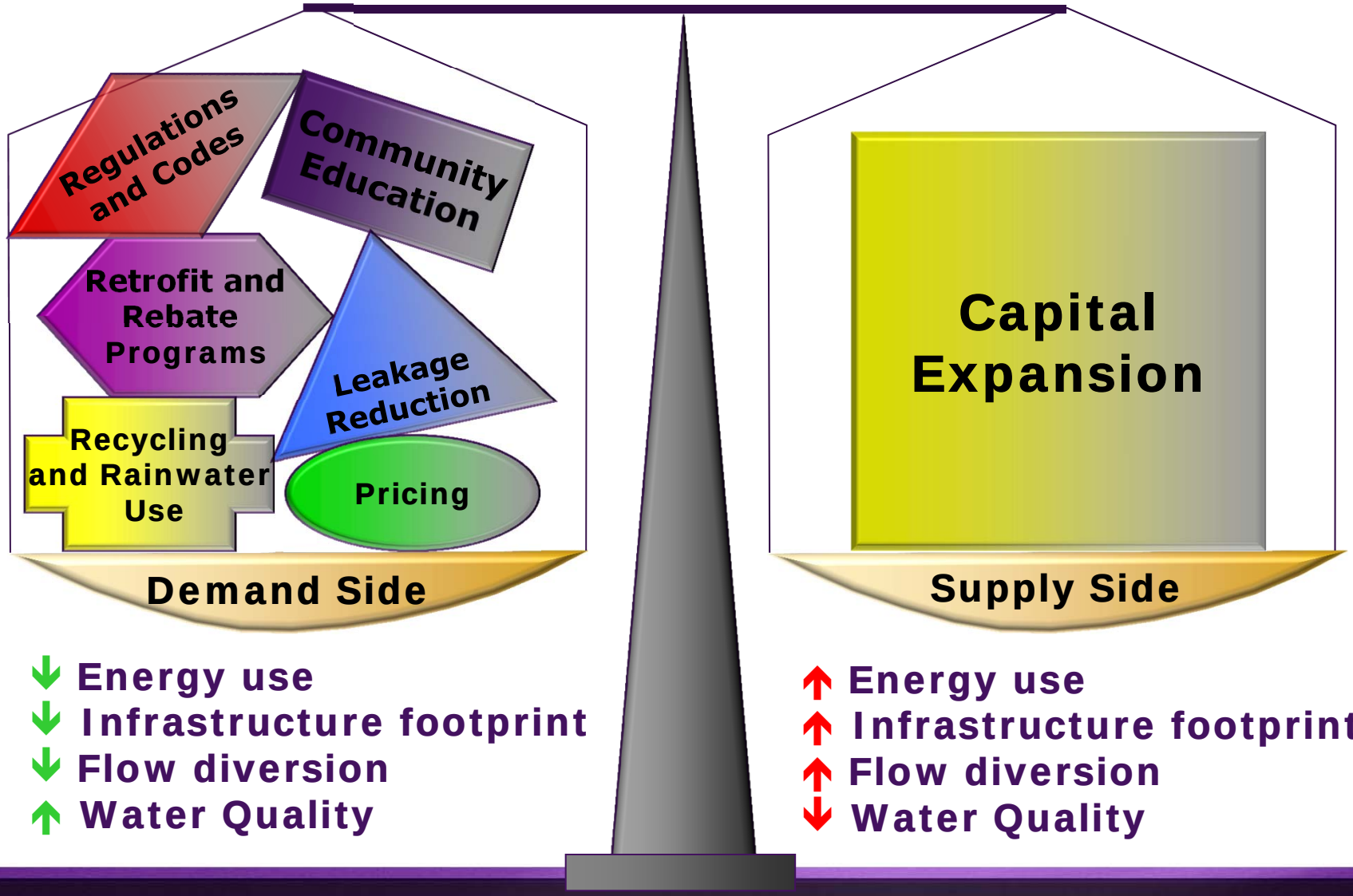
SINCLAIR KNIGHT MERZ

SKM

Integrated Water Resources Planning
Current Approaches

achieve outstanding client success

Integrated Water Resources Planning



- ↓ Energy use
- ↓ Infrastructure footprint
- ↓ Flow diversion
- ↑ Water Quality

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- ↑ Infrastructure footprint
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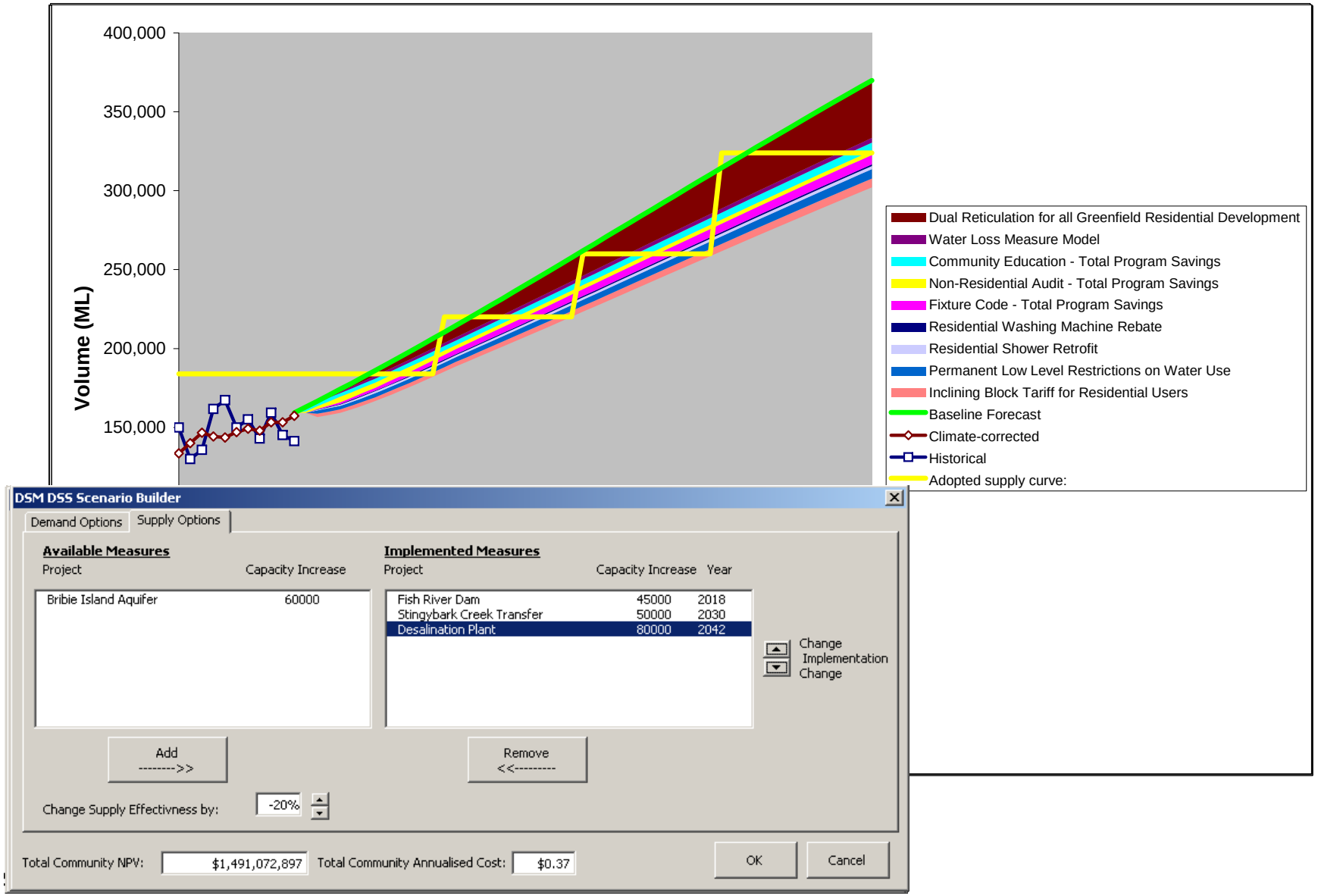
Integrated Planning Approaches

