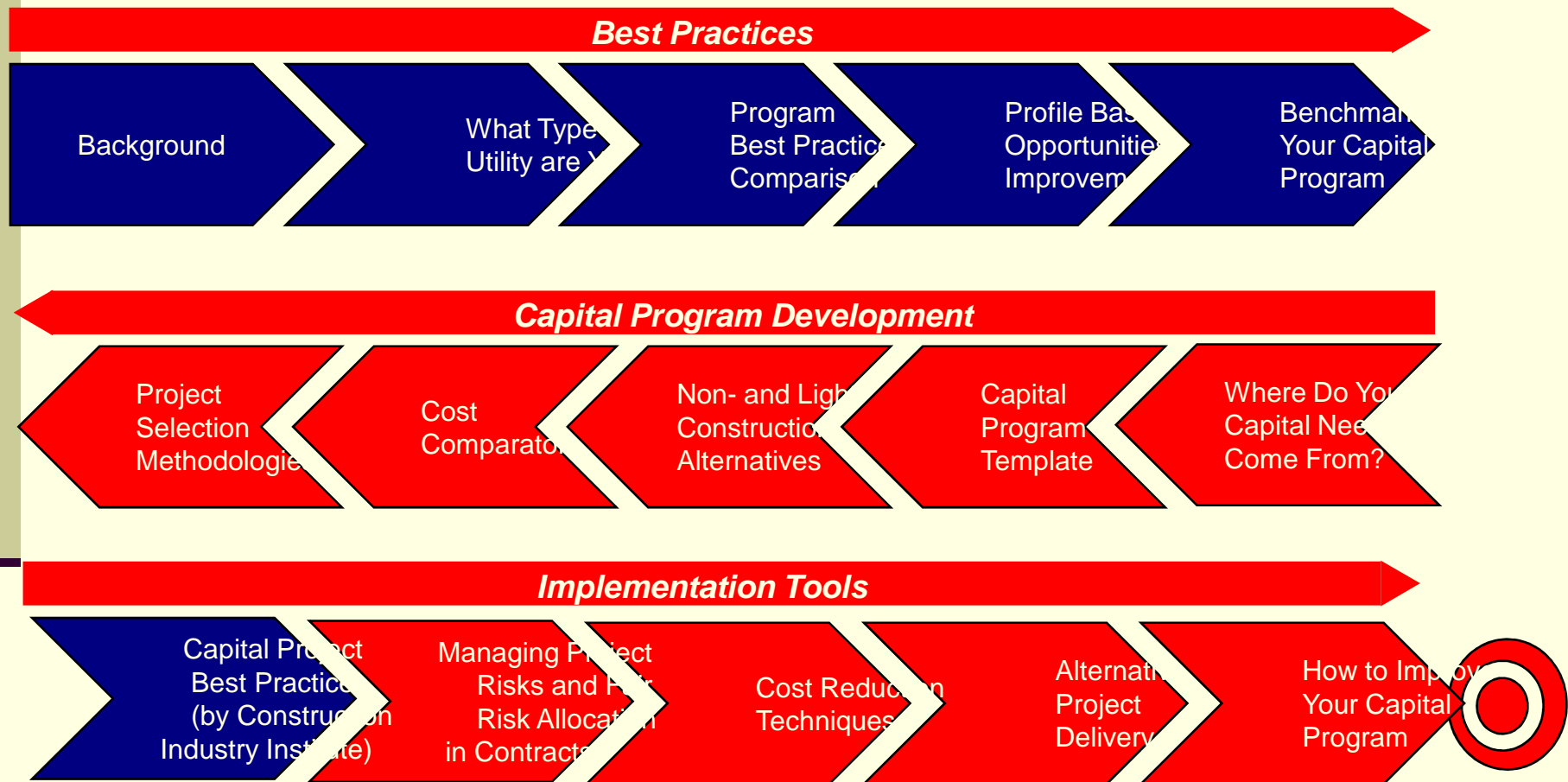
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Water Research Foundation Project 3119 – Improving Water Utility Capital Efficiency

