

# CA-NV AWWA Spring Conference

## Integrated Water Cycle Management in Australia

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March 31<sup>st</sup>, 2010

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# Contents

- Context
  - Australia and New South Wales
- Framework
  - Integrated Water Cycle Management
- Compliance
  - Obligations and Assessment
- Solutions
  - Options and Scenarios
- Assessment
  - Triple Bottom Line

# Objectives

To explain

- The integrated water cycle management framework
- An alternative compliance assessment process, encompassing formal and informal obligations
- Triple bottom line (environmental, social and financial) assessment of projects and strategies

# Integrated Water Cycle Management in Australia

**Context**

**Framework**

**Compliance**

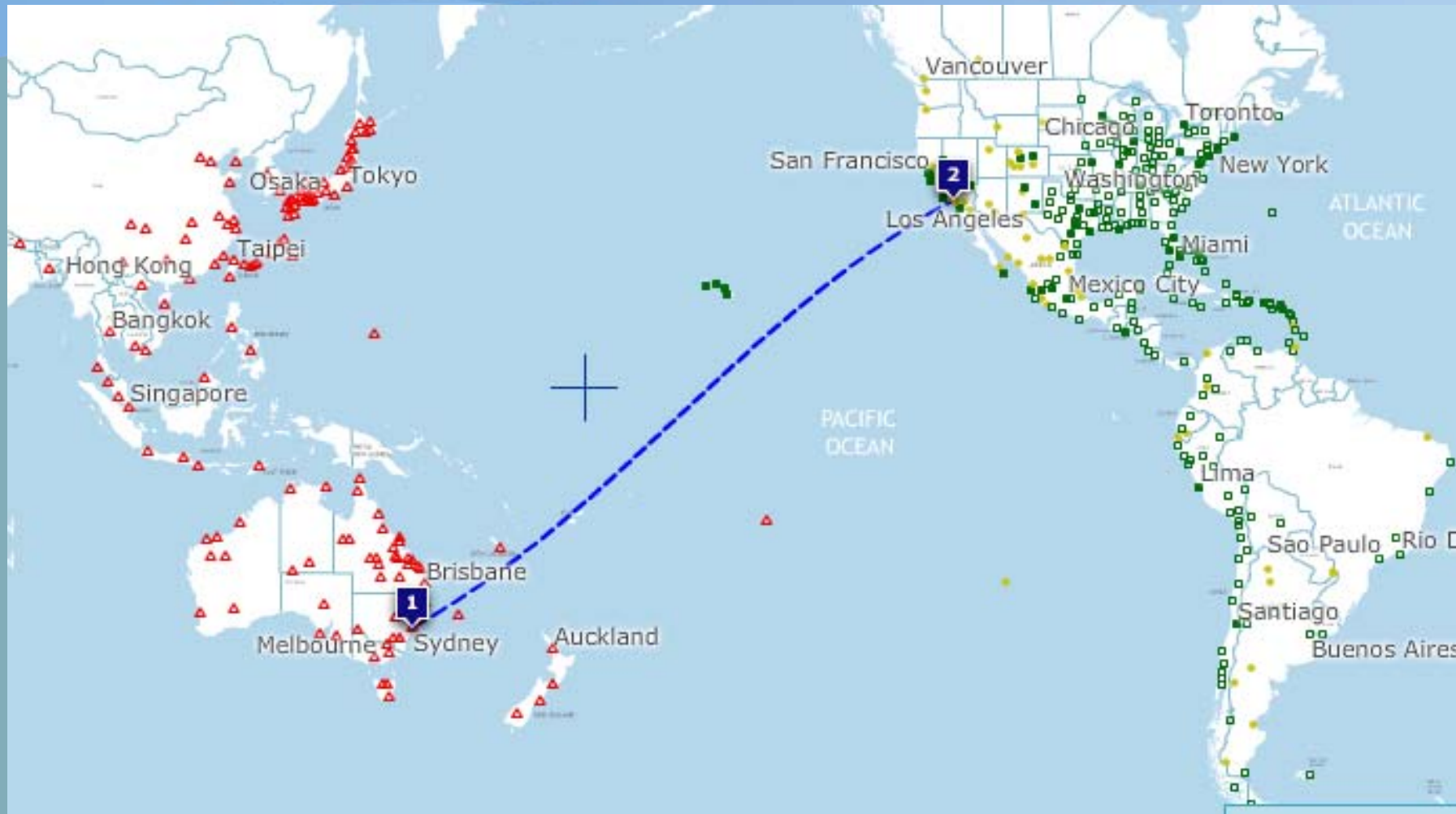
**Solutions**

**Assessment**

# Tucked on the Other Side of the World...

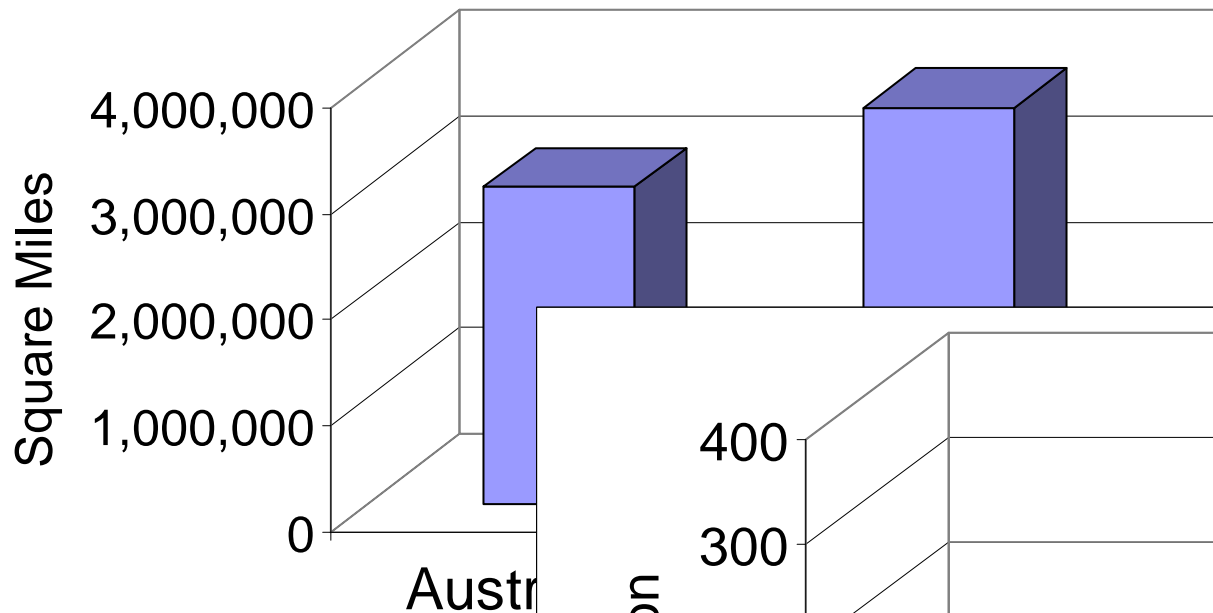


# Or just Across the Pacific

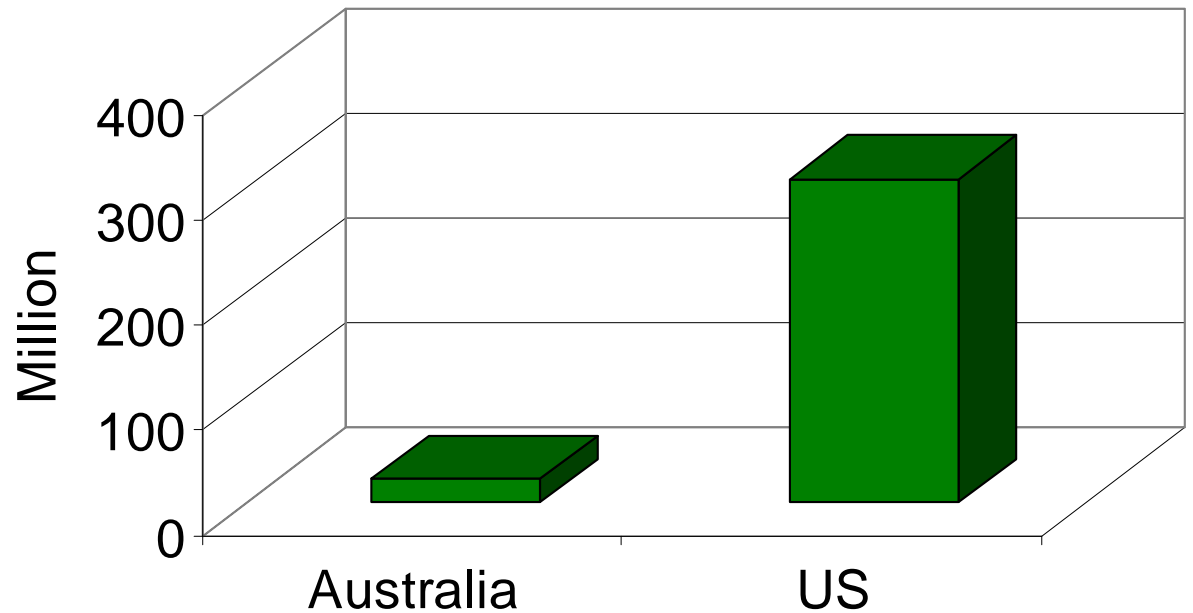


# Australia and the US

Area

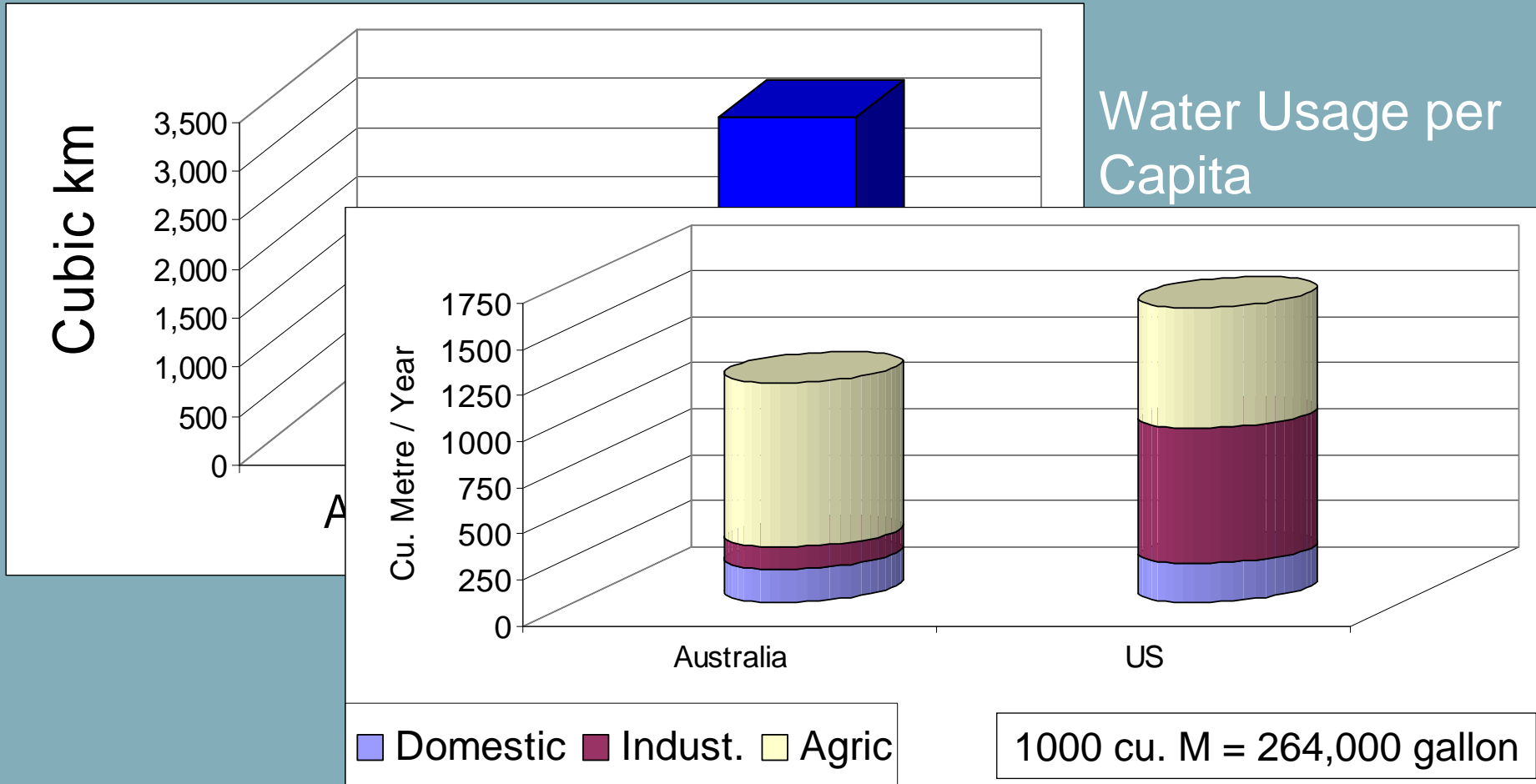


Population

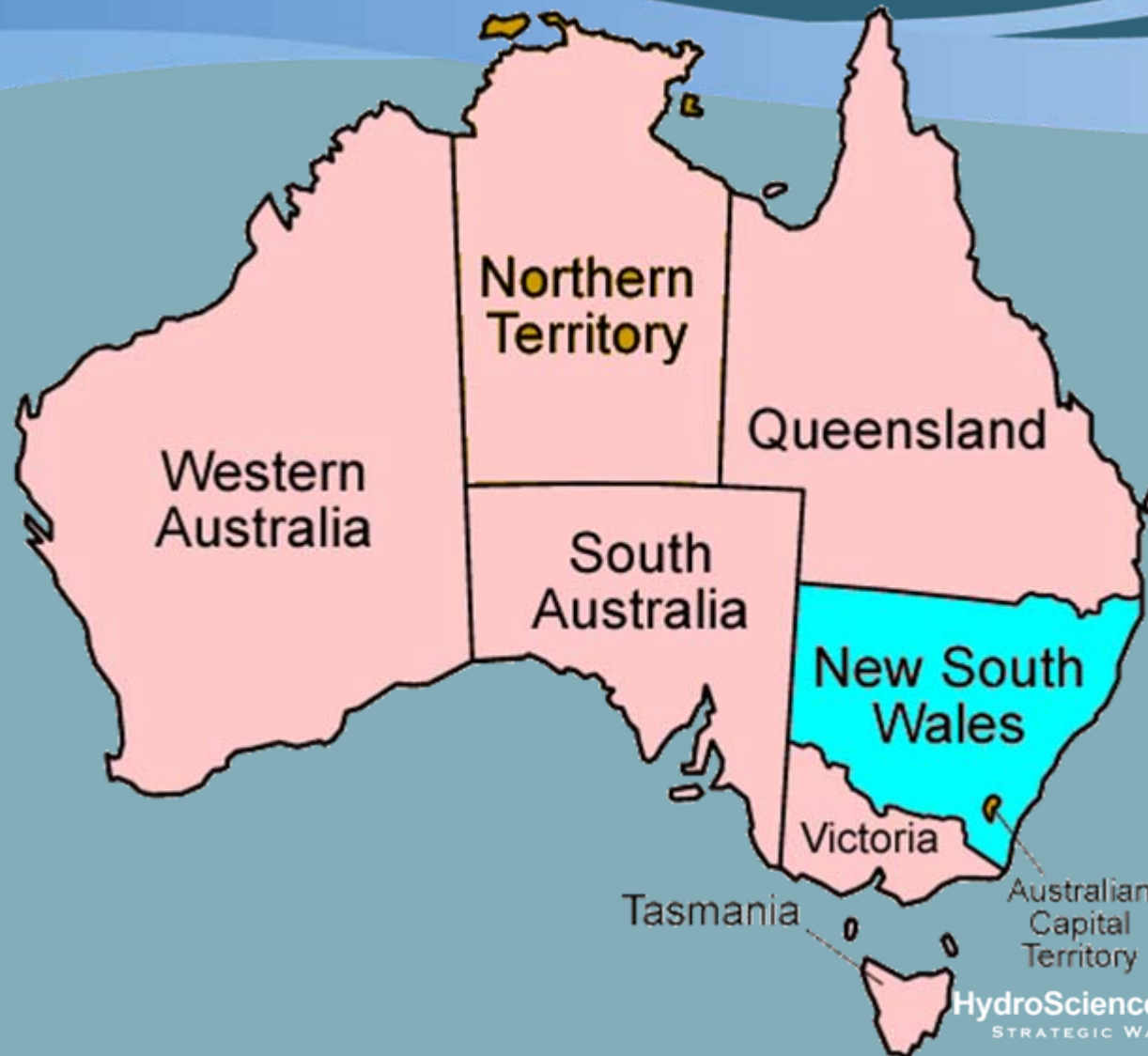


# Australia and the US - Water

## Renewable Water Resources



# Australia and NSW



# Water Utilities

- There are 106 local water utilities (LWUs) in NSW
- Most are part of a local government (City or County)
- The LWUs range in size from population of 100,000 down to 1,000
- Total population served: 1.8 M (out of 7.1 M)
- Revenue: A\$900 M pa
- Assets: A\$17 billion