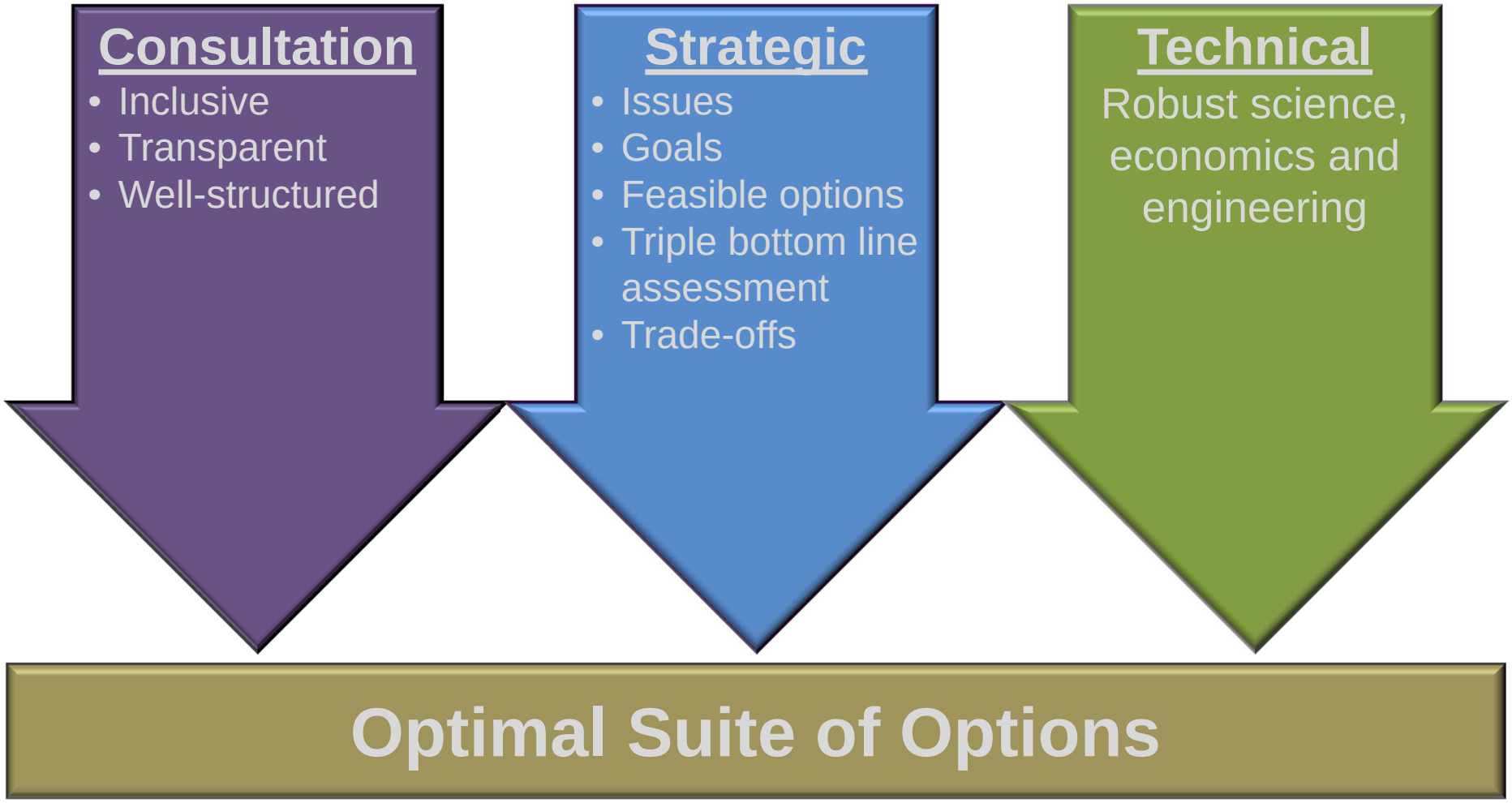
A number of terms are commonly used to describe integrated planning:

- Least Cost Planning - $/kL ranking of supply and demand options – simplistic and can bias results
- Integrated Water Resources Planning – total system analysis of supply and demand options
- Integrated Water Cycle Management – examination of TBL impacts of different water cycle management options in a whole of catchment context
- Total Water Management (term applied to almost any of the above)

