



I SO need a new Asset Management Standard!!!

How ISO 55000 can help Utilities improve efficiency, performance and stakeholder confidence



Presented by

CH2MHILL®

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Asset Management at CH2M HILL

- CH2M HILL is an engineering, management and technology consulting firm
- 30,000 employees (including recent additions from Booz Allen & Halcrow)
- Provide asset management services to multiple sectors:

Utilities

- Water / Waste water
- Power Distribution

Cities

- All Municipal Assets

Transportation

- Transit and Rail
- Aviation
- Ports and Maritime
- Highways and Bridges

Private Industry

- Oil and Chemical
- Mining
- Manufacturing



CH2M Hill AM Experience - North America



What is “Asset Management”?

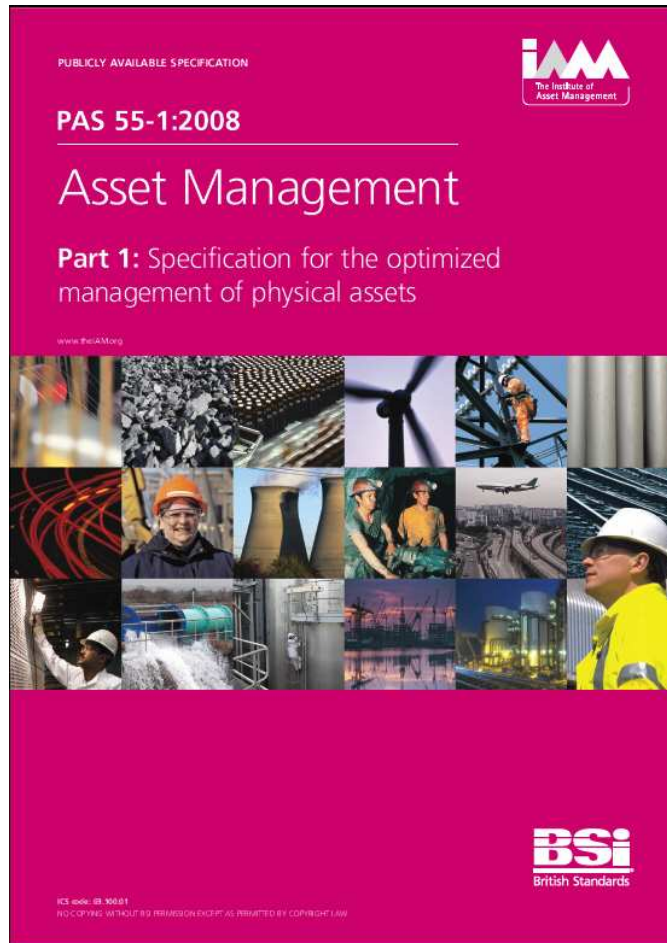
- In many sectors it is assumed that organizations are practicing “Asset Management” but
 - *How well?*
 - *How would we know this?*
 - *What is “good practice”?*
- Expectations of good practice from Customers, Stakeholders & Regulators
- It is **not** just an IT system

Asset Management

Systematic and coordinated activities and practices through which an organization optimally and sustainably manages its assets and asset systems, their associated performance, risks and expenditures over their life cycles for the purpose of achieving its organizational strategic plan.

Source: PAS 55

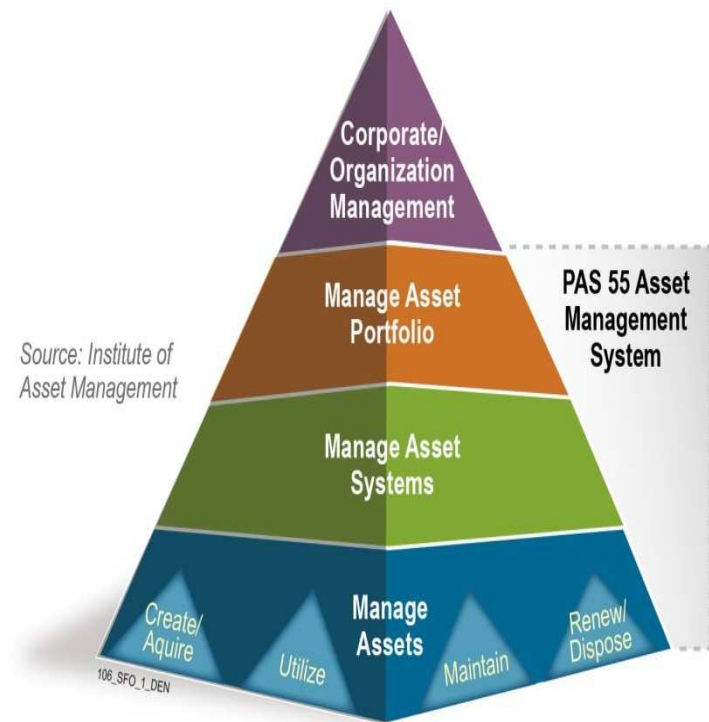
The Evolution of ISO 55000 - PAS 55



- Publicly Available Specification
- Optimized Management of Physical Assets
- Developed in 2004 by UK Institute of Asset Management (IAM) in conjunction with British Standards Institute (BSI)
- Update in 2008 involved:
 - 50 organizations
 - from 15 industry sectors
 - Representing 10 countries
- PAS 55 is the foundation for development of the new ISO

CH2M Hill and PAS 55 & ISO

- Staff involved in development of 2004 and 2008 PAS 55 documents in previous organizations
- Staff involved in project team that developed the PAS 55 assessment methodology (PAM)
- Heavily involved in PAS 55 aligned work across North America over last 5 years
- Now represented on ISO 55000 development committee



Why move on from PAS 55?

