

Advanced Asset Management



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Orange County Sanitation District
EPA Seminar Feb 2004



**OCSD Reclamation Plant No. 1
Fountain Valley, CA**

**OCSD Treatment Plant No. 2
Huntington Beach, CA**



OCSD Service Area

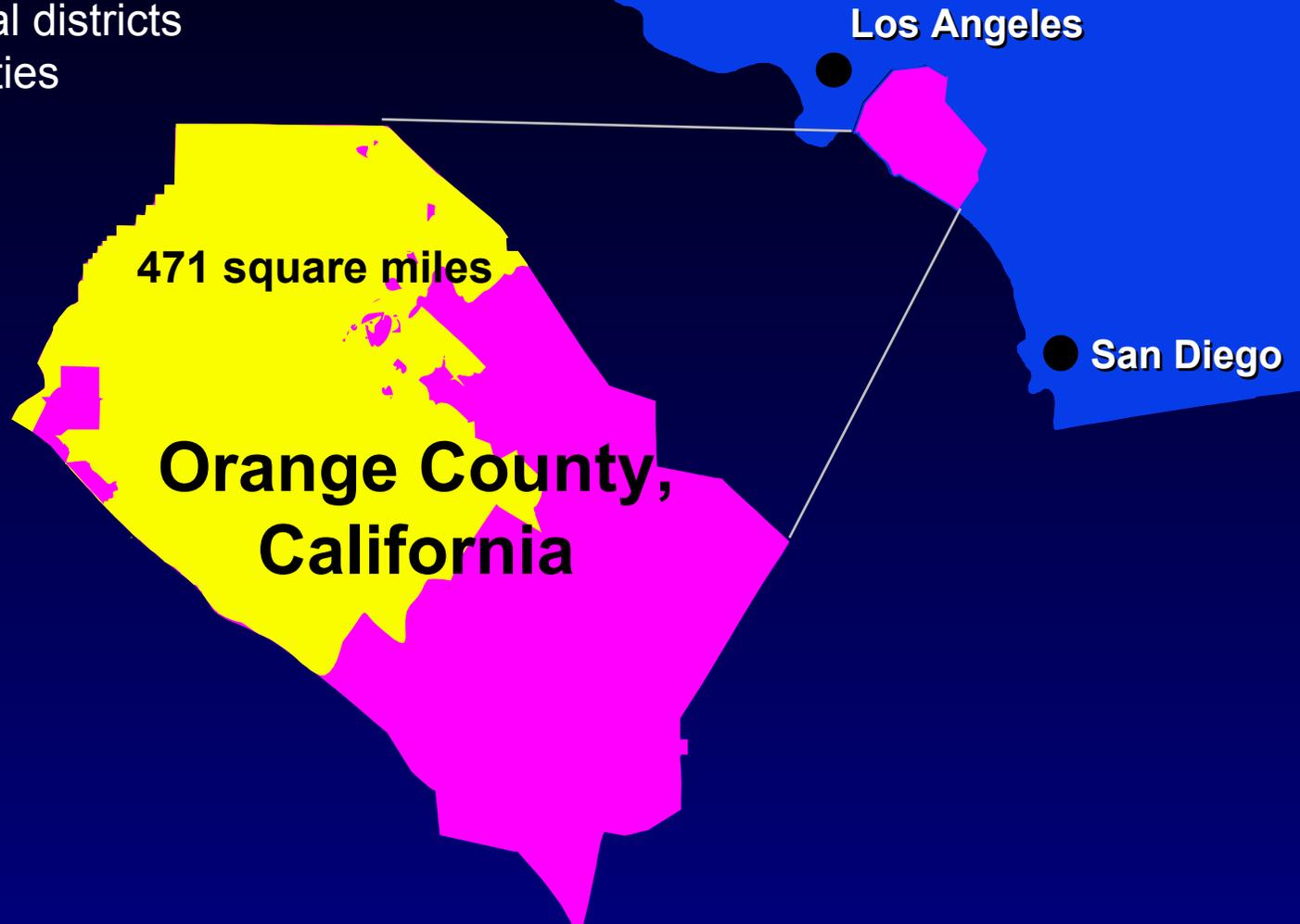
471 square miles

243 million gallons per day

2.3 million population

21 cities, 3 special districts

19 pumping facilities



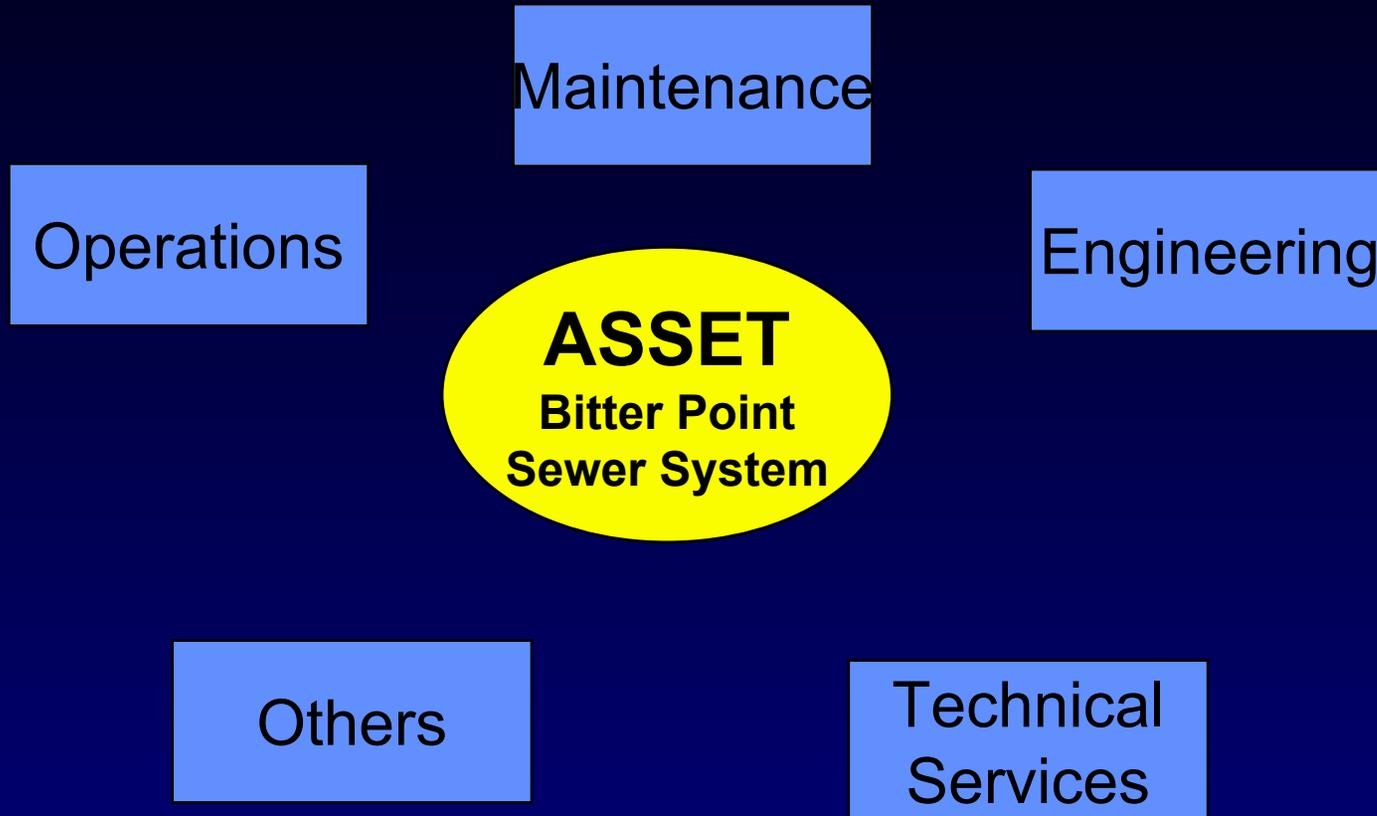
Genesis for AM at OCSD

- ◆ 1995 – privatization assessment (20%)
- ◆ 2000 – International infrastructure management manual (IIMM) – Aus/NZ approach
- ◆ Jun 2001 – benchmarking with West Coast agencies
- ◆ Feb 2001 – sold “concept” to management
- ◆ Nov 2001 – RFP for AM Strategic Plan
- ◆ Apr 2002 – Board approval of first phase

Bitter Point Background

- ◆ First barrel constructed in 1959, now triple pipeline
- ◆ First failed in 1984, then 1986 and 1989