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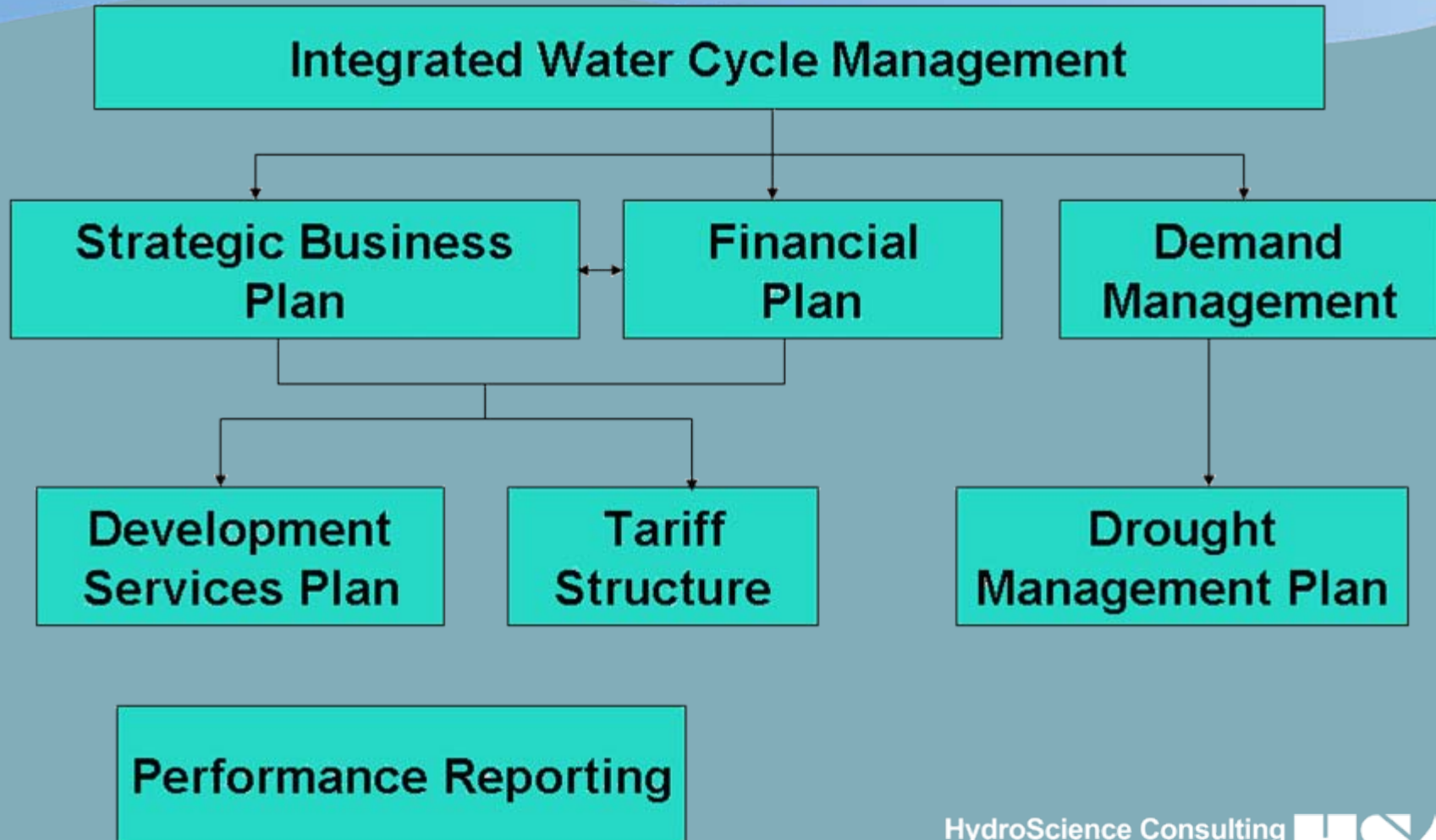
Solutions

Assessment

# Regulatory Framework

- The NSW Government requires all LWUs to implement Best-Practice Management
- Part of the Best-Practice is the preparation of Integrated Water Cycle Management (IWCM) strategy
- The IWCM is a major planning instrument, aimed at creating a long term (30 year) blueprint of water management

# Best-Practice Management



# IWCM: Major Planning Exercise

## Services

Water Supply  
Wastewater  
Stormwater

## Stakeholders

Urban Water  
Water Resources  
Catchment / others

## Assessment

Financial  
Environmental  
Social

USA Today  
3/29/2010

## Cities slap fees on storm runoff

Moves spurred by EPA  
limits on pollution source

By Dennis Cauchon  
USA TODAY

New environmental regulations are prompting cities to impose fees on property owners for the

sized aquatic "dead zone" in the Gulf of Mexico.