- Need to move towards a uniform, interchangeable and commonly understood asset management language
- Pas 55 sometimes perceived as
 - Utility centric
 - Dealing more in engineering terms than organizational benefits
- Development of ISO 55000
 - Has identified common practices and terminologies
 - That can be applied to the broadest range of assets
 - In the broadest range of organizations
 - Across the broadest range of cultures

The Next Step – ISO 55000 Series

- Will comprise 3 documents
- ISO 55000
 - Provides an overview of the subject of asset management and the standard terms and definitions to be used
- ISO 55001
 - Is the requirements specification for an integrated, effective management system for asset management
- ISO 55002
 - Provides guidance for the implementation of such a management system

ISO 55000 Series Development

- ISO Committee PC251
- 26 Countries Participating
- CH2M Hill has been actively involved with the development committee since initiation
- Most recent committee meeting in Calgary, Canada in May 2013
- Expected publication in late 2013 or early 2014
- Information listed here is based upon draft and may be subject to change

ISO 55001 - Key Points

- ISO 55001 defines requirements for a management system for asset management
- Equivalent to the management systems required for Quality Management (ISO 9001) and Environmental Management (ISO 14001)
- Focused on broad suite of interconnected and integrated processes and methodologies
- Covering all stages of asset life cycle
- DOES NOT set out the specifications for an IT system
 - Scope of ISO55001 is much(!) broader than this

Context of ISO 55000 Management System

- Organizational Management
 - *The steering mechanism for the organization as a whole – setting organizational vision and objectives*
- Asset Management
 - *The coordinated activities of the organization to realize value from its assets*
- Management System (AM)
 - *Interacting processes to establish AM policy and objectives and to deliver upon these objectives*
- Asset Portfolio
 - *Assets that are within the scope of the management system (AM)*



ISO 55000 - Fundamental Objectives

- Value
 - Does not focus on the asset itself but on the value that the asset can provide to the organization
- Alignment
 - Asset management decisions (technical, financial and operational) collectively enable the achievement of organizational objectives
- Leadership
 - Leadership and commitment from all managerial levels is essential for successfully establishing, operating and improving asset management within the organization
- Assurance
 - Assurance that assets will fulfill their required purpose via effective governance

7 Key Elements of ISO 55001

No.	Element	Key Topics
1	Context of the organization	External & Internal Context, Stakeholders
2	Leadership	Policy & Objectives Setting Roles & Responsibilities Communication & Feedback
3	Planning	Org. Strategic Plan, Strategic Asset Mgmt Plan Asset Mgmt Plans, Risk Management
4	Support	Resources, Competence, Awareness & Communication Information & Documentation Requirements & Control
5	Operation	Operational Planning and Control Management of Change, Outsourcing
6	Performance evaluation	Monitoring, Measurement, Analysis & Evaluation Internal Audit Management Review
7	Improvement	Non conformity & corrective action, preventive action Continual Improvement