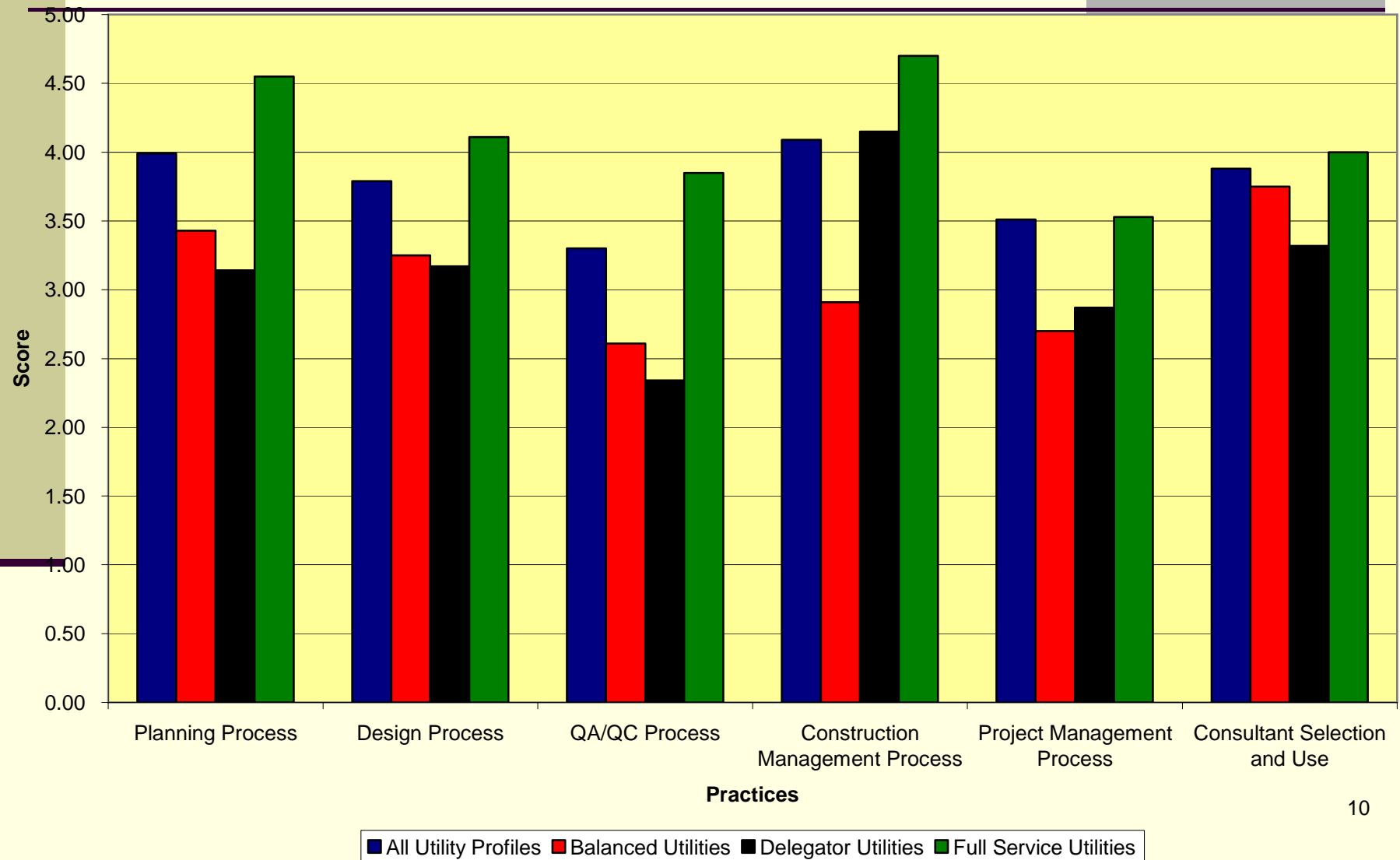
Due to be published in late spring. Contents include:

- Analysis of the Capital problem from 3 viewpoints
- Capital program best practices
- Non and light construction alternatives
- Capital efficiency survey
- Capital program benchmarks and metrics
- Project selection and prioritization
- Alternative project delivery
- Project risk reduction techniques
- Project Readiness Index
- Project completion reviews
- Conducting your own Capital Efficiency program
- Succession planning issues
- Other efficiency techniques (OCIP, financing techniques)
- Case studies
- Using the Capital Efficiency toolkit