- ◆ 3 spills in 2001
- ◆ Failures due to corrosion
- ◆ Inspection in 2000 reveals high corrosion
- ◆ H₂S levels at over 10,00 ppm levels (40x normal)

What Did We Learn?



The Australia / New Zealand Asset Management Study Tour

International Infrastructure Management MANUAL



Australia/New Zealand Edition

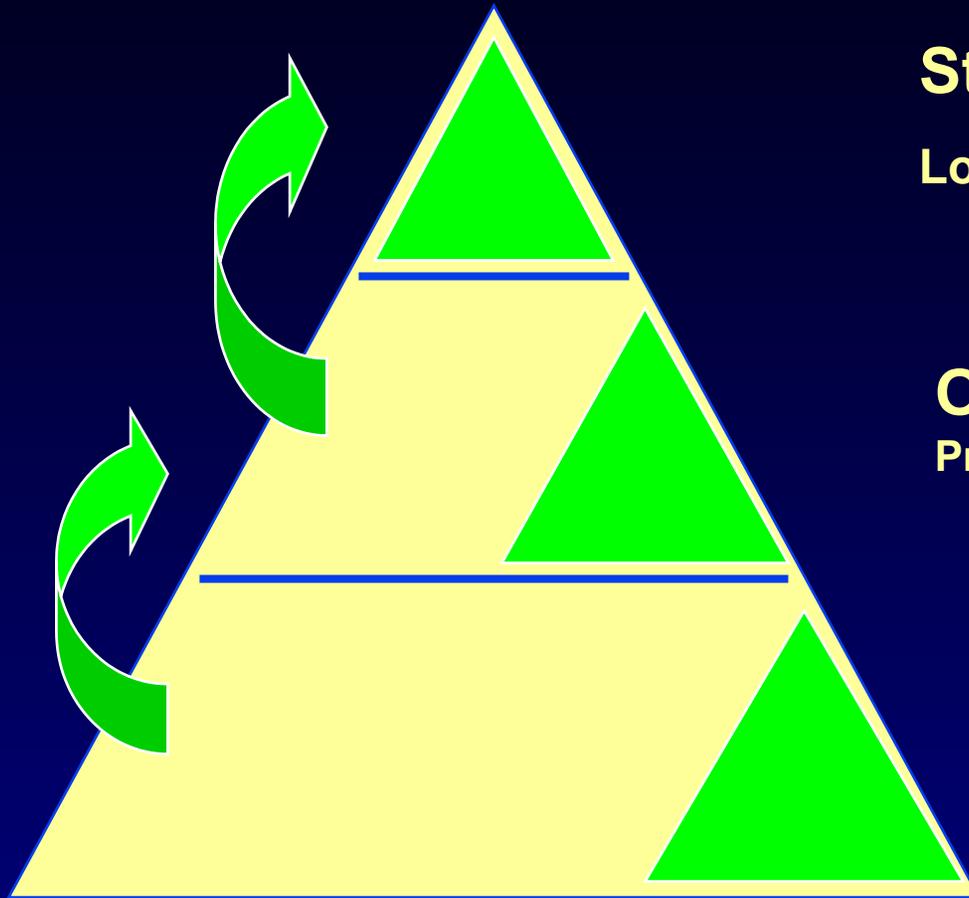
What is AM Down Under?

- ◆ Over-arching management process that drives the organization in everything they do
- ◆ Core business of utility – produces corporate alignment
- ◆ Strategic business planning is a way of life
- ◆ Custodianship of assets over the long term
- ◆ Framework for management of sustainable infrastructure

What is AM Down Under? (cont'd)

- ◆ Risk management, risk-based decision making, quality of decision making
- ◆ Public accountability for asset condition and performance
- ◆ Highly focused customer service
- ◆ Focused on management inputs with auditable results