Key Building Blocks – ISO 55001



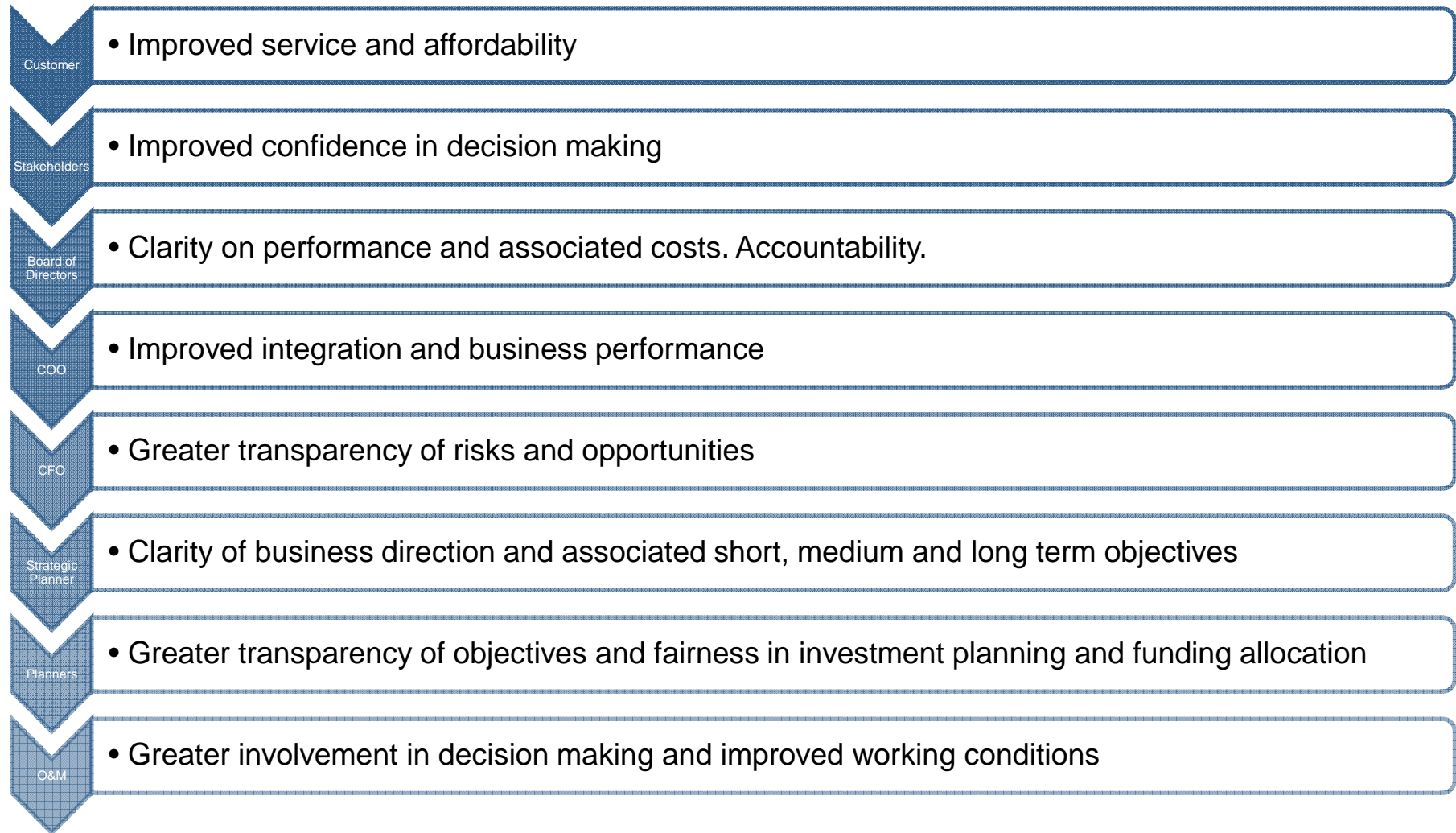
Benefits

- Improved Service Performance
- Robustly Managed Risks (and opportunities)
- Informed asset investment decisions
- Improved Capital and Operational expenditure efficiency
- Demonstrated compliance
- Demonstrated social responsibility
- Improved organizational sustainability
- Enhanced reputation

- **Defendable** good practice

- Increased Regulatory and Stakeholder Confidence

What's in it for me?



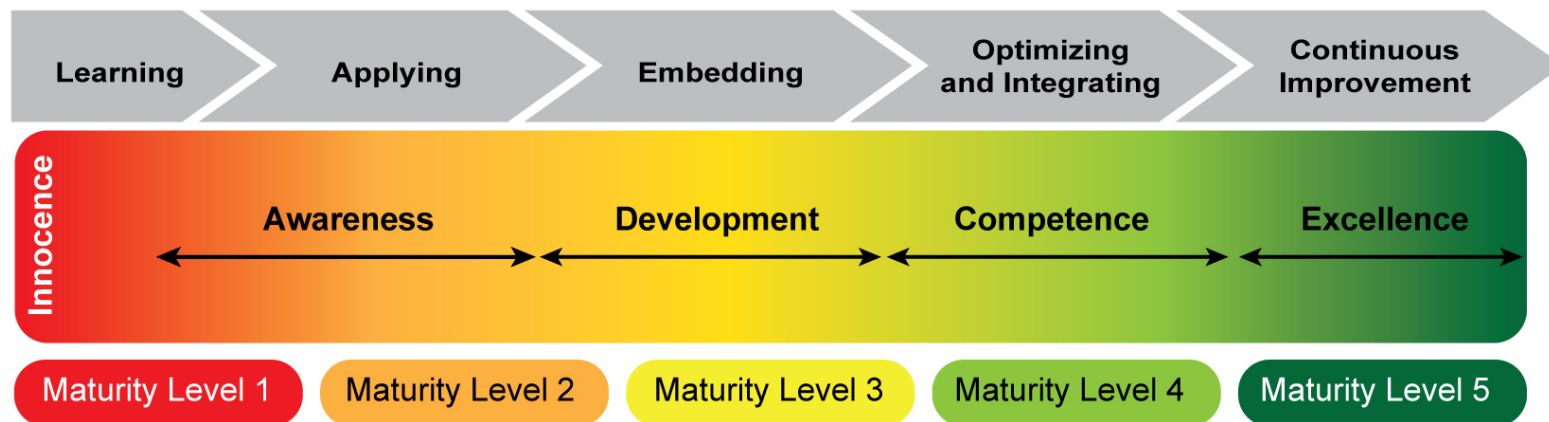
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Alignment & Accreditation

- Many municipalities and Water Utilities have sought to adopt PAS 55 concepts and principles and to seek “alignment” to demonstrate general good practice
- Full accreditation to ISO 55000 will be a possibility (as per 9001 etc)
 - Potentially extensive work required
 - Time consuming audit process
 - Accreditation must be done by “experienced Asset Managers”
- Potential for two stage process
 - i) Implement improvement program to align with key requirements of ISO55001
 - li) Seek accreditation only when maturity has evolved and confident in mgmt system