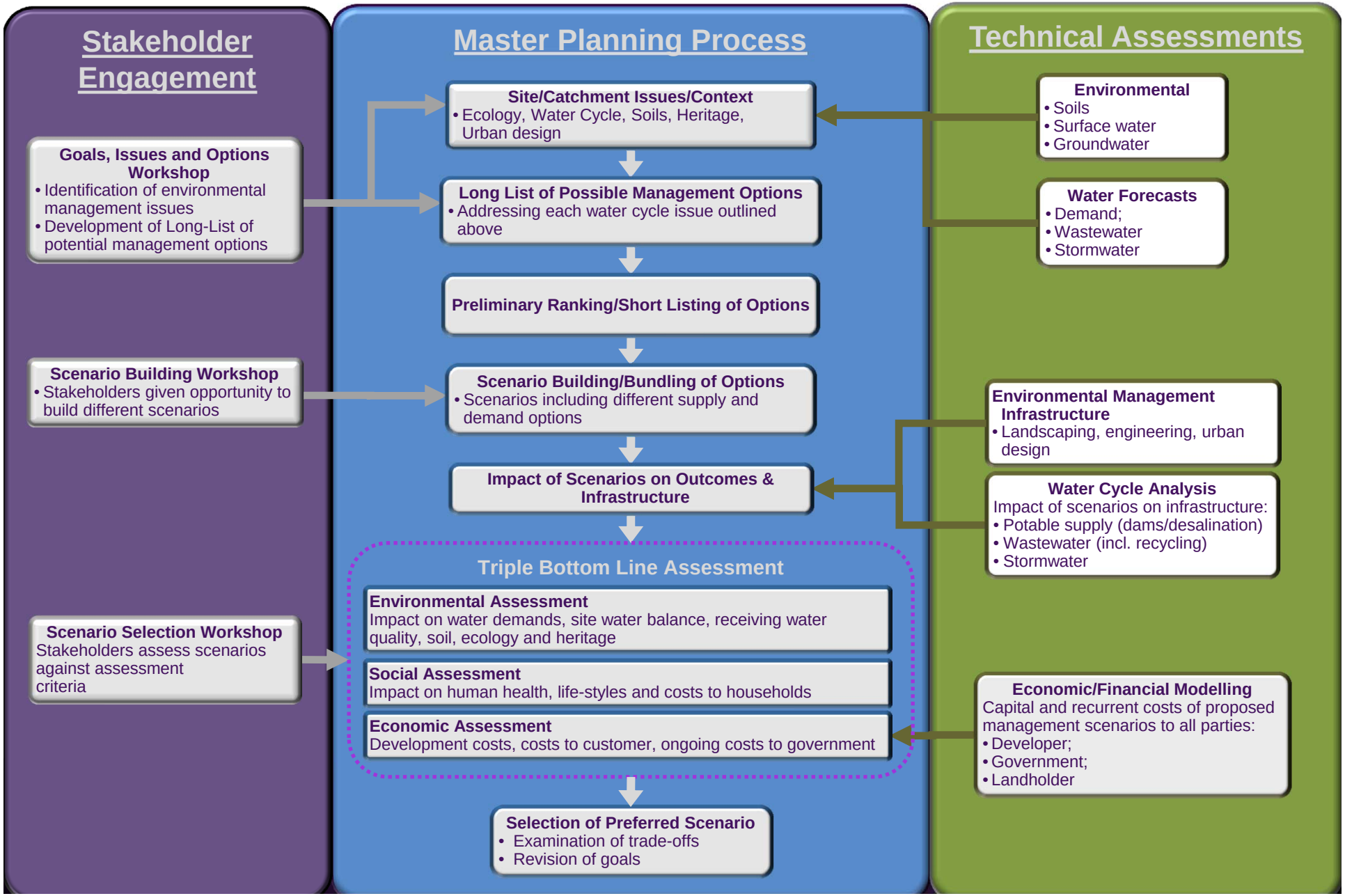
Scenario Planning



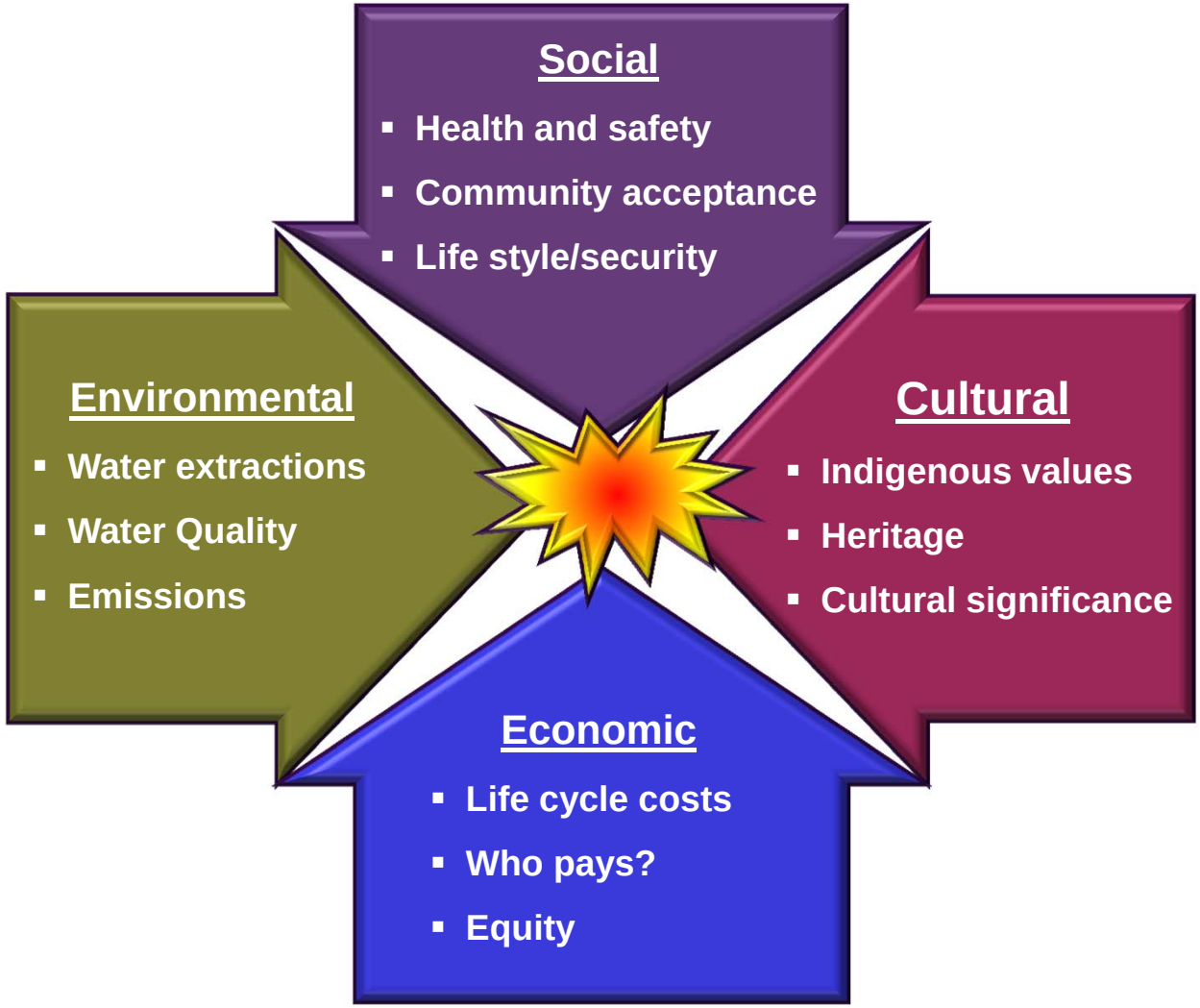
Key Strands in Integrated Planning



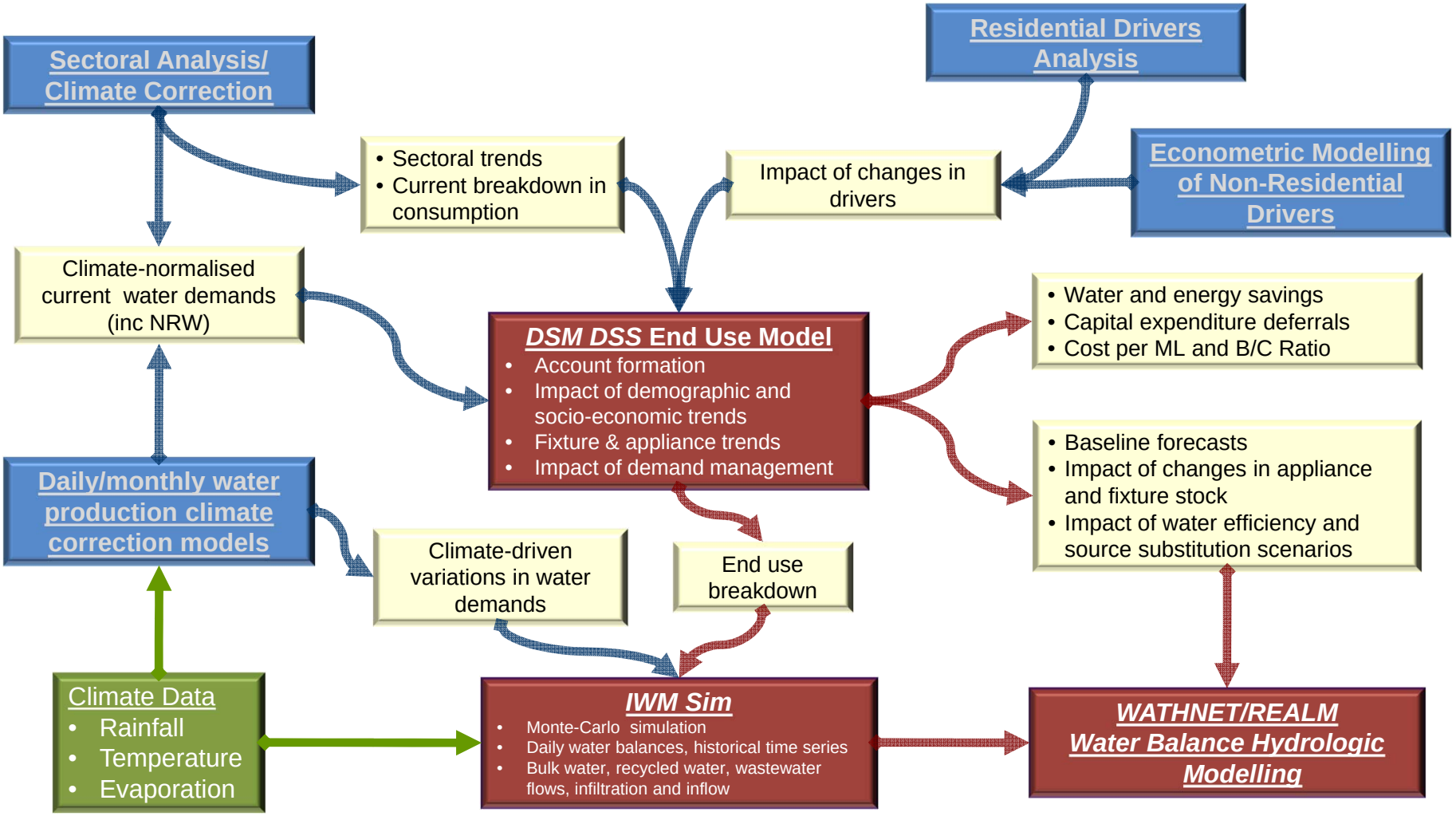
Typical IWRP Framework



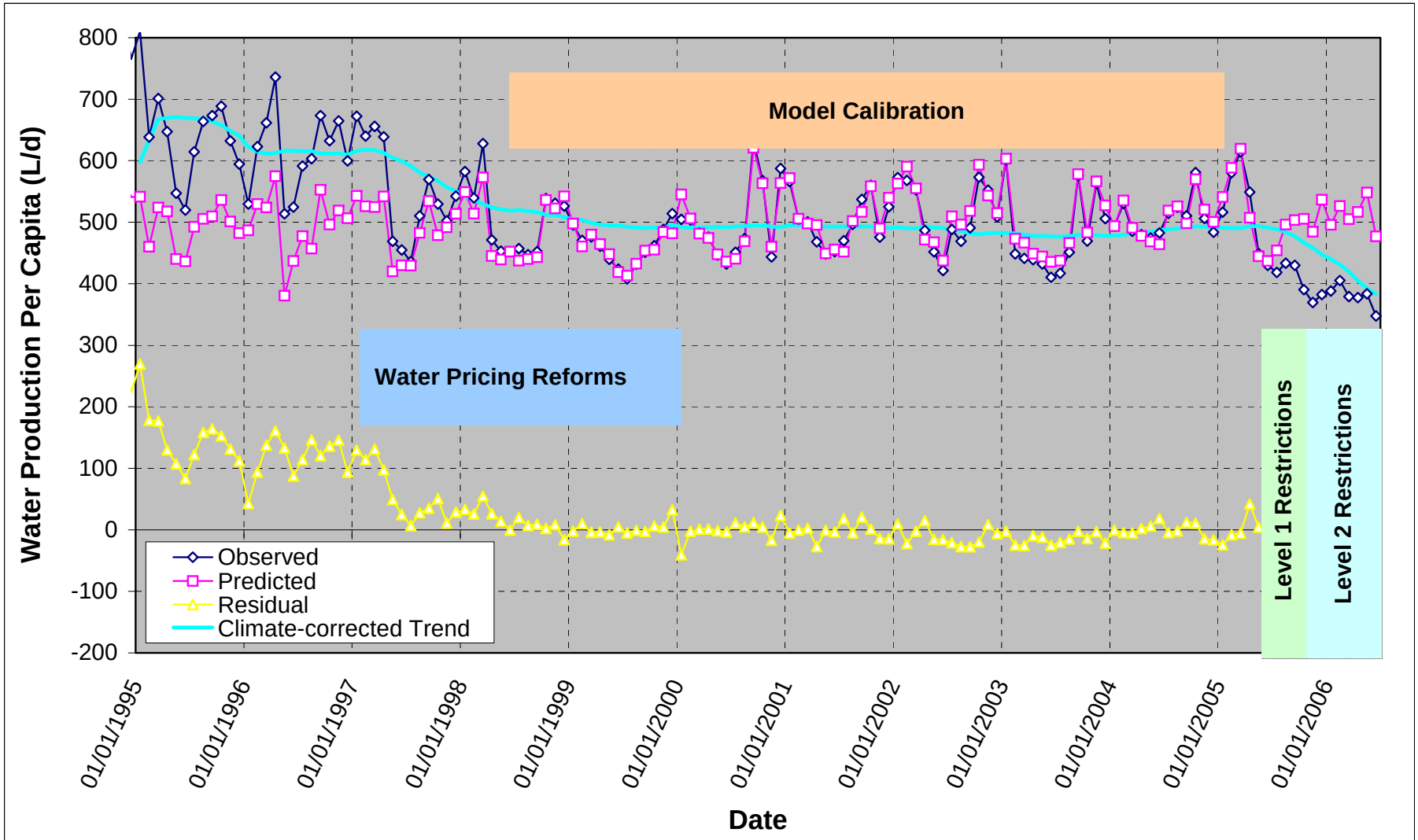
The Focal Point



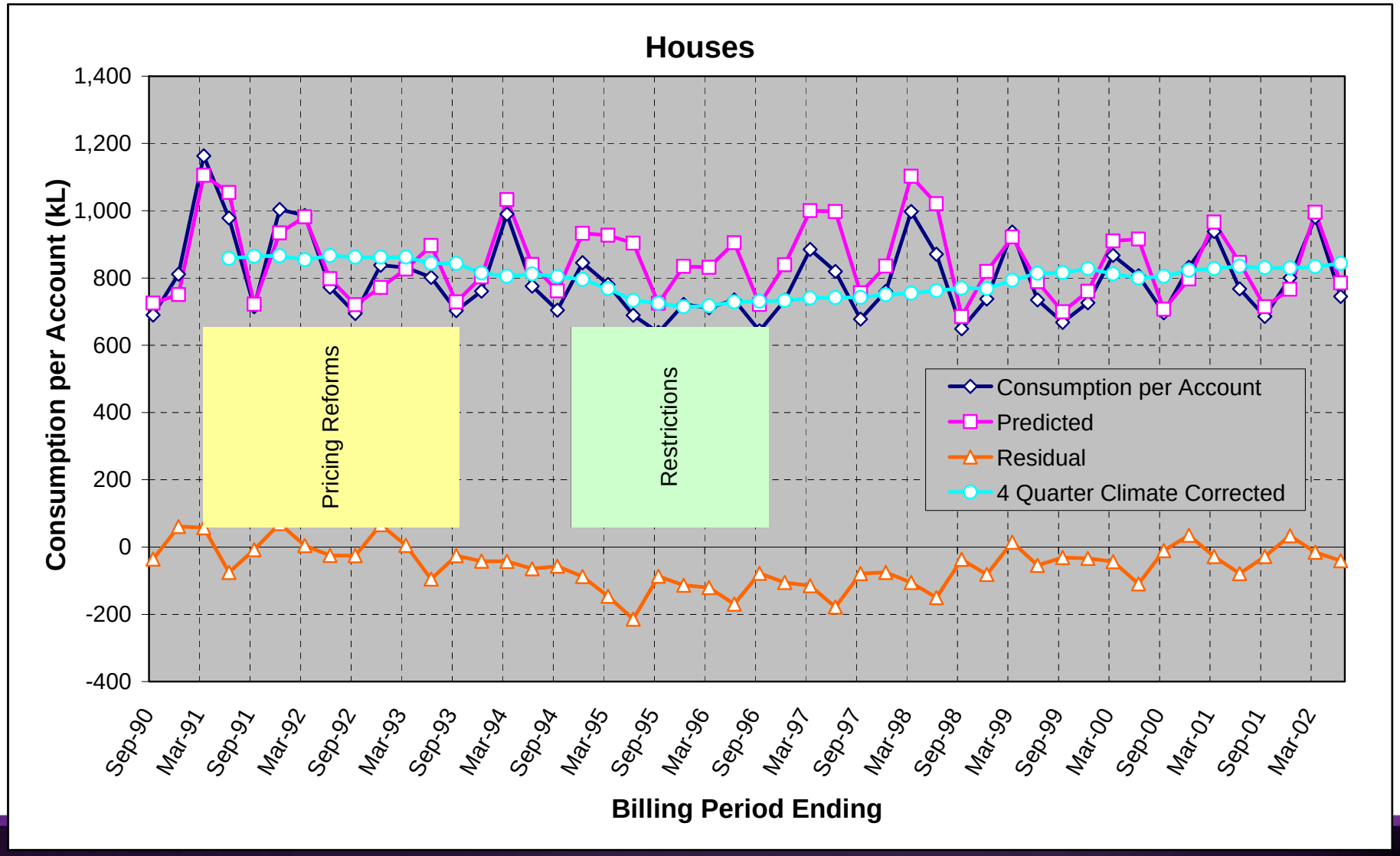
Modelling Framework



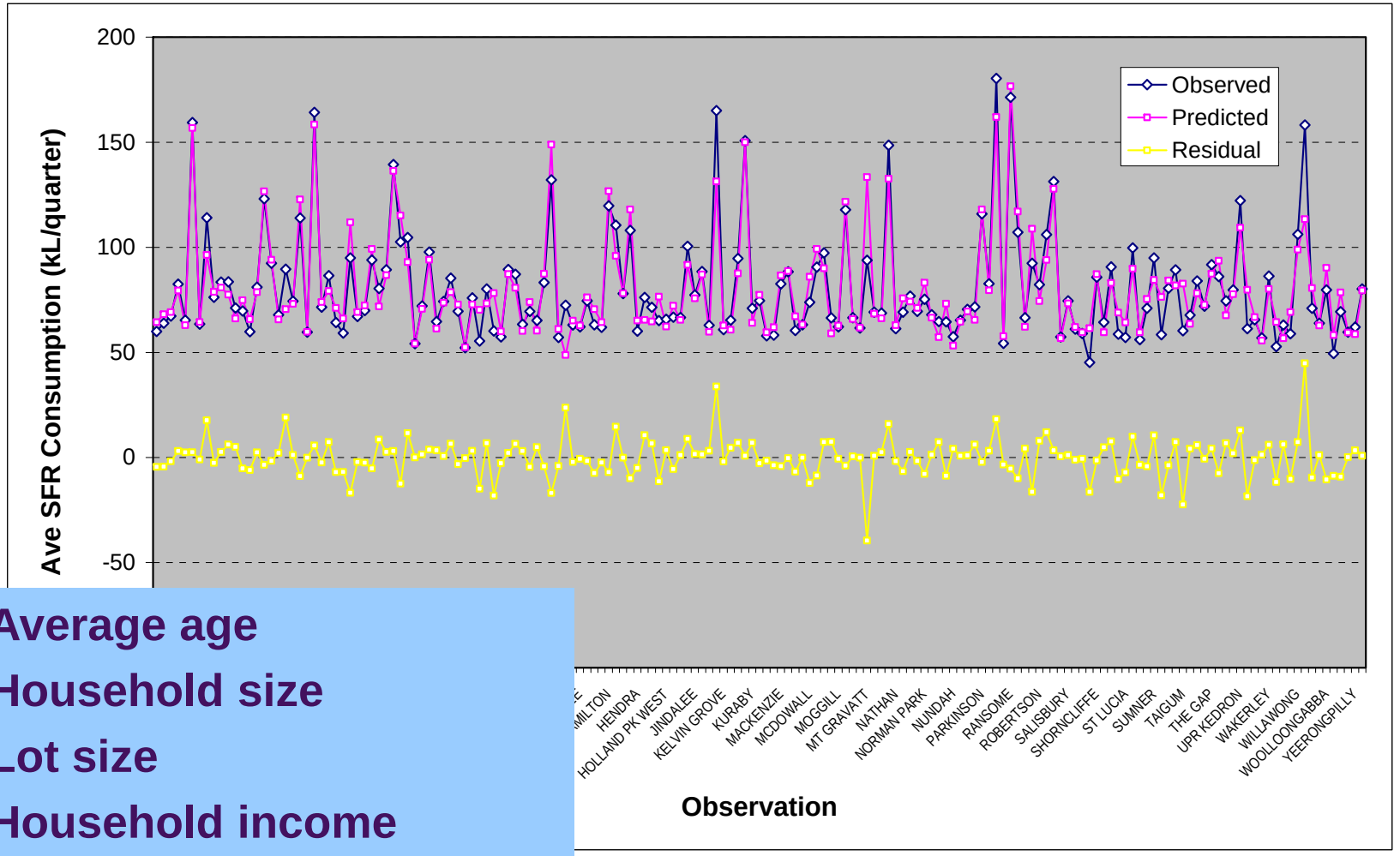
Climate Correction