Most local governments pay for storm water systems from general tax revenue. Faced with budget gaps, cities and counties are moving to storm water fees — like water and utility bills — based on how much rainwater flows off a property.

The fees have generated stiff opposition in some places. Seminole County commissioners in Florida rejected a fee after 500 people attended a hearing

# IWCM Stages

Evaluation Study



IWCM Strategy

- Data collection
- Obligations
- Compliance
- IWCM issues
- Consultation

- Options
- Scenarios
- Consultation
- Evaluation
- Strategy

# Process

- The NSW Office of Water oversees the implementation
- Guidelines designed for individual LWU
- Recent projects by HydroScience lumped a number of LWUs to achieve cost reduction
  - IWCM for 5 LWUs in the Riverina / Wagga Wagga area
  - IWCM for 4 LWUs in the Central Tablelands area
  - IWCM for a group of 8 LWUs forming parts of the Lower Macquarie Alliance

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# Evaluation Study

- Evaluation studies are data hungry, documenting all base data @
- The evaluation study identifies compliance

However....

- To assess compliance, we must first define obligations

# Obligations

- Formal Obligations: Required by law or regulation, eg
  - Wastewater discharge license (permit)
  - Drinking water quality
- Informal Obligations: typically community preference, e.g.,
  - Water recycling targets
  - Performance, compared to other utilities

**MUST**



# IWCM Issues

- IWCM issue is non-compliance with obligation – now or in the future
- Issues may be addressed by:
  - Business as usual
  - Non-structural solutions or minor capital works → Simplified strategy
  - Major capital works within the next 10 years → Detailed strategy

# Business as Usual Example

2.0

Water Filtration  
Plant 16 Mar 2007  
TSS discharge  
DECCW licence  
non-compliance  
Issue – one off  
event.

This issue has been  
addressed by BaUs as  
RWCC has implemented a  
procedure system to  
ensure this is not repeated

- BaUs
- Simplified
- Detailed

# Minor Issue Example

28.  
0

3 Culcairn STP  
suspended solids  
exceedence in  
2007/08

DECCW officer has  
advised that a new  
licence in 2010/11 will be  
modified to allow for  
chlorophyll-a, TSS, BOD  
and pH caused by  
excessive algae growth  
(source: personal  
communication Tom  
Plunkett)

- BaUs
- Simplified
- Detailed

# Major Issue Example

7.0

Insufficient treatment capacity to provide water to Wagga Urban and Southern Trunk Systems in 2019.

RWCC will undertake studies to identify the appropriate balance of treatment augmentation or demand management. This will determine the best option to address this issue. It is likely that this will require significant capital expenditure within the next 10 years.