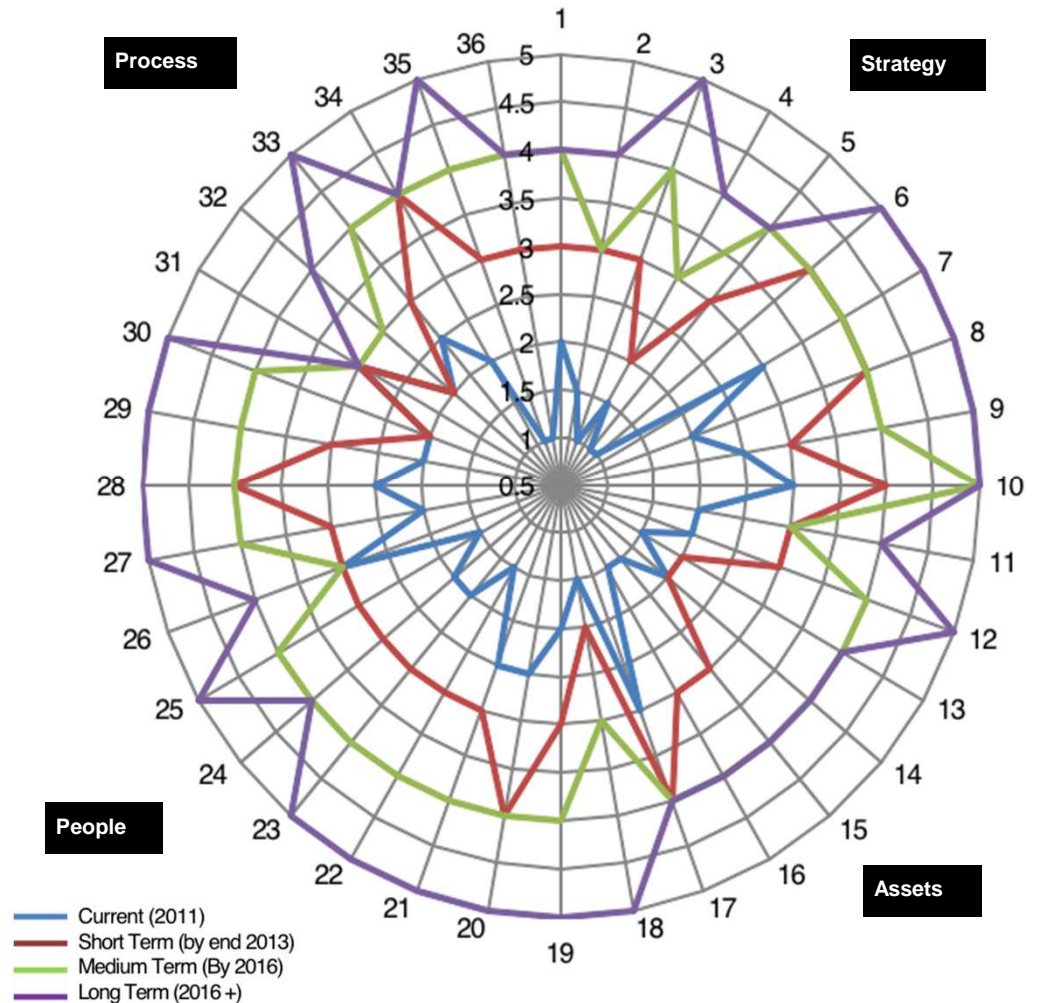
Maturity Assessment and Roadmap Development

- PAS/ISO encompasses a broad set of interrelated and/or interacting elements
- The focus should be achieving “competence” in all elements
 - Achieving good scores in one area does not compensate for gaps elsewhere!
- The target does not necessarily have to be “excellence”



Assessment of Current State

1 Overall Strategic Planning 2 Performance Measurement & Reporting 3 Asset & Customer Levels of Service 4 People Skills & Competencies Master Planning 5 Technology Assets Planning 6 Business Process Mapping & Procedures 7 Future trends (Impact of growth) 8 Asset Management Policy & Strategy 9 Asset Management Plans. 10 Legal, Regulatory & Statutory Requirements 11 Business Continuity and Emergency Preparedness and Response	Strategy
12 Asset Registry 13 Asset Information 14 Asset Knowledge (analysis of data) 15 Document, data and information control 16 Business applications 17 Technology Systems Integration 18 Capital Investment Plans (CIP) Development & implementation 19 Risk Framework - Strategic level and Asset level	Assets
20 Asset Management Leadership & Governance 21 Roles & Responsibility Clarity, Empowerment & Teamwork, Leading Change 22 Learning and Development 23 Communication and Information sharing 24 Continuous improvement culture (sustainability) 25 Knowledge retention & Succession planning 26 Commercial Focus (Ops & maint.)	People
27 Commercial Focus (Project Delivery.) 28 Capital projects - Planning, design & construction 29 Operations Management 30 Maintenance Management 31 Materials Management 32 Financial - Budgeting 33 Financial - Reporting (PSAB) 34 Optimized Asset Interventions 35 The Management System for Asset Management 36 Asset Management Quality Assurance	Process



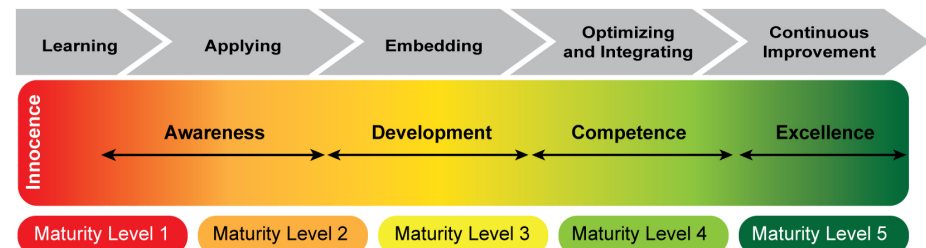
Setting Targets

		Current	Short Term (End 2014)	Medium Term (End 2017)	Long Term (2017+)
		Water Wastewater	Water Wastewater	Water Wastewater	Water Wastewater
1	Performance Measurement				
2	LOS & Targets				
3	People Skills & Comp. Master Planning				
4	Technology Assets Planning				
5	Business Process Mapping & Procedures				
6	Future trends (Impact of growth)				
7	Asset Management Policy & Strategy				
8	Asset Management Plan and Master Plans				
9	Legal, Regulatory & Statutory Requirements				
10	Business Continuity and Emerg. Prep.				
11	Asset Registry				
12	Asset Information				
13	Information Management				
14	Asset Knowledge (analysis of data)				
15	Investigation of Asset Failures				
16	Business applications				
17	Infrastructure Investment Plans				
18	Risk Framework - BU level and Asset level				
19	Asset Management Leadership & Governance				
20	Learning and Development				
21	Communication and Information sharing				
22	Continual improvement				
23	Knowledge retention & Succession planning				
24	Commercial Focus (Ops & maint.)				
25	Outsourcing				
26	Commercial Focus (Project Delivery.)				
27	Capital projects				
28	Operations Management				
29	Maintenance Management				
30	Materials Management				
31	Financial - Budgeting				
32	Financial - Reporting (PSAB)				
33	Optimized Asset Interventions				
34	Asset Management System				
35	Asset Management Quality Assurance				