The Different Layers of AAM



Strategic Level

LoS, CoS, Risk, Customer Service

Operational Level

Process & Data

Tactical Level

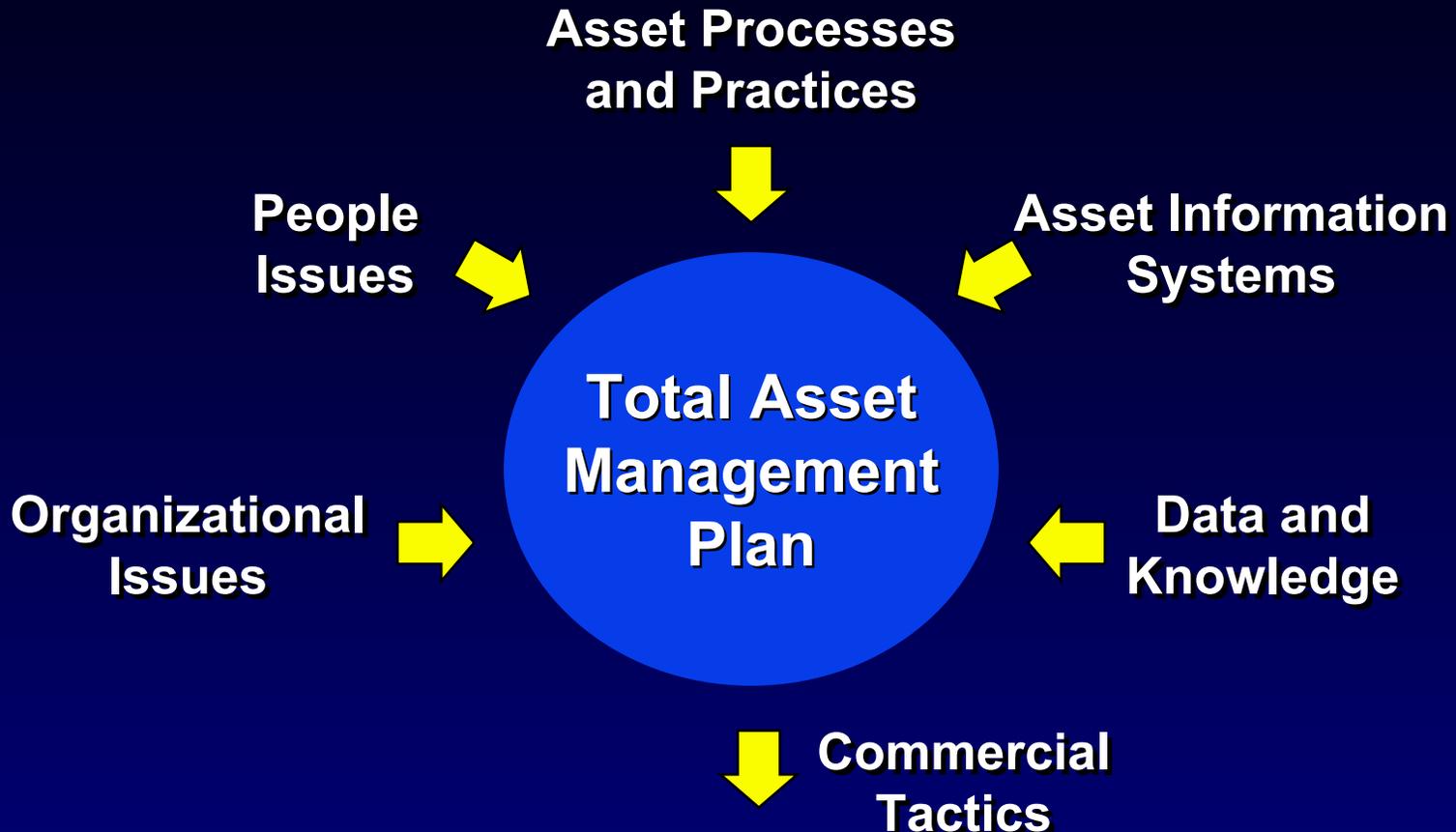
Assets

Three-Stage Process to Begin Implementing AM

- ◆ Dec 2002 – Asset Management Strategic Plan
- ◆ Dec 2003 – focused implementation plans
- ◆ Structured implementation (3 and 10-year targets)