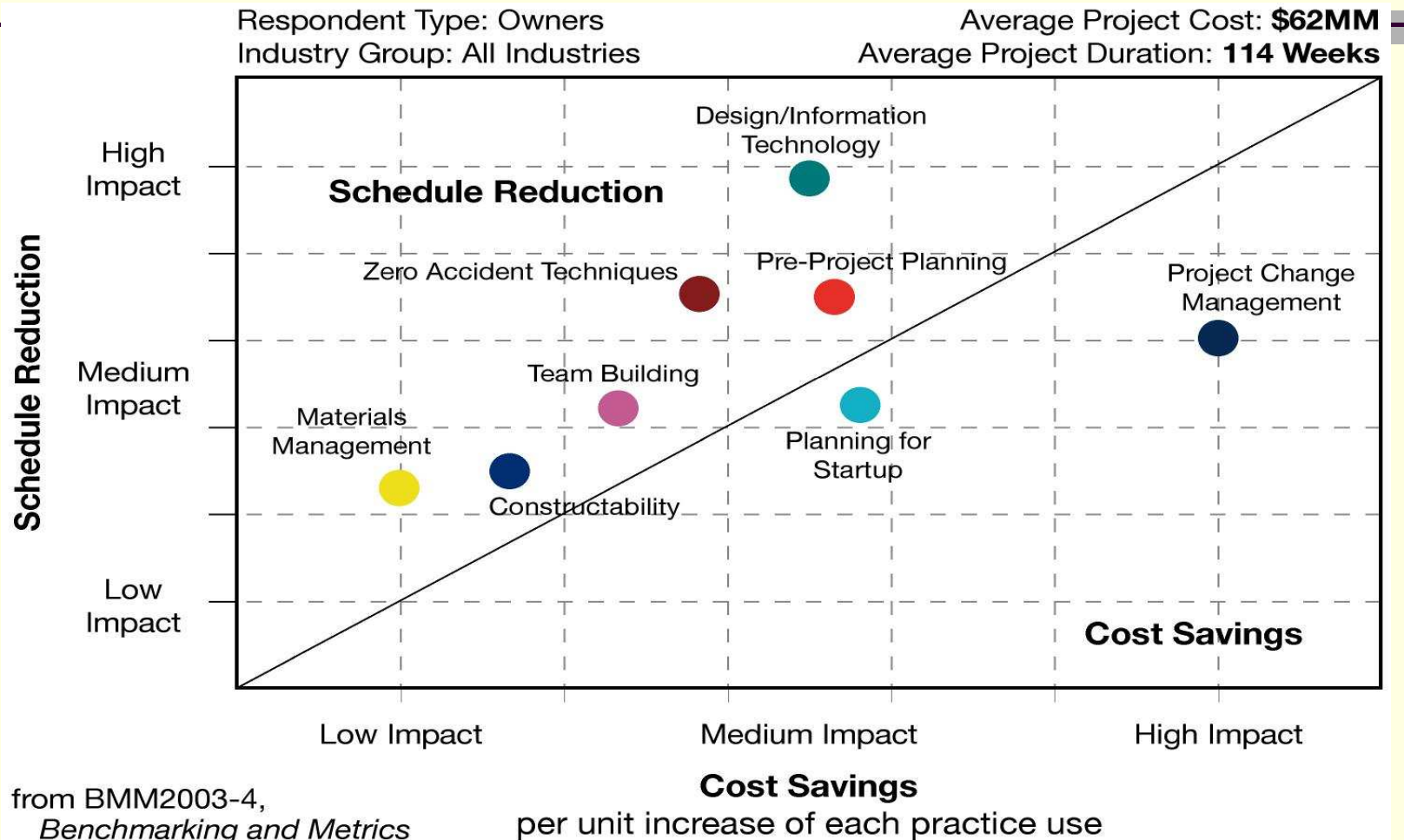
Project 3119 – Improving Capital Efficiency - CD