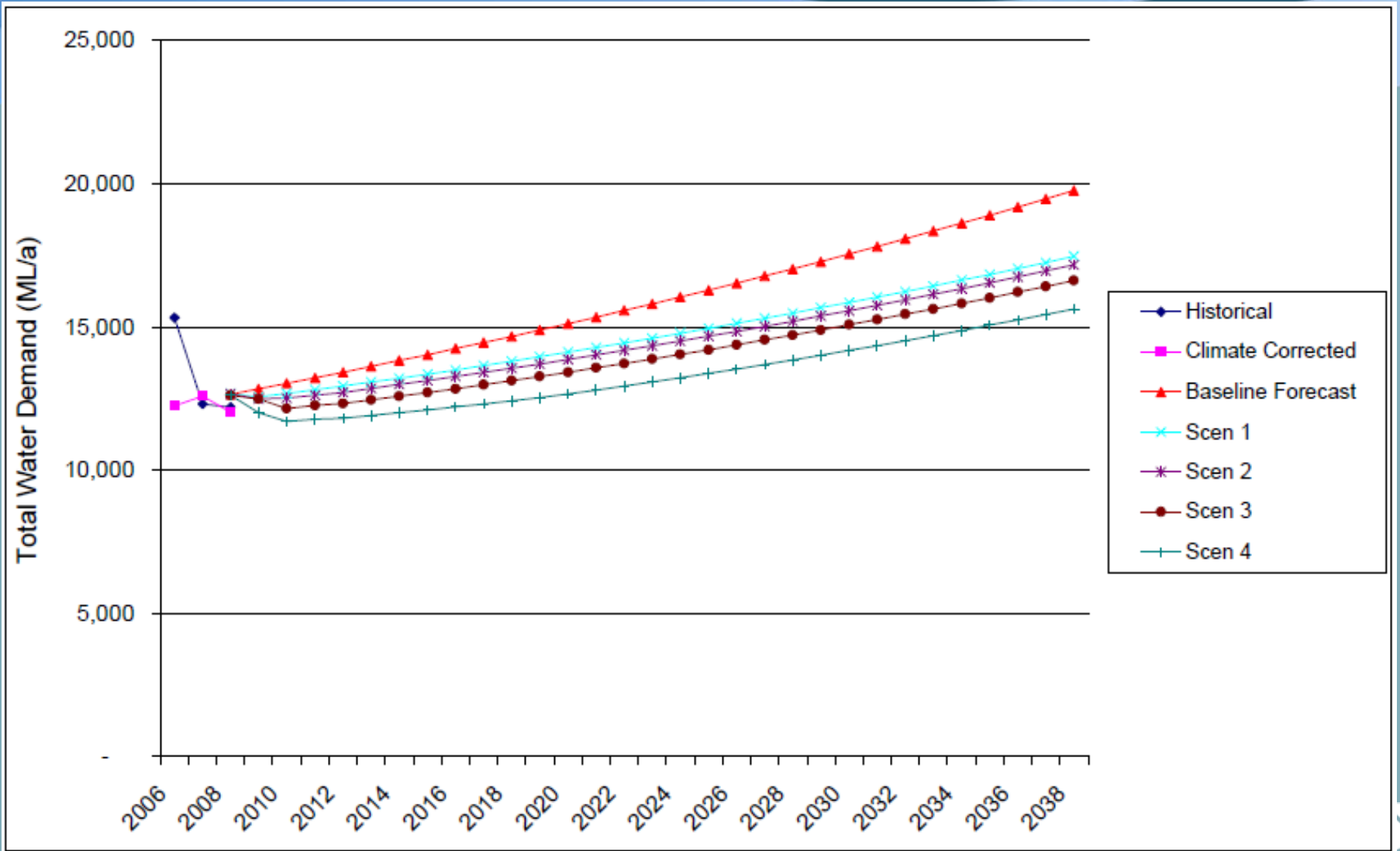
- BaUs
- Simplified
- Detailed

# Community Preference Example

Riverina Water County Council

No.	IWCM Potential Issues – Community Objectives related	Explanatory notes and recommended actions
5.2	RWCC performance ranked in the 4th and 5th Quintile in the state-wide TBL report for some indicators	None of the issues appear to require significant capital works within the next 10 years. RWCC will review the TBL performance and develop appropriate best-practice actions.

# Demand Modelling



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# Options and Scenarios

- For each IWCM issue there could be a number of options
- Scenarios are a suite of options. Scenarios are long-term plans
- Typically we develop 4-5 scenarios:
  1. Do nothing
  2. Basic solutions
  3. Acceptable options
  4. High quality options
  5. Insanely expensive options

} Preferred scenario likely to be one of these

# Example – Broken Hill

- Broken Hill is a remote town in arid area
- Water is piped from 60 miles away
- Water quality has been a major issue, as supply sources deteriorated due to drought
- Existing water filtration plant was in bad shape



# Scenarios – Broken Hill

- While there were other issues, including wastewater treatment plants, the main variable was the water treatment plant
- Scenarios
  1. Do nothing – treatment plant is likely to fail
  2. Refurbish existing treatment plant
  3. New filtration plant – sand filters
  4. New filtration plant – membrane filtration
  5. Membrane filtration + retaining an RO plant