Why do this? – Education and buy-in from the organization about AM

Components of an Asset Management Value Chain



Enables Optimum Stewardship of Assets

Orange County Sanitation District
Quality Element Gap Analysis 26 - Aug

Organisational - Sustainable

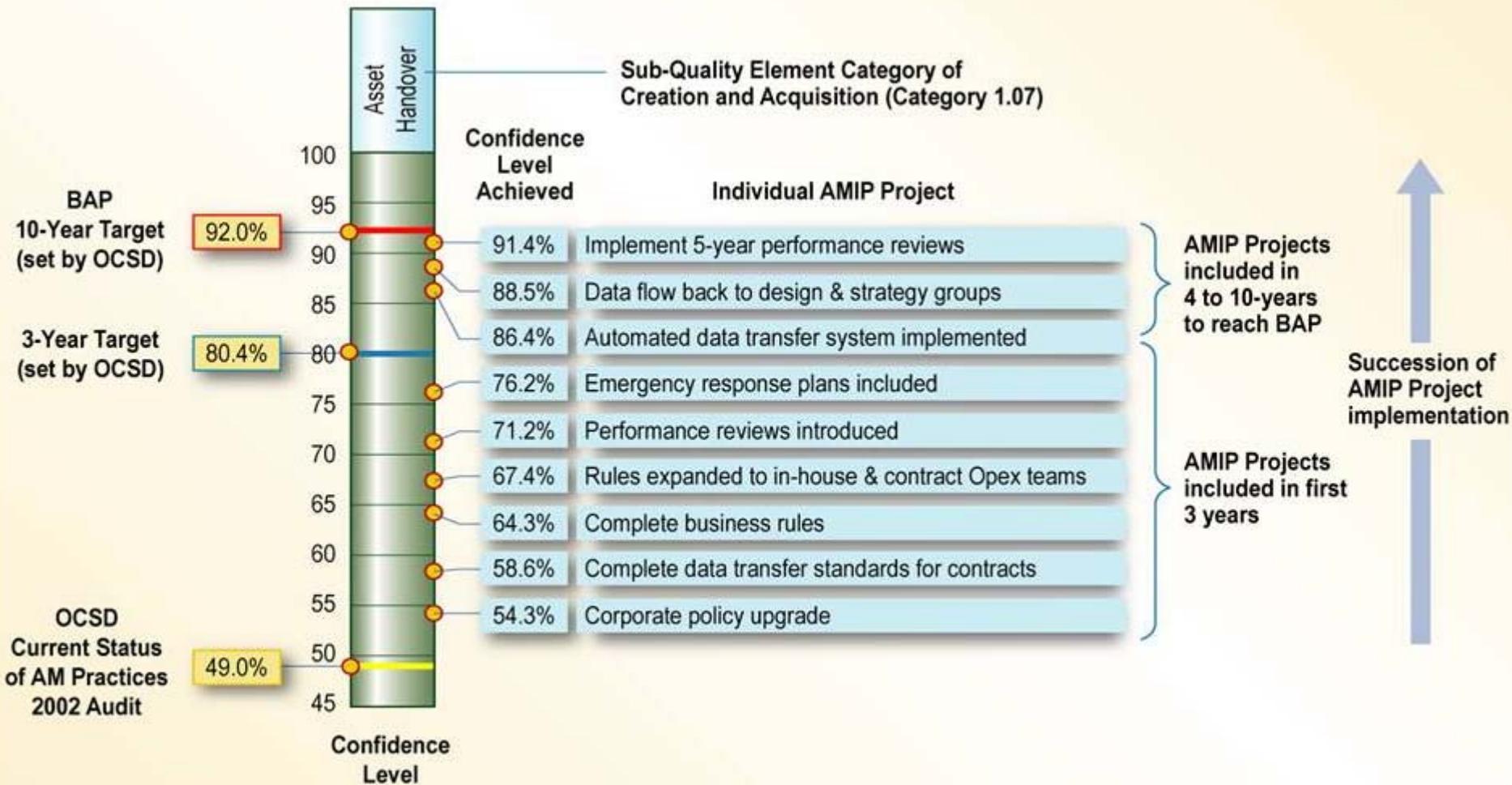
Update GRAPH

Summary View

Full View

Status	Overall Demand Analysis	Overall Knowledge	Overall Acctg & Costing	Overall Strategic Planning	Overall CAPEX Evaluation	Overall Business Risk	Overall Creation/Acquisition	Overall Rationalism/Disposal	Overall Operations	Overall Maintenance	Overall Work/ Resource Mgmt	Overall Continuous Improvement	Overall L.C.A.M.Process & Practices	Overall Primary Systems	Overall Secondary Systems	Overall - Tertiary Systems	Overall - Systems Issues	Overall Rating - AMS	Overall Primary Data	Overall Secondary Data	Overall Tertiary Data	Overall Data Rating	Overall Commercial Tactics	Overall Organisational	Overall People Issues	Overall TAMP Rating	
Reference Number	101	102	103	104	105	106	107	108	109	110	111	112	1	201	202	203	204	2	301	302	303	3	4	5	6	7	
Excellence	94	88	88	88	88	92	92	92	92	94	87	89	96	86	90	97	93	92	92	76	87	94	97	90	89		
Competence	74	68	68	68	68	72	72	72	72	74	67	69	76	66	70	77	73	64	72	74	28	58	81	52	66	66	
Systematic Approach	58	52	52	52	52	56	56	56	56	58	51	53	60	43	43	52	17	32	23	20	65	36	15	46	29	29	
Awareness	23	24	23	30	19	31	11	19	14	20	15	26	21	26	32	52	17	32	23	20	65	36	15	46	29	29	
Innocence	8	7	8	9	7	7	7	5	6	7	5	8	7	9	8	6	8	8	8	9	8	6	9	7	7		
Top 10 % Aust & NZ Water Bus.	90.8	91	88	86	83	85	92	88	92	92	94	87	89	96	86	90	97	93	92	92	76	87	94	97	90	89	
Av. 10 Like Aust & NZ Water Bus.	83.2	86	86	82	78	79	89	84	88	83	88	80	83	89	79	65	90	81	83	86	60	77	90	81	82	81	
3 Year Improvement Target	78.3	85	84	83	77	77	86	80	85	78	86	78	81	90	68	43	87	72	78	81	54	71	83	74	78	76	
Best Appropriate Practice	94.0	94	93	89	87	85	87	94	95	92	93	92	91	99	94	95	97	96	95	94	93	94	96	97	94	95	
Current	68.6	71	69	66	57	66	56	83	76	78	72	78	66	73	62	43	80	64	72	74	28	58	81	52	66	66	
Gap	25.4	23	24	23	30	19	31	11	19	14	20	15	26	21	26	32	52	17	32	23	20	65	36	15	46	29	29
Business Driver		8	7	8	9	7	7	7	5	6	7	5	8	7	9	8	6	8	8	8	9	8	6	9	7	7	
Weighted Score													147					249				293					
Importance		139	139	139	139	139	139	139	139	139	139	139	79	139	139	139	139	40	139	139	139	32	139	139			

3-Year BAP Target Setting Results in Asset Management Improvement Program Projects



“Best Practices” Assessment Work Form

1.02.03 Condition

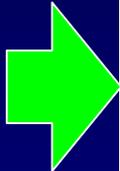
The way in which the organisation assesses the condition of individual assets and their components and the process used for recording this data.

Questions	Findings/Current Status
28. Does the organisation have a policy on condition data?	
29. Is the method of condition rating clearly identified for all asset types and other documents linked to any national or international standards?	
30. Does the condition data policy include both owner and user/customer criteria?	
31. Does the organisation have a policy for condition assessment intervals?	
32. Does the organisation employ any statistical or actuarial type techniques in its condition assessment process?	

Rating of “Findings” - Basic

Innocence Awareness Systematic Approach Competence Excellence

Process	Level 1	Level 2	Level 3	Level 4	Level 5
1.02.02 Physical Attributes Data	No physical attributes and data standards available for any asset.	Guidelines for detailing physical attributes and data of assets exist. Knowledge comes from staff familiarity with assets. All attributes not qualified.	Asset classification system in place unique asset identification process in place. Asset data captured eg. Basic physical attributes Detailed information on the construction of assets, their manufacture and additional data. Tertiary level data information including, risk, maintenance plans, condition assessment and performance etc. But not to appropriate hierarchal level.	All physical attributes and data collected to appropriate hierarchal level and resident in appropriate information system. Most data requirements covered by policy and standards.	Full as constructed process in place to ensure accurate data held on necessary assets.. Complete and detailed data standards available.
1.02.03 Condition Data	No condition rating system available	Basic method/ guidelines defined, rating criteria identified (distress modes), ranking quantified. For 50% of all asset types.	Intermediate condition assessment processes fully qualified on 50% of assets.	Advanced condition assessment process completed including risk impacts on 50%.	Advanced condition assessment process completed including risk impacts on 50%. Plus actuarial sampling techniques included.



Capex Evaluation and Approval Score

CAPEX Evaluation & Approval Process									
			CURRENT		3 YEAR TARGET		BAP		
	Project No.	% Contribution	Complete	Score	Complete	Score	Complete	Score	
1.05	100%	4%	0%	0	0%	0	100%	4	Re-rank CAPEX Program in line with new outputs
1.05	96%	15%	0%	0	0%	0	100%	15	Reasses & Re-evaluate current CAPEX program in line with new process
1.05	81%	5%	0%	0	100%	5	100%	5	Train staff and consultants in new process
1.05	76%	10%	65%	6.5	0%	6.5	100%	10	Introduce Risk Based Evaluation & Confidence Levels
1.05	66%	8%	0%	0	100%	8	100%	8	Introduce advanced maintenance and operational costing
1.05	58%	5%	25%	1.25	100%	5	100%	5	Introduce demand analysis process outputs
1.05	53%	8%	50%	4	100%	8	100%	8	Complete detailed evaluation process & policy/training
1.05	45%	10%	100%	10	100%	10	100%	10	Undertake review/needs analysis and develop improvement strategy
1.05	35%	5%	100%	5	100%	5	100%	5	Further staff undertake intermediate training in this quality element
1.05	30%	5%	100%	5	100%	5	100%	5	Purchase appropriate texts and collect examples of this quality element
1.05	25%	25%	100%	25	100%	25	100%	25	Undertake basic training for some staff
1.05 Total		100%		56.75		77.5		100	