Sectoral Analysis

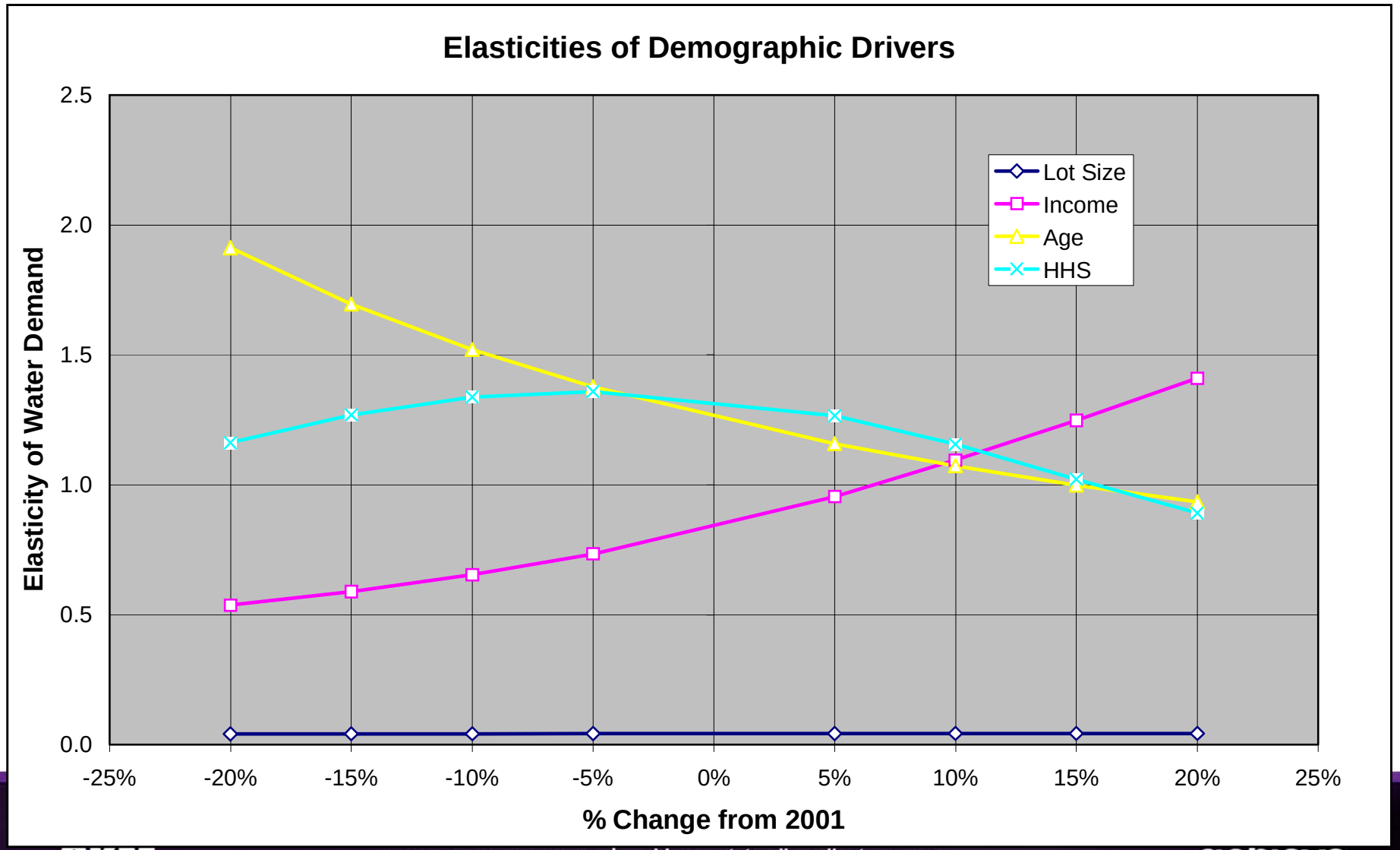


Econometric Analysis – Demand Drivers

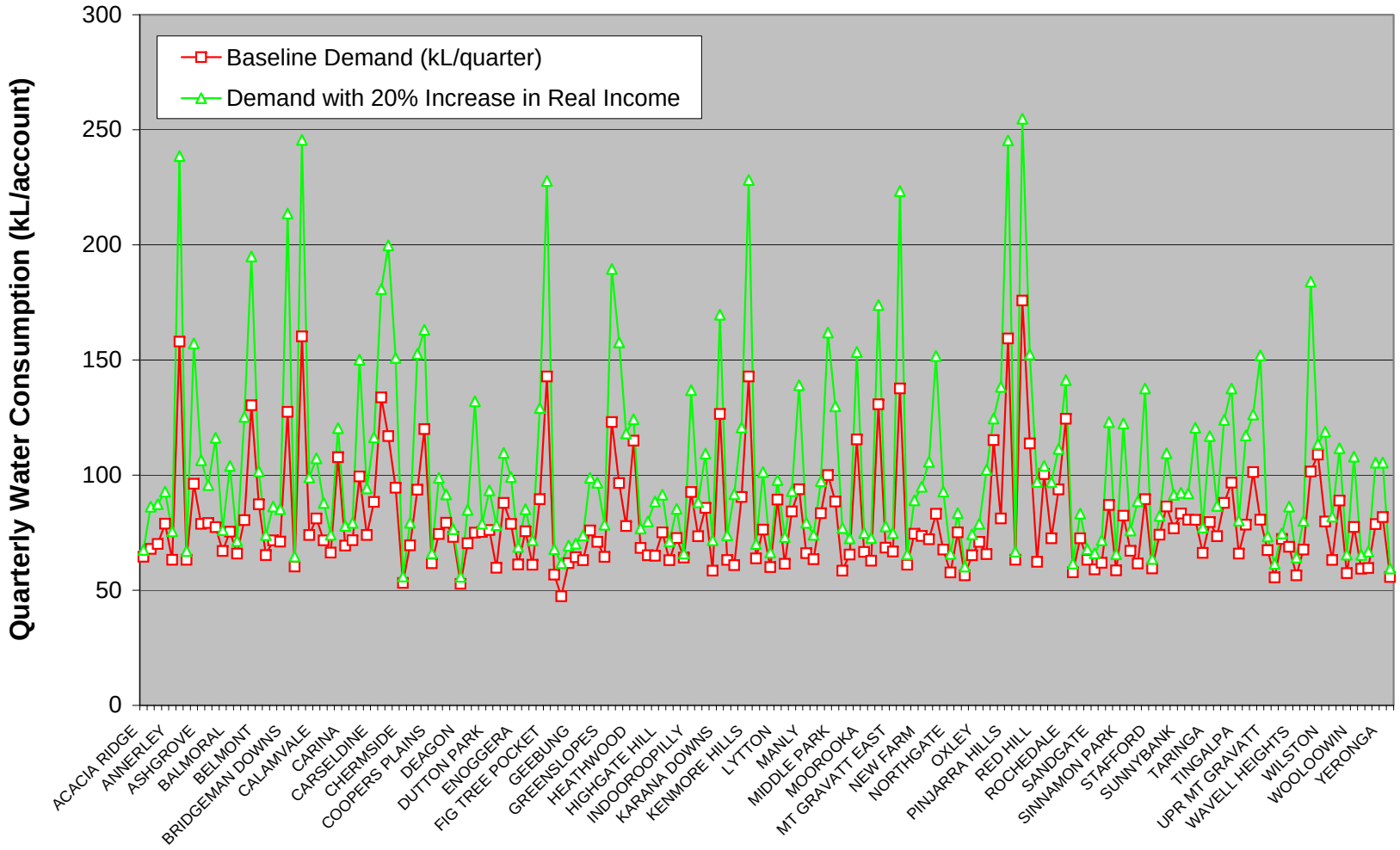


- Average age
- Household size
- Lot size
- Household income
- Soil type

Better Understanding Drivers



Scenarios – Upward Demand Pressure



A New Environmental Awareness?

Essential Luxury?

Luxurious Hand Held and Dual Shower Heads with or without Tub & Shower Faucet Systems