Capital Program Best Practice Audit



CII Project Best Practices



from BMM2003-4,
*Benchmarking and Metrics
Value of Best Practices Report*

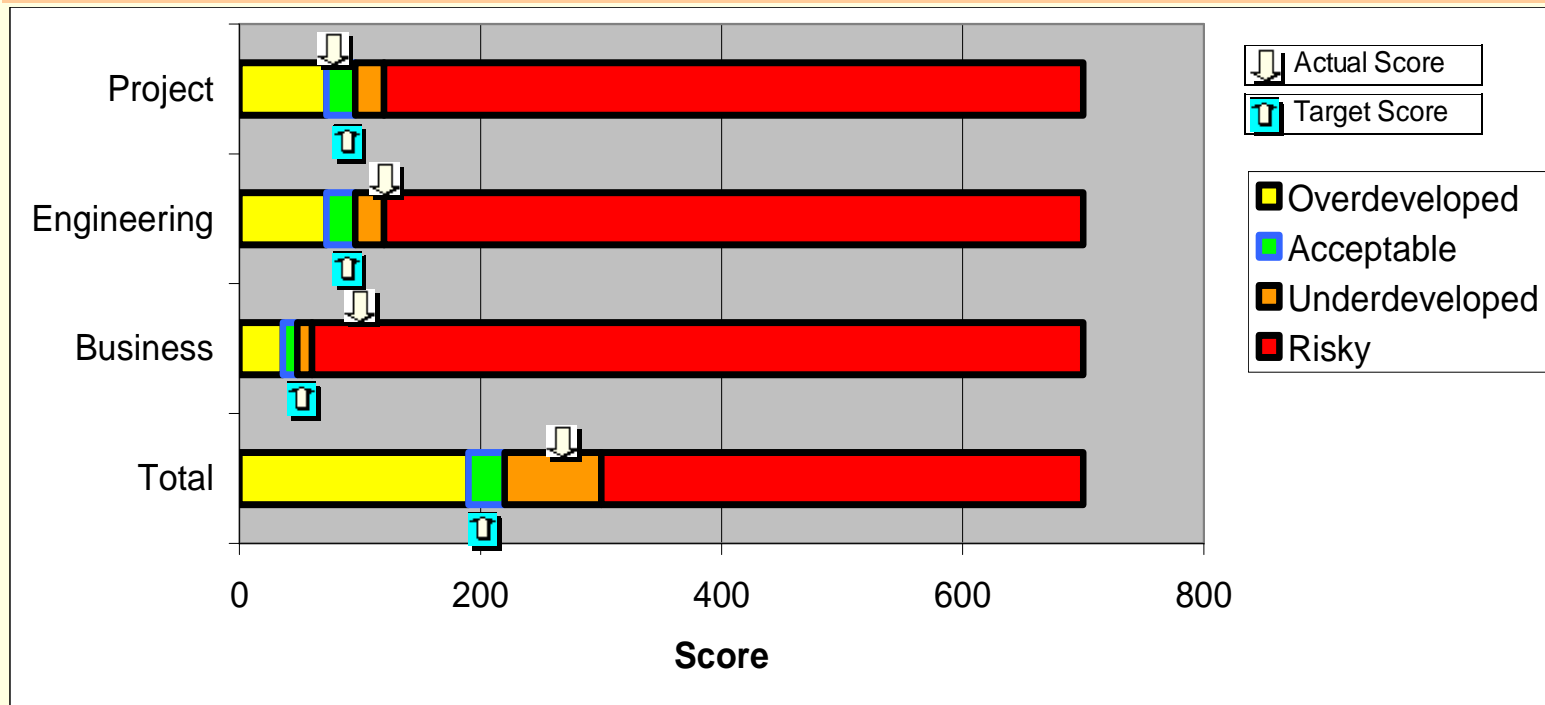
Thank you...Questions?

There will be a webcast describing the Capital Efficiency CD February 12, 2009 at 3 PM EST Free to Water Research Foundation subscribers. A limited number of guests can be accommodated. If you are interested send me an e-mail.

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Project Definition & Gate Readiness Rating				
Track	Score		Comment	Target
Total	269		Underdeveloped	200
Business	90		Risky	40
Engineering	112		Underdeveloped	80
Project	67		Overdeveloped	80

Key
Overdeveloped
Acceptable
Underdeveloped
Risky



[Go to List of Elements](#)

Project Track - PRI Evaluation

Selection	Element		Score	Evaluation Comments
5	PRI Process	Answer Questionnaire	38 1	
5	Framing	Answer Questionnaire	8	
5	Project Objectives	Answer Questionnaire	1	
5	Project Roadmap Use	Answer Questionnaire	1	
5	Owner Involvement, Approval and Acceptance Requirements	Answer Questionnaire	2	
5	Approval by Appropriate Statutory Authorities for Project Execution	Answer Questionnaire	84 1	
5	Project Team Composition	Answer Questionnaire	1	
5	Project Manager/Team Leader	Answer Questionnaire	1	
5	Steering Committee Composition	Answer Questionnaire	09 1	
5	Steering Committee Function	Answer Questionnaire	17 1	
5	Project Sponsor	Answer Questionnaire	1	
6	Geographic Location	Answer Questionnaire	1	