Identifying The Improvement Tasks

3 Year Target		BAP		
Complete	Score	Complete	Score	
50%	2.5	100%	5	Monitor and Report Annually
30%	0.9	100%	3	Complete Customer Charter and Service Levels
50%	2.5	50%	2.5	Complete Customer / Stakeholder / Consultation Policy / Training
50%	3	50%	3	Complete Past Histories and Predictions High - Low
100%	6	100%	6	Set Up Full Demand Sub Elements and Policy
50%	2.5	100%	5	Complete Customer Survey Guidelines / Training
60%	3	100%	5	Identify Demand Drivers and All Sub-Elements
100%	10	100%	10	Document Outputs and Demand Data Flows
100%	10	100%	10	Produce Demand Analysis Guidelines and Policies / Training
100%	10	100%	10	Undertake Review / Needs Analysis and Develop Improvement Strategy
100%	5	100%	5	Further Staff Undertake Intermediate Training in This Quality Element
100%	5	100%	5	Purchase Appropriate Texts and Collect Examples Of This Quality Element
100%	25	100%	25	Undertake Basic Training for Some Staff
	85.4		94.5	



Verios 2002.12.3.72

Organizational - Selectable GHD Benchmark

Update VIEW

PQE Chart	PQE View
SQE Chart	SQE View
TQE Chart	TQE View

Status	Knowledge of Assets							Asset Accounting & Costing							Strategic Planning								
	Trend Prediction in Elements	Overall Demand Analysis	Hierarchical Level	Condition	Performance	Utilization	Physical & Other Attributes	Overall Knowledge	Valuations	Effective /Residual Lines/Depreciation	Operational Costs	Maintenance Costs	Reversal Program	Residual risk Assessment	Historic Cost Data	Overall Acctg & Costing	Future Mode Prediction	Risk Assessment (Operations)	Optim. Review, Decision Making	Life Cycle Costing	Improvement Programme	Asset Management Plus Production	Customer Review/Revision

Reference Number

181.95	1.01	1.02.01	1.02.02	1.02.03	1.02.04	1.02.05	1.02	1.02.01	1.02.02	1.02.03	1.02.04	1.02.05	1.02.06	1.02.07	1.02	1.04.01	1.04.02	1.04.03	1.04.04	1.04.05	1.04.06	1.04.07	1.04.08
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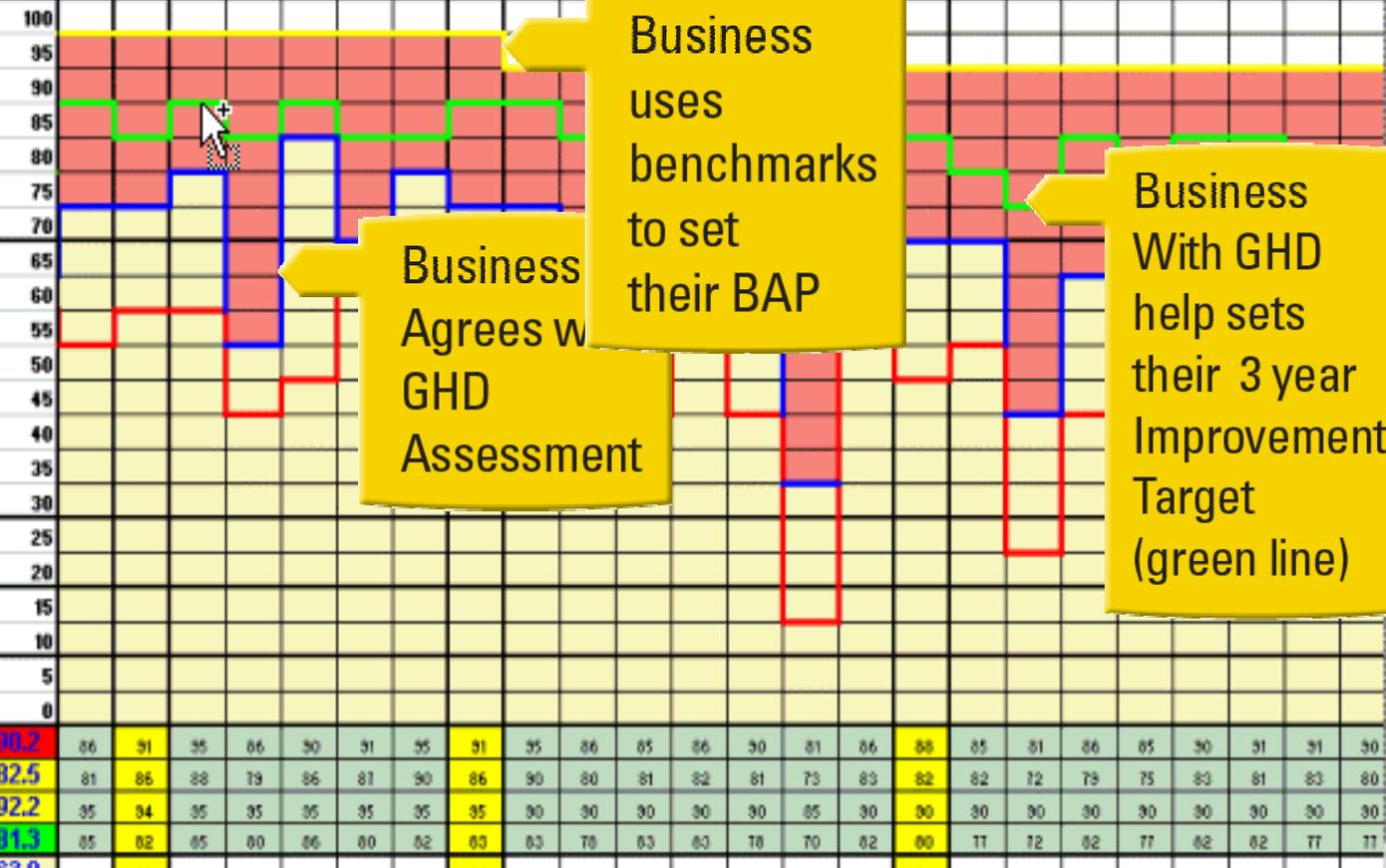
Excellence

Competence

Systematic Approach

Awareness

Innocence



Business uses benchmarks to set their BAP

Business Agrees w GHD Assessment

Business With GHD help sets their 3 year Improvement Target (green line)