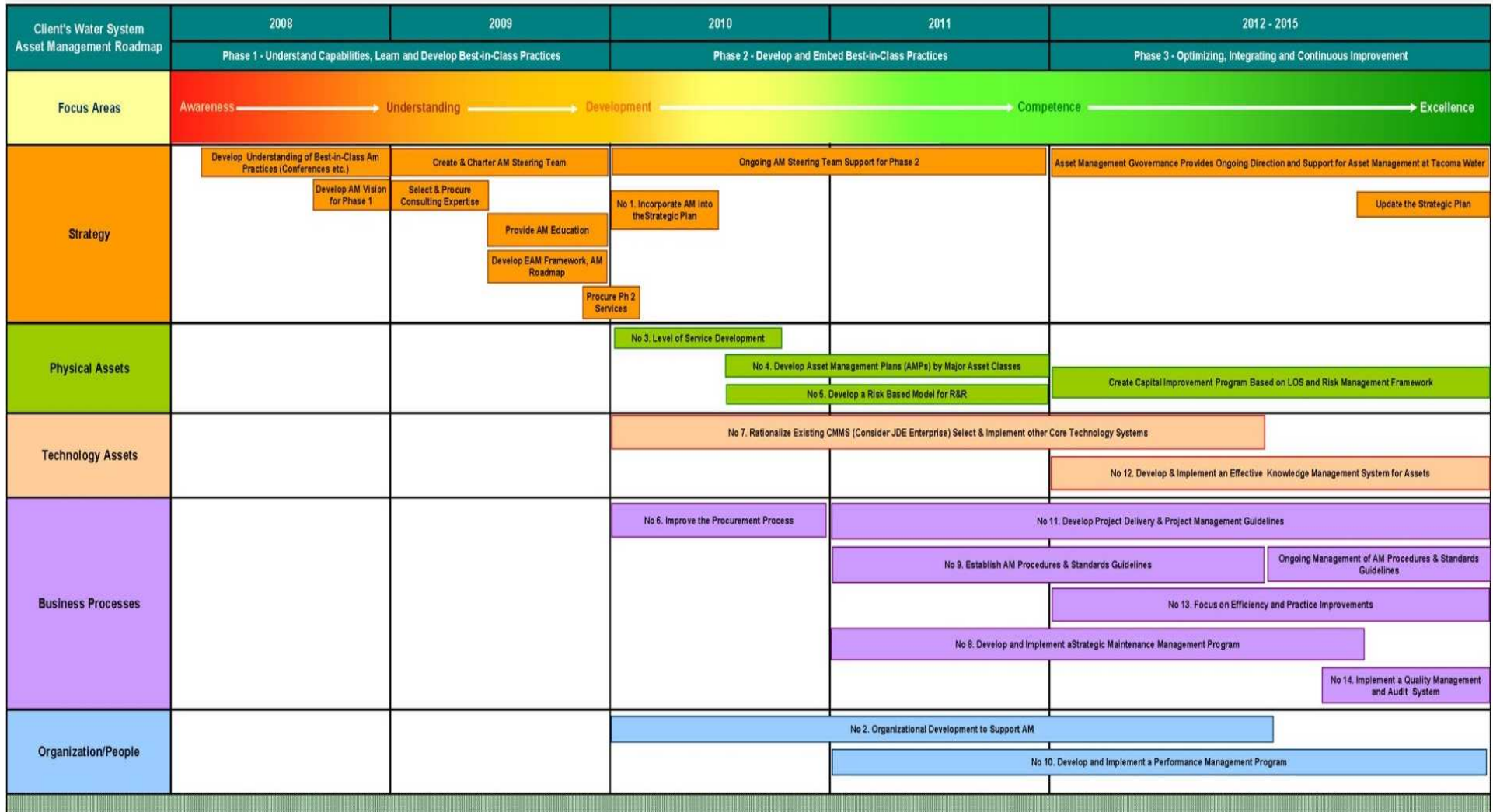
Assessment
Scores:

	1
	2
	3
	4
	5

1.5
2.5
3.5
4.5



Example of Roadmap



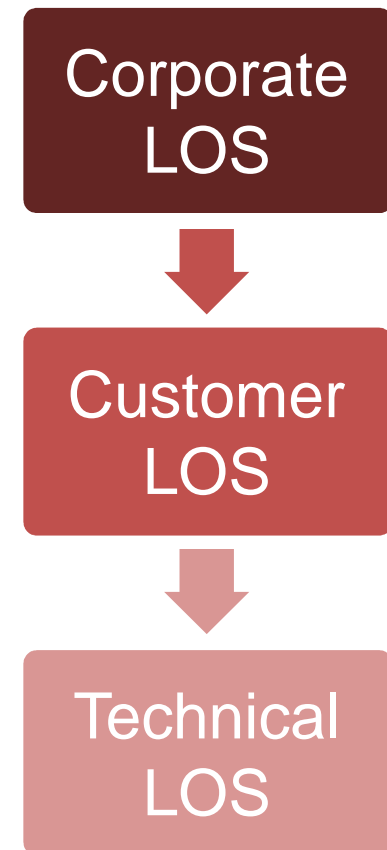
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Common Areas for Improvement

- Water Utilities tend to be good at O & M (no surprise!)
- Typically less good at strategy and planning
- Common areas for priority improvement:
 - Developing Asset Management Policy
 - Developing a strategy for the Management System
 - Developing Levels of Service
 - Implementing Strategic and Asset Risk Management
 - Business Cases, Investment Planning and Governance

Levels of Service (Delivering Value)

- Delivering Levels of Service (LOS) is fundamentally why the City is in business
- LOS set at the Corporate Level sets the stage for:
 - Customer Service Levels
 - Technical Service Levels
- Target LOS determines resources and funding strategies