Project Readiness Index I

Engineering Track - PRI Evaluation

Element		Score	Evaluation Comments
Engineering Execution Plan	Answer Questionnaire	4	
Control System Design Base	Answer Questionnaire	4	
Electrical Equipment Specs & Datasheets	Answer Questionnaire	3	
CADD System Requirements & Utilization	Answer Questionnaire	1	
Dismantling & Demolition Requirements	Answer Questionnaire	4	
Engineering Track Scope of Work / Responsibilities	<p>This is a complete narrative description of the engineering track responsibilities on the project, generally discipline orientated. This should be developed through the use of a Work Breakdown Structure (WBS)</p>		
Process Simplification			
Material of Construction Selection (MCFD)			
Design for Constructability	Answer Questionnaire	4	
Surveys and Soil Tests	Answer Questionnaire	3	

Project Readiness Index II

Engineering Track - PRI Evaluation	
Element	Engineering Track Scope of Work / Responsibilities
Engineering Execution Plan	0 <input type="radio"/> Not Applicable
Control System Design Base	5 <input type="radio"/> Still to be developed
Electrical Equipment Specs & Datasheets	4 <input type="radio"/> WBS available with indicative discipline work scope. Objective is to ensure all engineering track members have clarity on their responsibilities with respect to the overall project scope of facilities.
CADD System Requirements & Utilization	3 <input type="radio"/> Preliminary Scope of Facilities and discipline RASCI available. RASCI is a matrix identifying individuals who are responsible, approve, supervise and consult.
Dismantling & Demolition Requirements	2 <input checked="" type="radio"/> Scope of Facilities and discipline RASCI available and agreed within the project team.
Engineering Track Scope of Work / Responsibilities	1 <input type="radio"/> Scope of Facilities and discipline RASCI agreed with all stakeholders for each discipline (agreement should include discipline heads)
Process Simplification	Comments: <input type="text"/>
Material of Construction Selection (MCFD)	Score: 3
Design for Constructability	Definition: <input type="text"/>
Surveys and Soil Tests	Lessons Learned: <input type="text"/>
Environmental Assessment	
Utility Services with Supply Conditions	
Submit Answers	

Navigation: Introduction / Overall Analysis

<u>Element</u>	<u>Evaluation Comment</u>
<i>Business</i>	
Strategy and Strategic Fit	
Ownership Structure and Stakeholder Considerations	
Cross Departmental Impact Analyses	
Management Structure and Organization Design	
Resource Analysis and Competitive Advantages	
Regional Analysis and Rate Impacts	
Plant Capacities	
Security	
Regional Demands	
Sustainability	
Source Characteristics/Operating Environment	

	Asset	Average Flow Rate (MGD)	Quantity	Cost
Pumps				
	Influent (Raw Water) Pump Station	50	0	\$0
	Intermediate Pumping	50	0	\$0
	Other Pump Costs (Owner Entered)			
Preliminary Treatment				
	Bar Screen & Grit Removal	50	0	\$0
	Microscreening	50	0	\$0
	Equalization	50	0	\$0
	Primary Clarification	50	0	\$0
	Dissolved Air Flotation	50	0	\$0
	Other Preliminary Treatment Costs (Owner Entered)			
Suspended Growth Reactors				
	Sequencing Batch Reactor	50	0	\$0
	Complete Mix Activated Sludge	50	0	\$0
	Extended Aeration Activated Sludge	50	0	\$0
	Oxidation Ditch	50	0	\$0
	Activated Sludge Package Plant	50	0	\$0
	Contact Stabilization Activated Sludge	50	0	\$0
	Step Aeration Activated Sludge	50	0	\$0
	High Rate Activated Sludge	50	0	\$0
	Pure Oxygen Activated Sludge	50	0	\$0
	Aerated Lagoon	50	0	\$0
	Other Suspended Growth Reactor Costs (Owner Entered)			