UnHide Rows

- Asset Strategic Planning
 - The ASP Process
 - Assign Roles & Functions
 - Service Delivery Planning
 - Develop Delivery Strategies
 - Develop Asset Strategic Plan
 - Prepare the ASP
 - Consolidate Strategic Plans
 - Monitor & Improve Planning

- Asset Management Plans
- Benchmarking AM Activities
- CapEx Review
- ORDM Guidelines
- Infrastructure Risk Management



About assets

Asset Strategic Planning

Whole-of-government Level

Develop the Asset Strategic Plan

Whole-of-government Policy

Agency (or Portfolio) Level

Develop the Investment Program

Whole-of-government Guidelines

Asset (or Facility) Level

Develop the Repairs & Maintenance Program

Develop the Disposal Program

Agency Policy

Agency Guidelines

Support Systems

Asset Performance Management

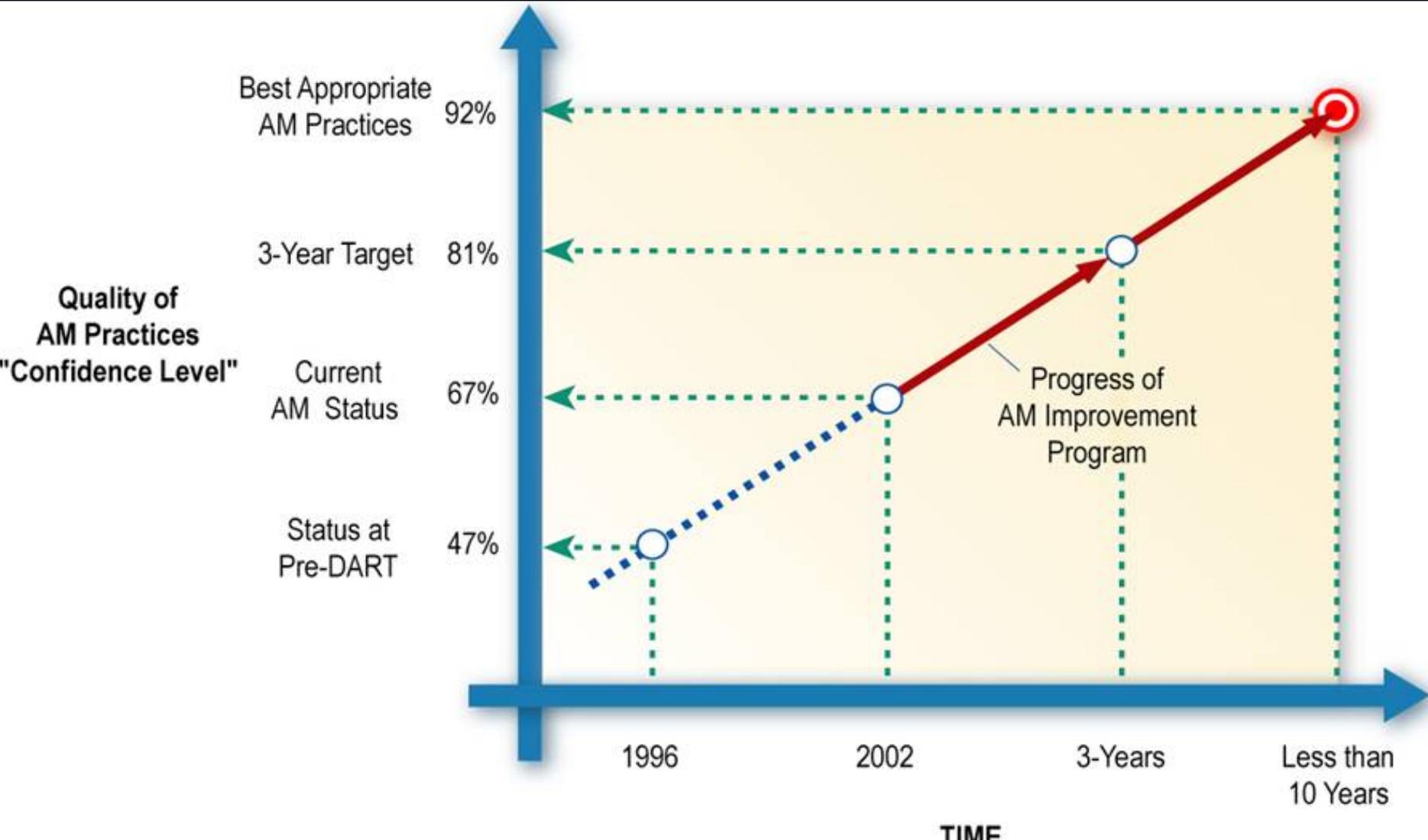
Websites



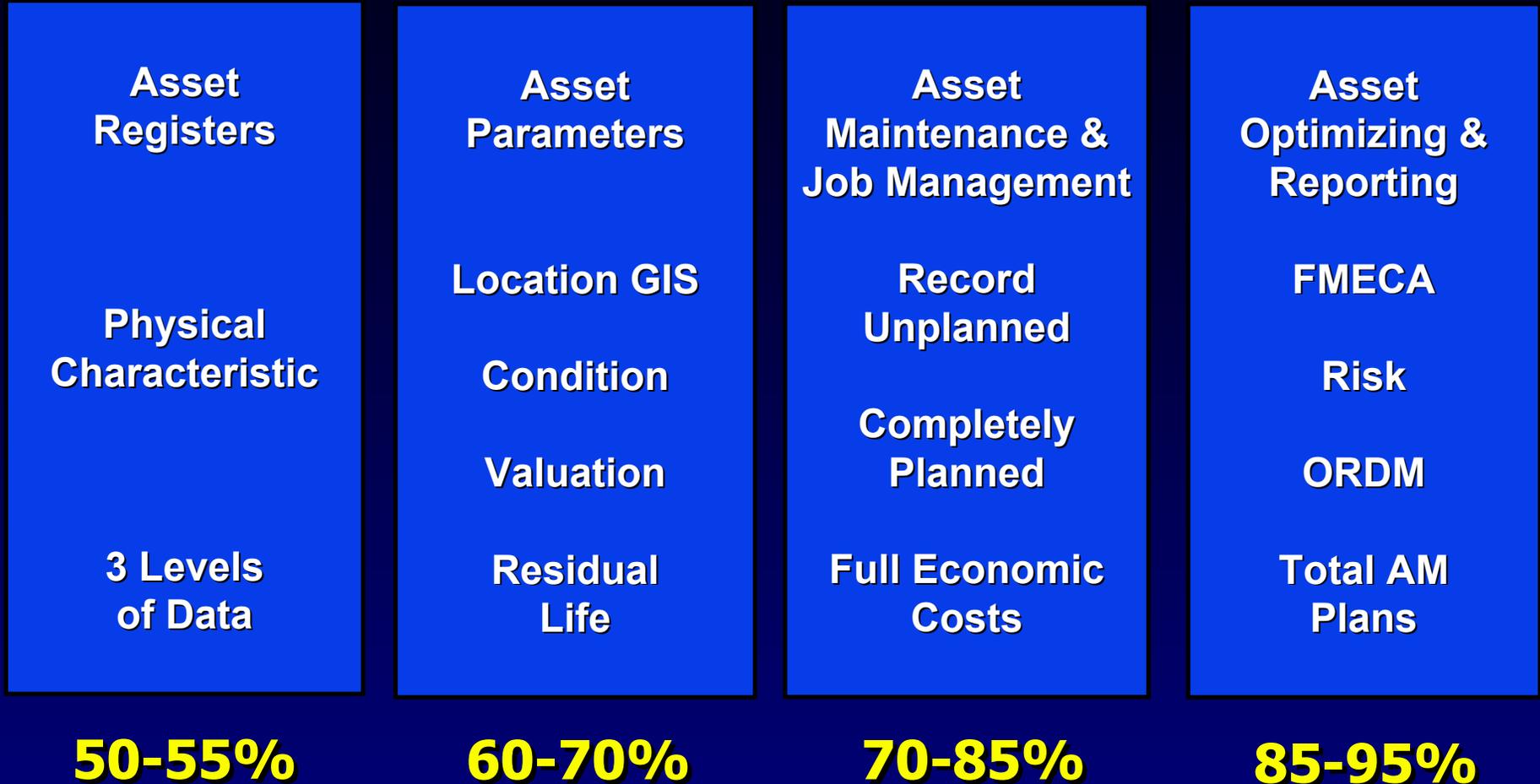
OCSD AM BAP Quality Goals

◆ Pre-reinvention	47
◆ Now	67
◆ 3-year	81
◆ 10-year	92
◆ Avg Aus Sewer Bus.	81