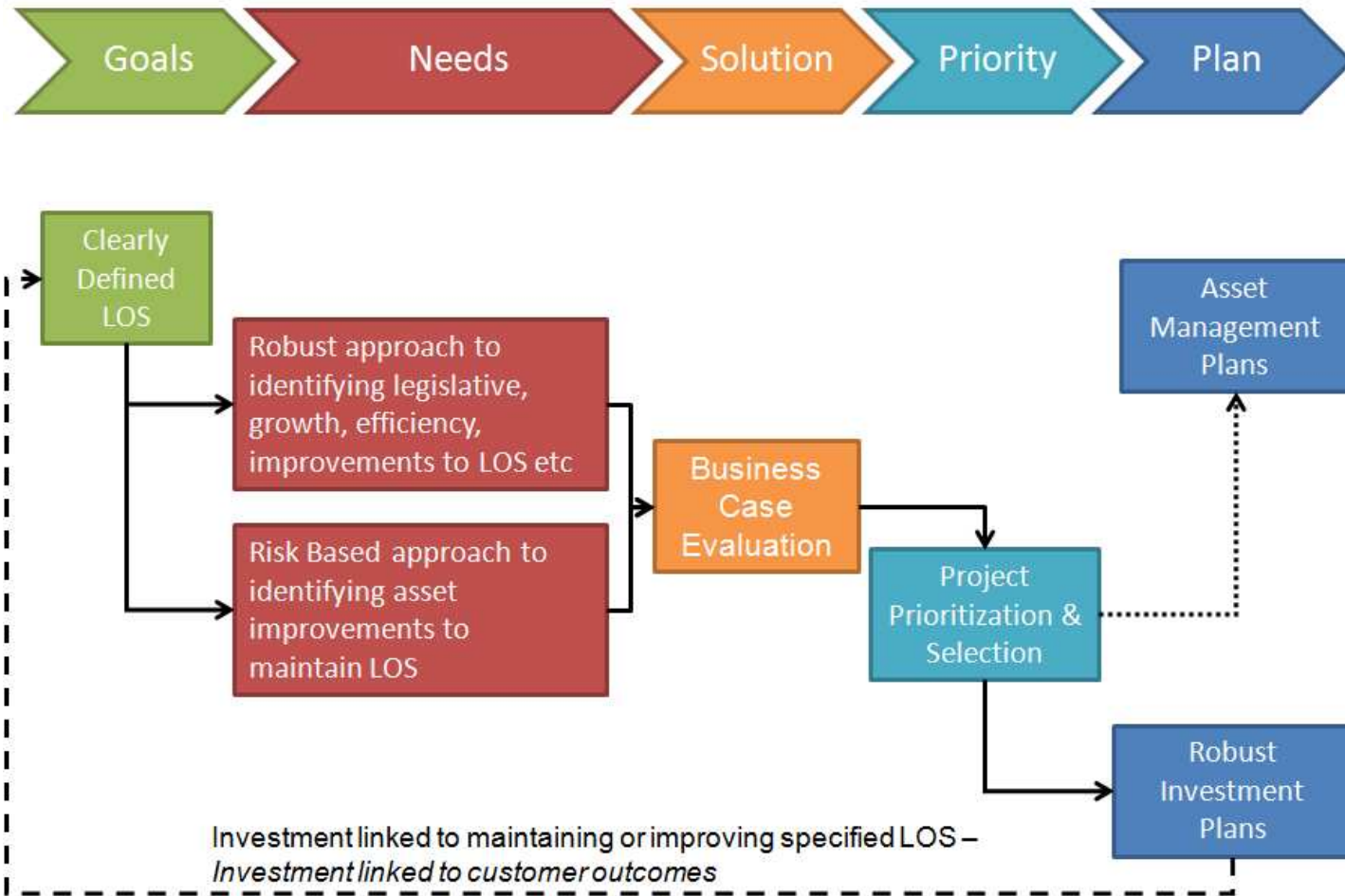
Water Supply & Distribution

Sample Customer LOS Measures

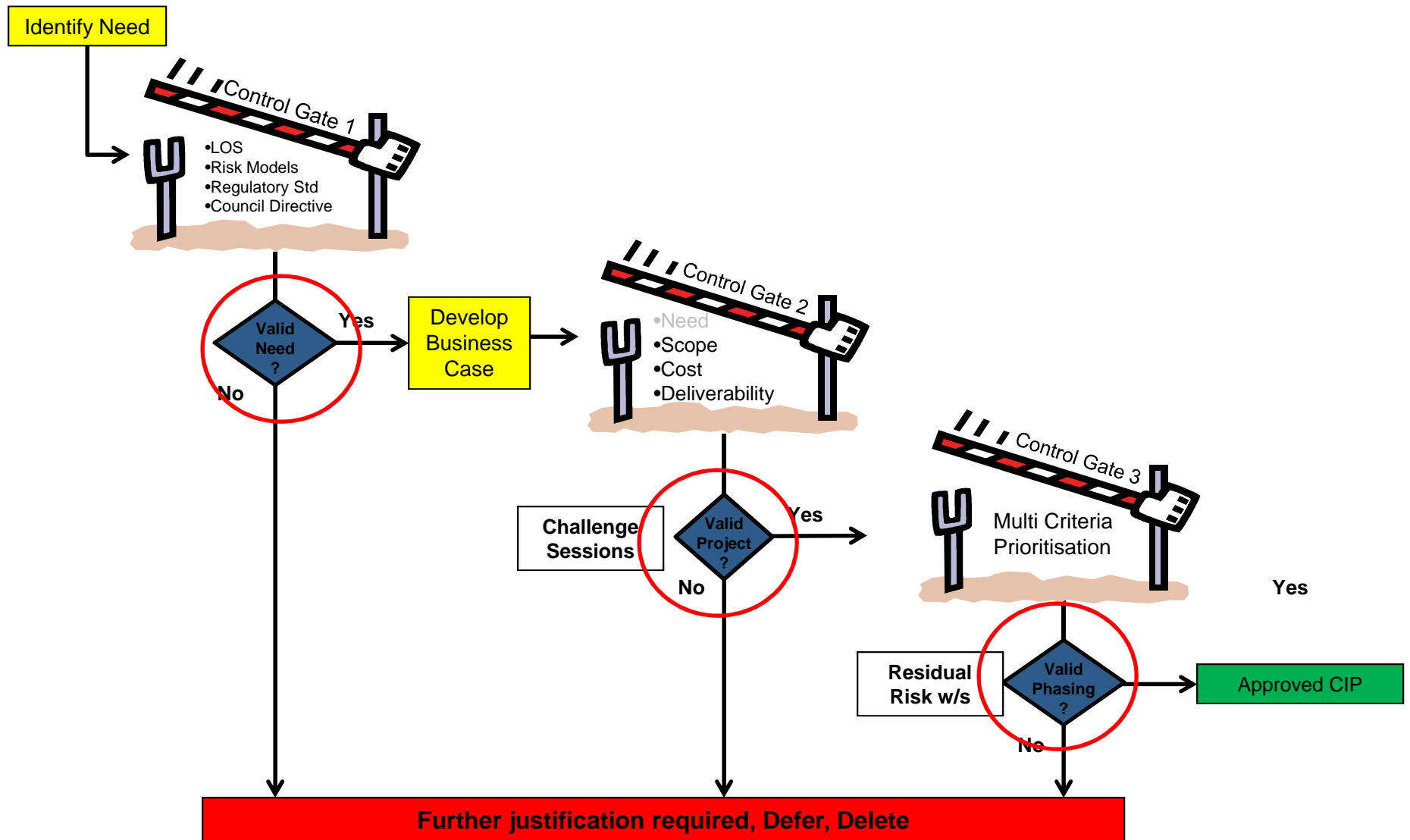
Cat.	Service Goal	CLOS Measure
Servicing Development	Accommodate growth and redevelopment (within RDP) by providing access to service when and where it is wanted.	# of properties (requests) rejected for utility servicing issues.
Reliable Service	Provide water at adequate pressure and in sufficient quality and quantity to satisfy the requirements for domestic and commercial use, irrigation and fire protection.	# of logged Aesthetic Inquiries
		# of logged Low Press Inquiries
		# of days of service restriction
	Ensure water will be available with only minimal local disruptions for system maintenance and rare large-scale disruptions due to unforeseen catastrophe.	# of unplanned svc outages.
Regulatory Compliance	Provide water that meets or exceeds Provincial water quality standards and objectives.	# of non-compliance events resulting in mandatory Advisories.
Environmental Stewardship	Enhance Water Efficiency by reducing water loss and the per capita water consumption and the short term peak water demand.	Estimated water loss (%)
		% reduction in electricity use (from 2010 levels).
Customer Service	Be responsive to customer service requests.	% compliance with svc. bookings.
	Minimize length of service disruption.	Average length of service disruption.

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Investment Planning Linked to Value/Service Objectives