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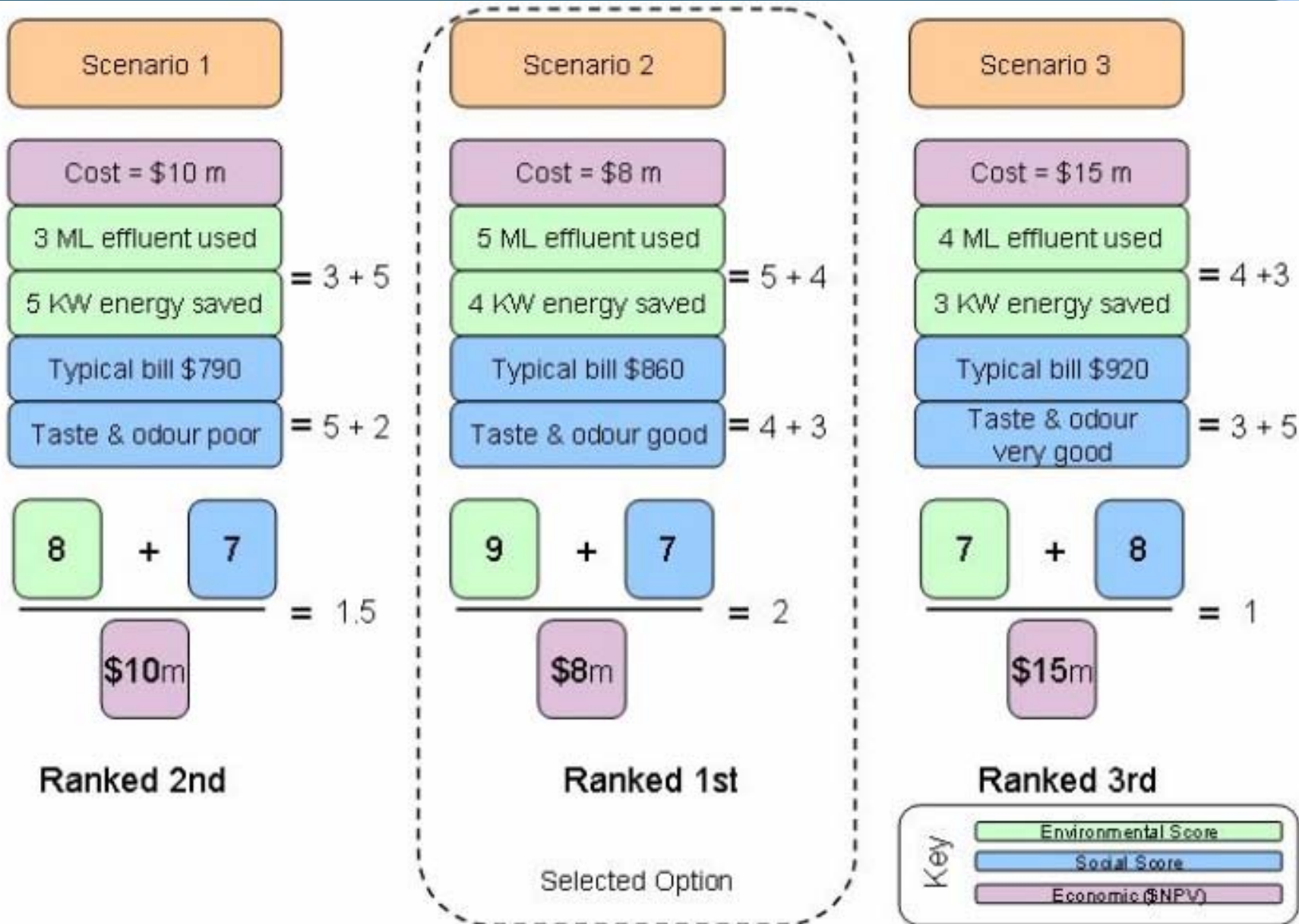
# Triple Bottom Line Assessment

- Projects and plans should not be valued on cost alone
- TBL includes:
  - Financial
  - Environmental
  - Social
- This is a structured evaluation of something we have all been doing informally

# Implementing TBL Assessment

- Scoring
  - Environmental score – positive
  - Social score – positive
  - Cost – negative
- Use no more than 2-3 variables for environmental and social parameters
- Scoring is often an opinion, so environmental and social scoring is done in a workshop with stakeholders

# TBL Assessment - Example



# Summary

- The IWCM is a major planning exercise
- Understanding obligations and non-compliance is the foundation of the plan
- Alternative scenarios are evaluated using the triple bottom assessment process
- The outcome is a long-term blueprint for the management and development of urban water services

# Acknowledgement

- The NSW Office of Water has developed the IWCM concept, framework and guidelines.
- The guidelines and information sheets are available from:

[www.water.nsw.gov.au](http://www.water.nsw.gov.au)

And follow links to

- Urban Water
- Country Town Water

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# Thank you

## Questions?

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