◆ Top 10% Aus Sewer Bus.	90
◆ Avg All Aus Bus.	86

OCSD's Confidence Rating



Stages of AM Confidence Level



What AM Will Mean to OCSD

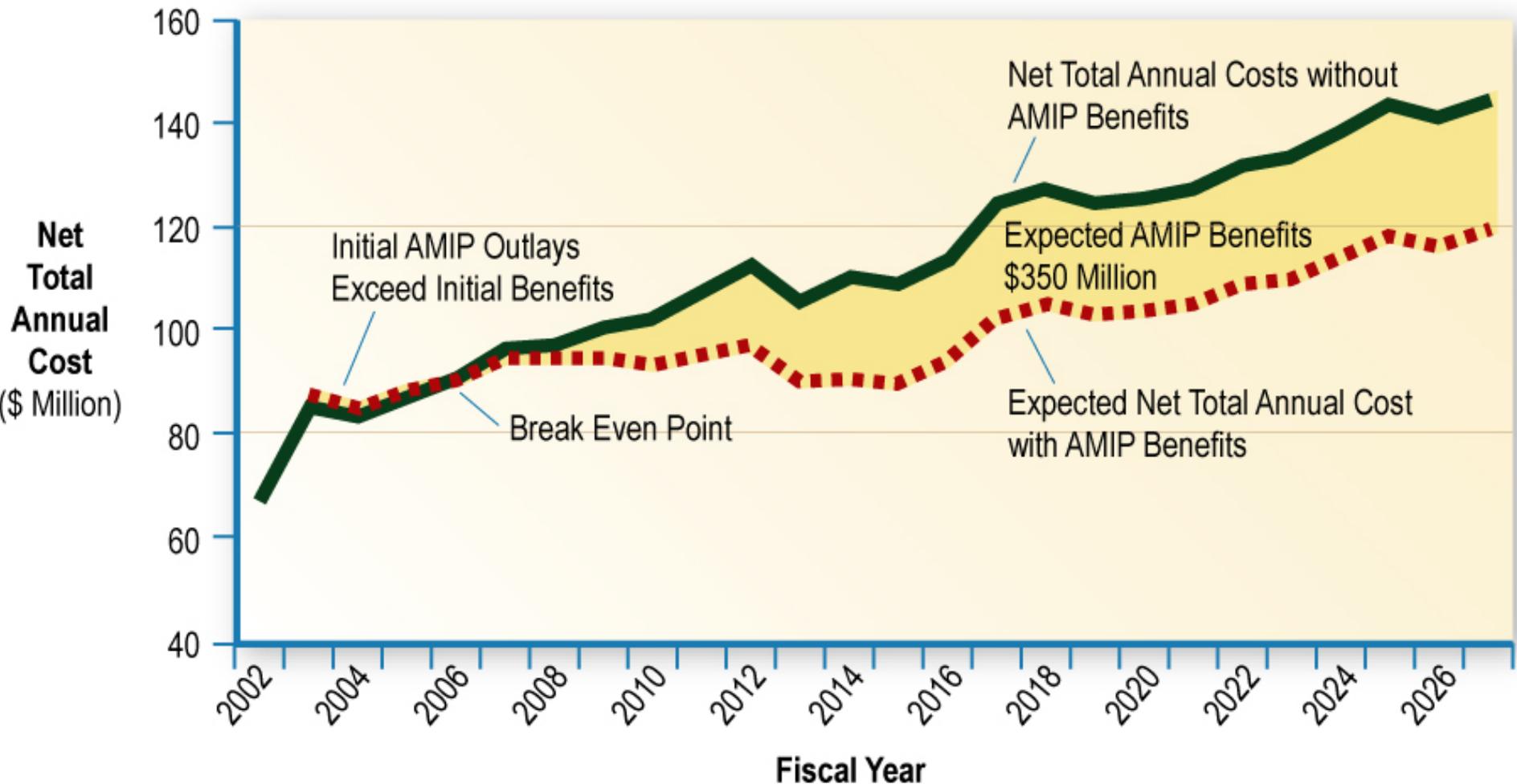
It is not a project, but a management paradigm

- ◆ Principles of AM organizes strategic, operational and tactical levels of planning
- ◆ Asset sustainability
- ◆ Total life cycle costing
- ◆ Risk-based decision making

What AM Will Mean to OCSD (cont'd)

- ◆ Decisions are made considering all factors – reduces siloism
- ◆ Continuous improvement program
- ◆ Sustainable infrastructure for the lowest Cost of Service

Asset Management Improvement Program (AMIP) Expected Benefits for OCSD



**OCSD Has Already Reduced
Life-Cycle Costs 15%**

U.S. EPA estimates cost
savings of 20–30%

Expected Drivers

- ◆ Clean Water Act
 - ◆ Sanitary Sewer Overflows
 - ◆ National Pollution Discharge Elimination System
 - ◆ Total Maximum Daily Loads
- ◆ GASB 34
- ◆ cMOM

But Really It is... Better Business Decisions!