These Shower Heads elevate the act of showering to a luxurious experience that can be customized to accommodate individual preferences. With innovative products that are inspired by the power of water, including single-function and multifunction shower heads with large diameters, as well as hand held showers that offer unique water delivery, it's easy to create an wonderful showering environment. You choose the package. We'll wrap you in water.

Captain's Quarters Shower


Nautilus II Shower Head

Polaris II Shower Systems

Brass Shower Heads

Dolphin Shower Head

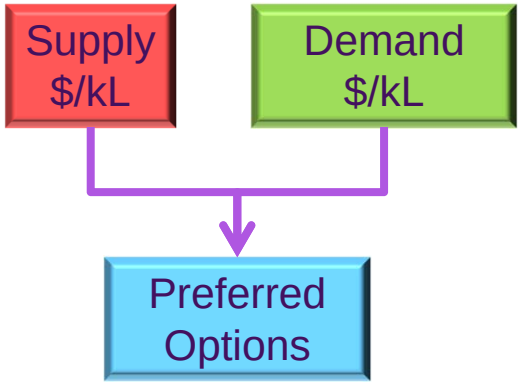
Sea Horse Shower System

Sea Horse II Shower Systems

Polaris Shower Heads

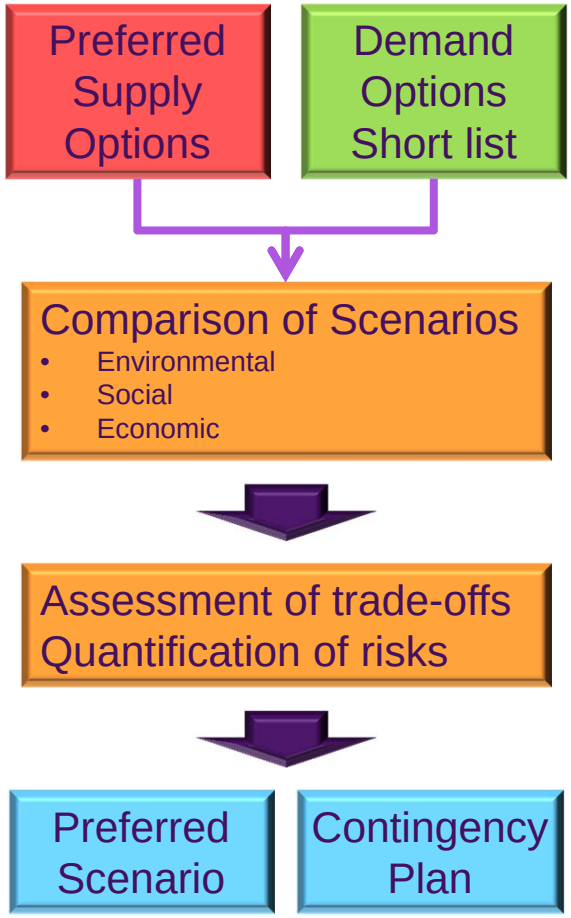
Lack of Integration/Simplistic Economics