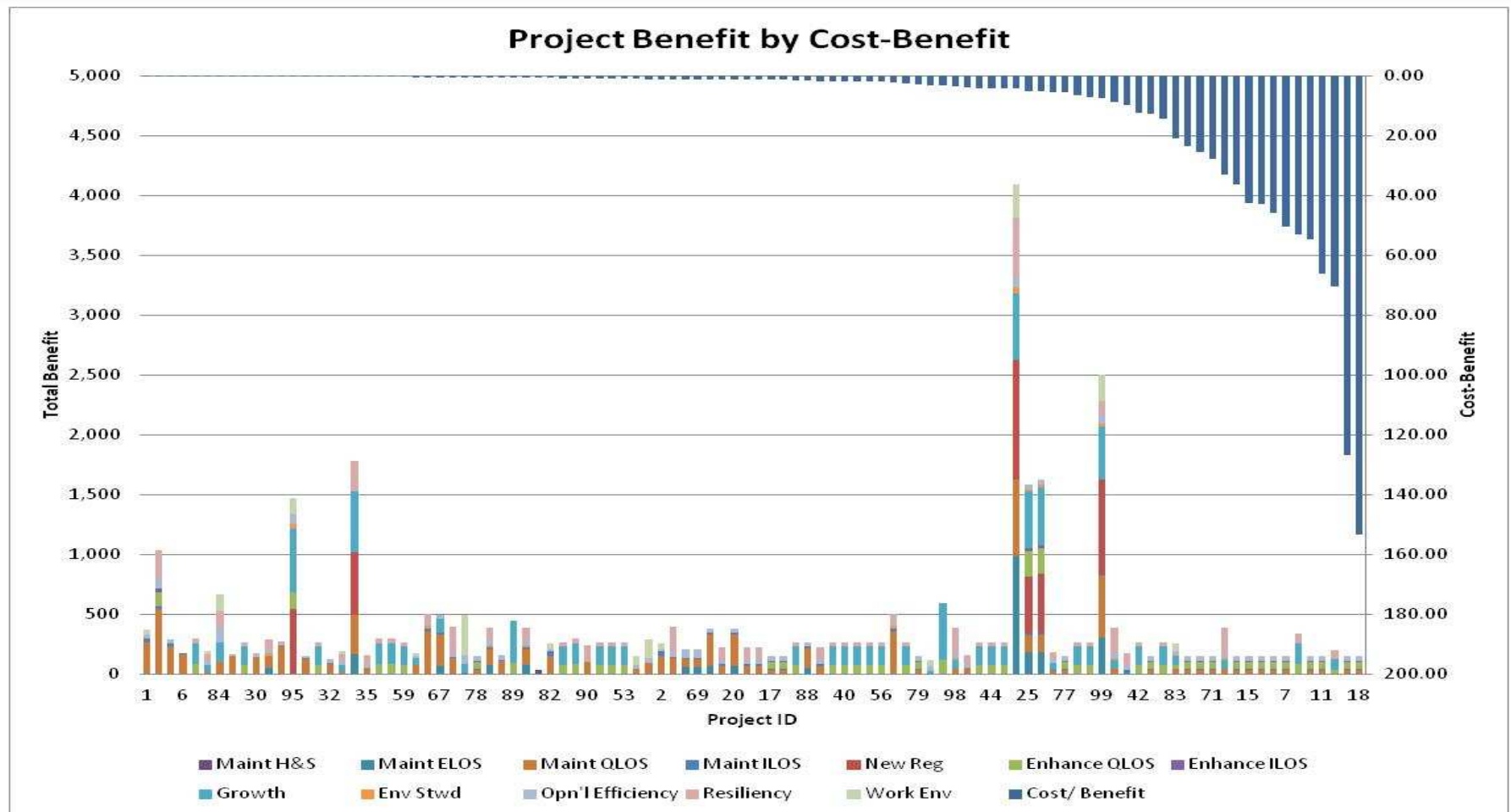
Investment Planning Governance



Candidates are evaluated based on benefit and value in meeting business objectives...

General							Cost		Benefits													Benefit	Cost/ Benefit	Project Rank	
							Base Service Provision				Growth and Enhancement						Other								
ID	Project	Service/ Div	Project Owner	Invest Type	Projects/ Periods	Capex (\$k)	Normalized	Maint H&S	Maint ELO	Maint QLO	Maint ILO	New Reg	Enhance QLOS	Enhance ILOS	Growth	Env Stwd	Opn'l Efficiency	Resiliency	Work Env	Total	Ratio			Calculated	Proposed
1	Billing Field Service Equipment	Cust Service	Fin - Pat Wilson	Program	5	\$27	\$5	0	0	262	35	0	0	0	0	0	34	0	39	370	0.01	1	1		
87	230 2453 U5012 Asset Management & Infrastructure Performance	WW Collection	WSP - TBD	Project		\$31	\$31	0	0	542	23	0	120	30	0	0	78	241	0	1,034	0.03	2	2		
21	Sewer Laterals Maintenance	WW Collection	WSC - TBD	Program	50	\$680	\$14	0	0	234	17	0	0	0	0	0	35	0	0	287	0.05	3	3		
6	Drainage Catch Basin Replacement	Drainage Systems	WSC - TBD	Program	10	\$100	\$10	0	0	163	7	0	0	0	0	0	0	0	0	170	0.06	4	4		
54	Trunk main oversizing allowance - System Wide – specific locations to be determined	Planning and Development	P&D - TBD	Program	5	\$100	\$20	0	0	0	0	0	80	0	179	0	0	40	0	299	0.07	5	5		
80	230 2451 U4014 Easement Jetting Crawler	Other Capital Projects	SDO - TBD	Project		\$20	\$20	0	0	15	0	0	0	0	61	0	34	54	27	192	0.10	6	6		
84	230 2620 U4018 Infrastructure Communications/SCADA Upgrades	Other Capital Projects	WSE	Project		\$80	\$80	0	0	100	0	0	0	0	160	0	121	142	142	665	0.12	7	7		
31	Poly B Water Service Connection Replacement	Water Distribution	WSE - TBD	Program	50	\$1,000	\$20	0	0	146	0	0	0	0	0	0	17	0	0	163	0.12	8	8		
46	NE-E Industrial Lands - Agricultural Bypass Ditch	Planning and Development	P&D - TBD	Project		\$33	\$33	0	0	0	0	0	71	0	159	0	0	35	0	265	0.12	9	9		
30	Hydrant Replacement with Infrastructure Renewal	Water Distribution	WSE - TBD	Program	8	\$200	\$25	0	0	137	0	0	0	0	0	0	36	0	0	172	0.14	10	10		
91	230 2453 U5023 Garnet St Lift Station Pump Upgrade	WW Collection	WSE - TBD	Project		\$50	\$50	0	53	92	7	0	0	0	0	21	37	76	0	285	0.18	11	11		
29	Reactive Water Valve Replacement	Water Distribution	WSC - TBD	Program	6	\$300	\$50	0	0	240	0	0	0	0	0	0	35	0	0	274	0.18	12	12		
95	230 2441 U6005 Wastewater Treatment Upgrade- Sludge Handling	WW Treatment	WWT - TBD	Project		\$300	\$300	0	0	0	0	544	136	0	536	40	79	0	136	1,471	0.20	13	13		
5	Drainage Storm Channel Maintenance	Drainage Systems	WSE - TBD	Program	10	\$300	\$30	0	0	121	8	0	0	0	0	0	17	0	0	146	0.21	14	14		
45	Greens on Gardener - Storm Sewer – Green Water Drive from Green Apple Drive to Primrose Green	Planning and Development	P&D - TBD	Project		\$55	\$55	0	0	0	0	0	71	0	159	0	0	35	0	265	0.21	15	15		

Candidates are evaluated based on benefit and value in meeting business goals...



Actual \$\$\$ Benefits Realized

As a result of the Business Case Review and Project Prioritization, 19 projects were adjusted resulting in the following

	Total Benefit
Delayed 1 year	2,194,250
Delayed 2 year	1,425,000
Delayed 3 year	0
Delayed 4 year	0
Canceled or Deferred 5 years	4,655,667
Total Benefit	\$8,274,917

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Questions?



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