Implementation Challenges

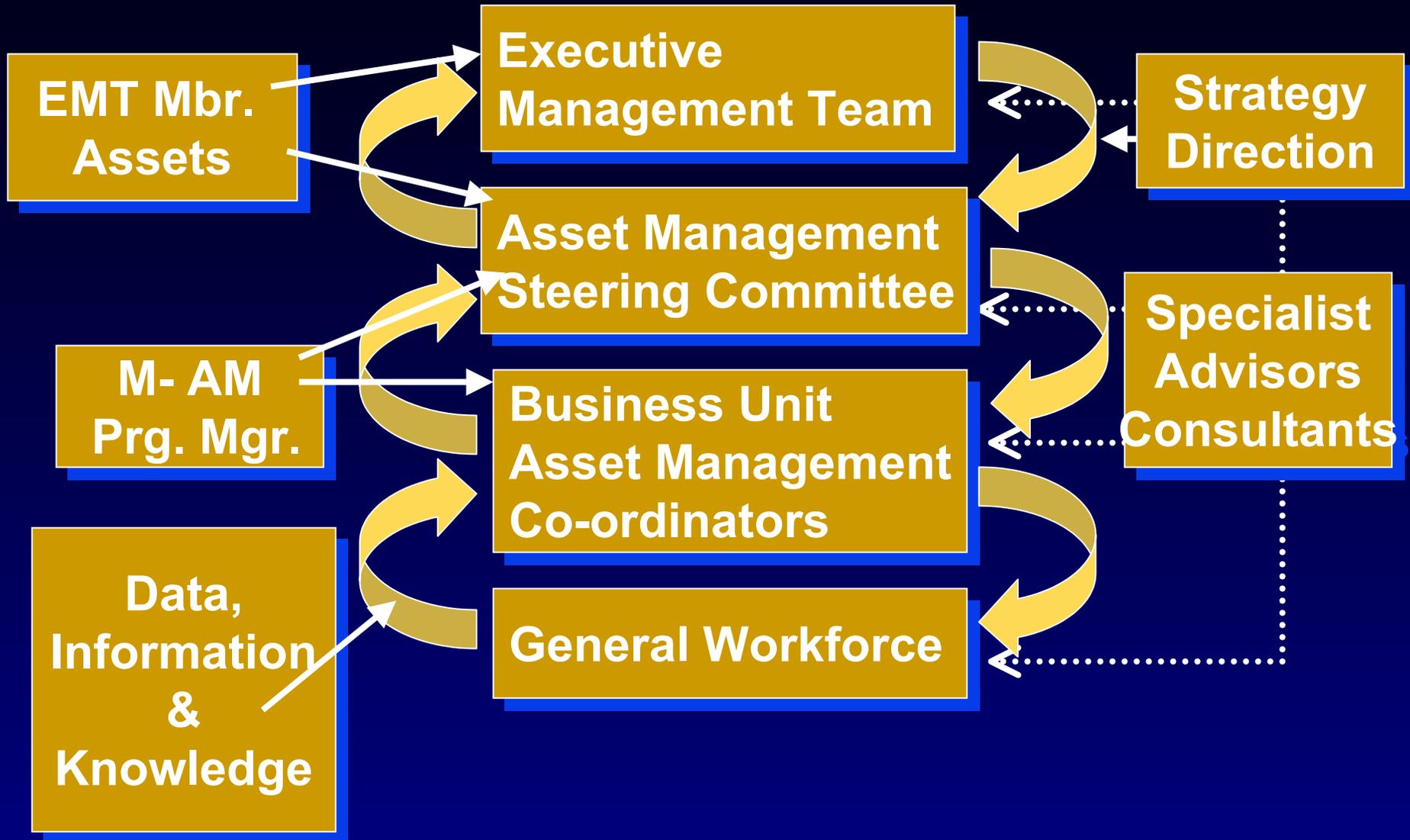
- ◆ Few strong outside drivers
- ◆ Culture of technical silos
- ◆ Plate is already full
- ◆ Needs strong advocate at top of organization
(stay the course)
- ◆ This is not taught in school (in the U.S.)

How We are Overcoming

- ◆ Education
- ◆ Gap Analysis Interviews
- ◆ Workshops on Gap and Future Vision (BAP)
- ◆ Asset Management Steering Committee
- ◆ Commitment of General Manager

It takes an AM Champion that will never rest!

Managing Your AAM Program



Next Steps

- ◆ Develop Tactical Plans based on Gap Analysis
- ◆ Institute Quick Start projects already identified
 - ◆ Organizational structure
 - ◆ CMMS-SCADA-FIS
 - ◆ CAPEX review
 - ◆ Data flows and responsibilities
 - ◆ Asset plans with available data
- ◆ Implementation – 10-year rolling, continuous process

The End of the Story...

...the Rest of the Story

Strategic Plan was approved, **BUT...**

- ◆ Peer Review process
- ◆ Progress continues in-house
- ◆ **Lessons learned**

Lessons Learned

What We Did Well

- ◆ Training is vital – 24 hours delivered
- ◆ Bring wide diversity of work groups into process
- ◆ Collaborative approach to gap analysis and goal setting
- ◆ Approach to developing plan
- ◆ Roadmap is complete

Lessons Learned

What We Would Do Differently Today

- ◆ Include Board members in early education of AM paradigm
 - ◆ Focus on benefits and how AM will help them
 - ◆ Catch 22 – Benchmarking
- ◆ Build basis of business case on Agency data – earlier, if possible
 - ◆ Analyzed cost side in detail – but benefits could only be shown from Australia/NZ experience

Lessons Learned

What We Would Do Differently Today (cont'd)

- ◆ Complete local case studies early in program
 - ◆ Renewal, growth, maintenance
- ◆ More structured dissemination of information – Train the Trainer
- ◆ Structure implementation concurrent with plan development – as you learn – start implementing – build basis for culture change

Issues in Effective Deployment

- ◆ **Framework** – Creating a common conceptual framework (paradigm)
- ◆ **Structure** – The Asset Management Steering Team
- ◆ **Workplan** – Who does what for whom by when?
- ◆ **Culture** – Transitioning from “short-term operations centric” to “long-term asset centric”
- ◆ **Politics** – Winning commitment from the top shop
- ◆ **Cost** – Funding the first steps; making the business case

Questions?

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