Least Cost Planning

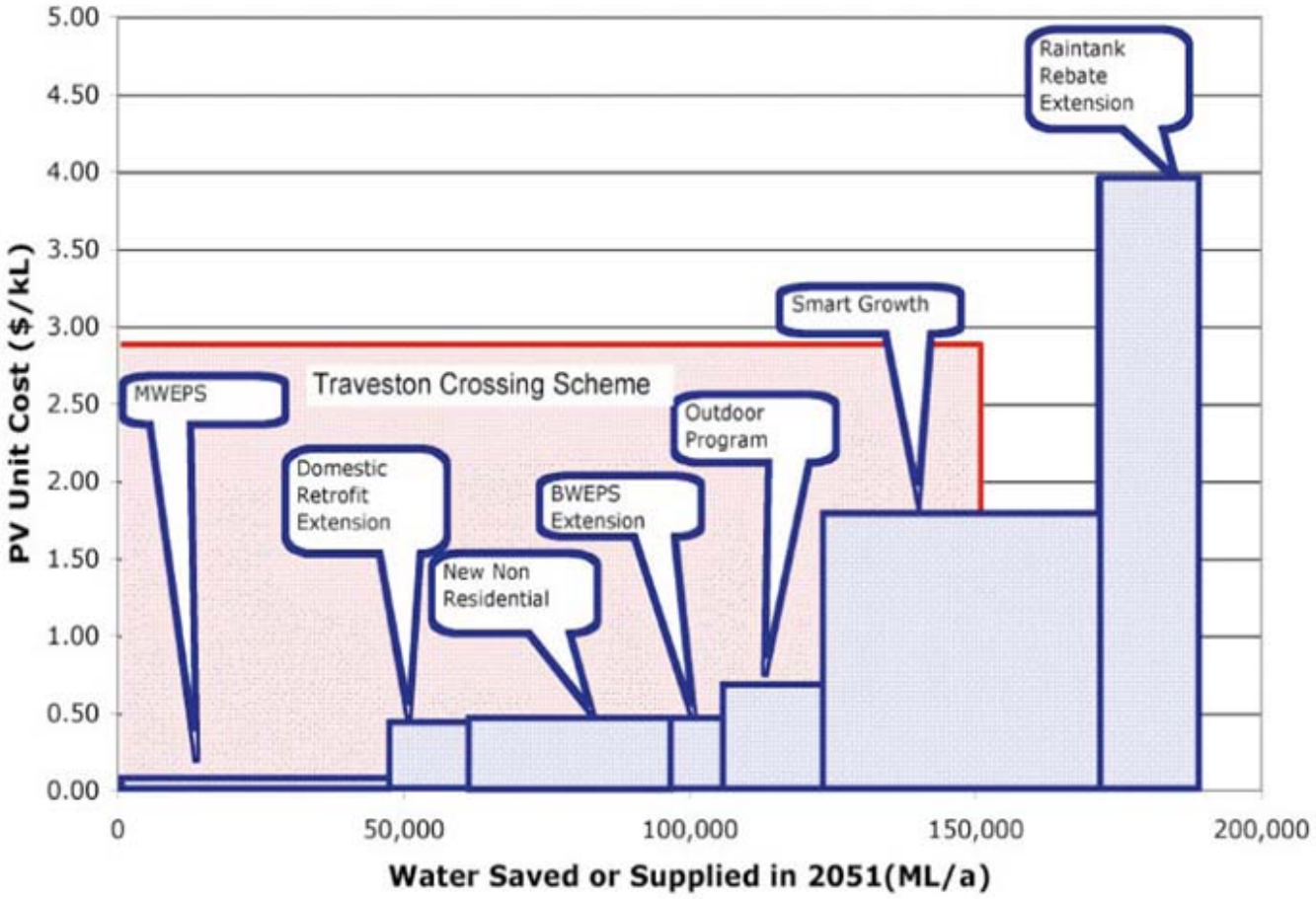


- Supply and demand options compared on the basis of $/kL
- No scenario planning or examination of trade-offs

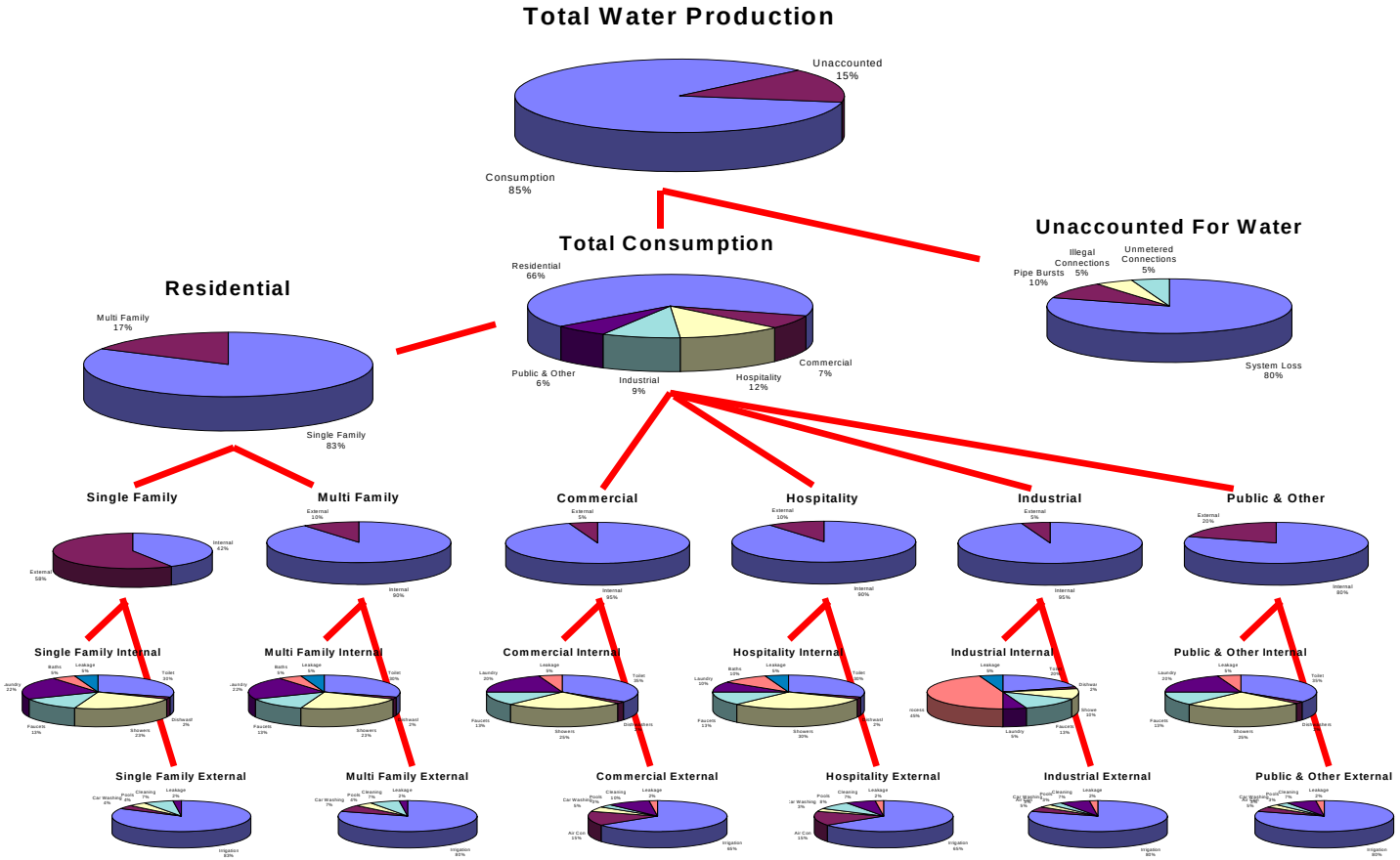
Integrated Water Resources Planning



What IWRP is Not

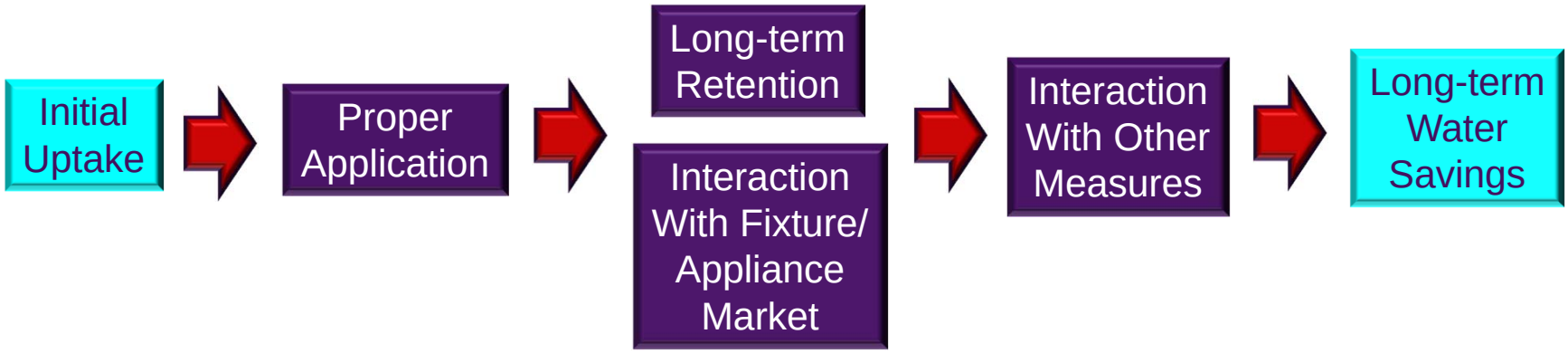


End Use Modelling – Forecasting on the Basis of Each Use of Water

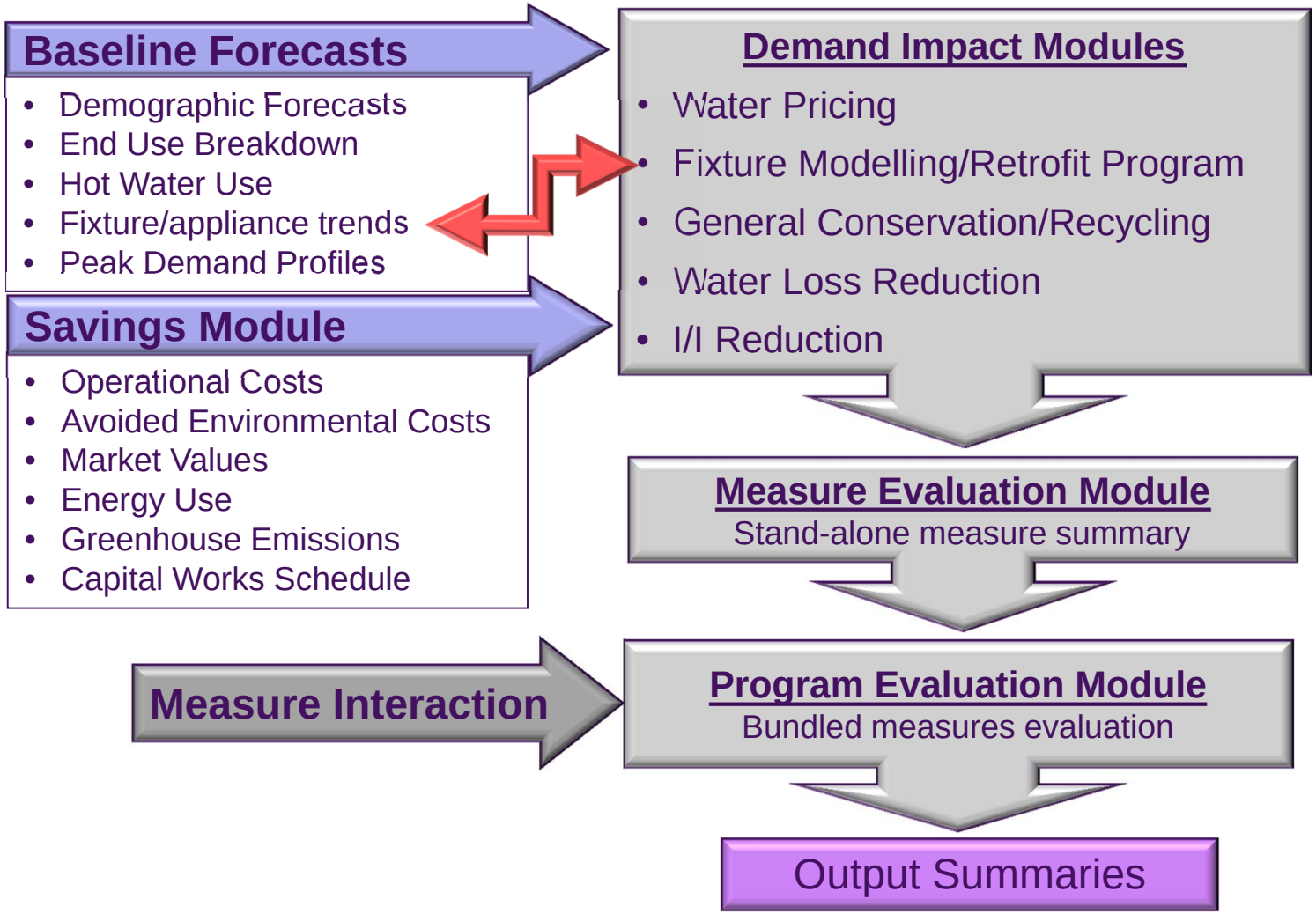


Limited End Use Modelling

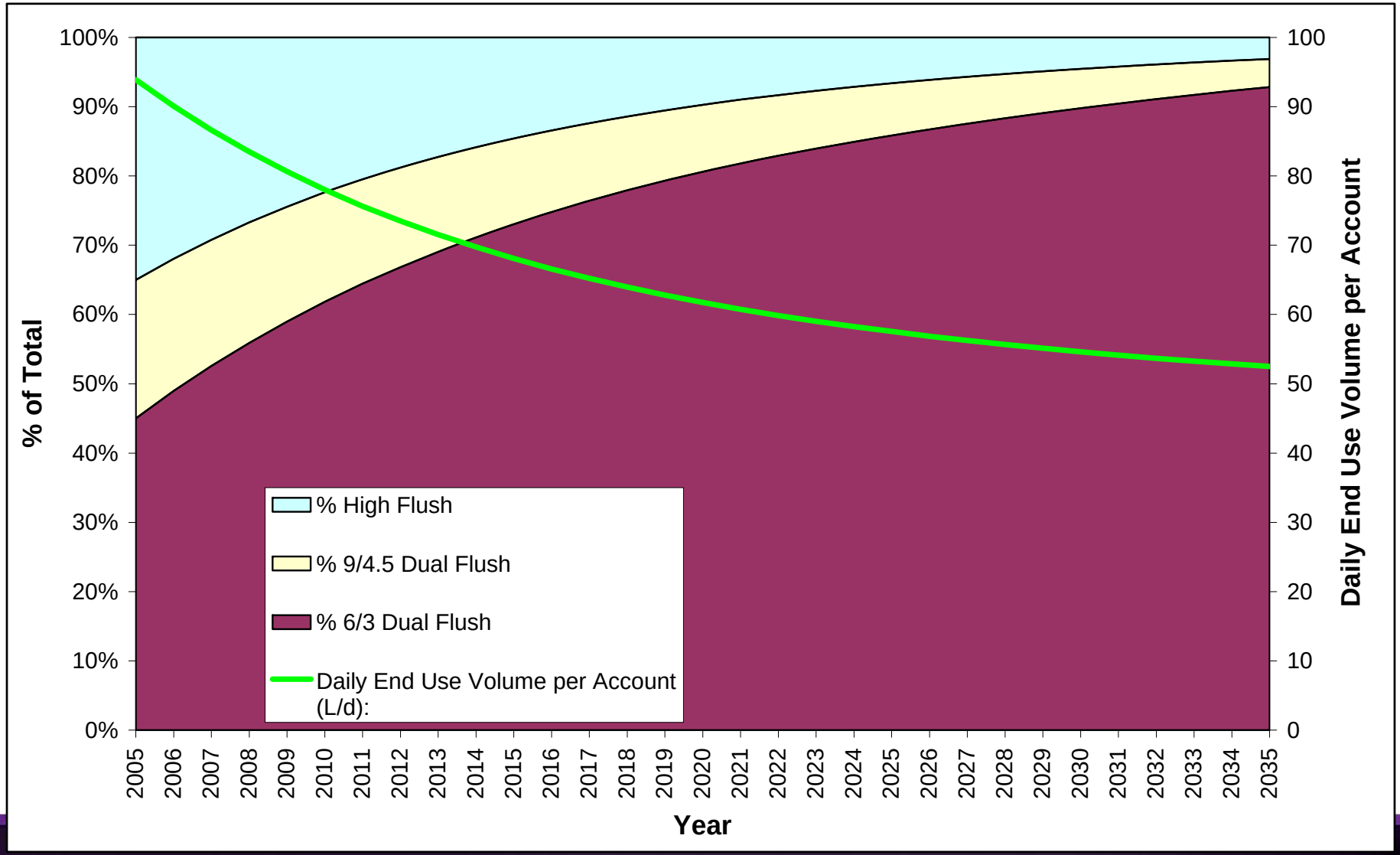
- Not seen as important or worthy or long-term resourcing
- Most end use models reflect that sentiment
- Should have equal status to design of supply-side options



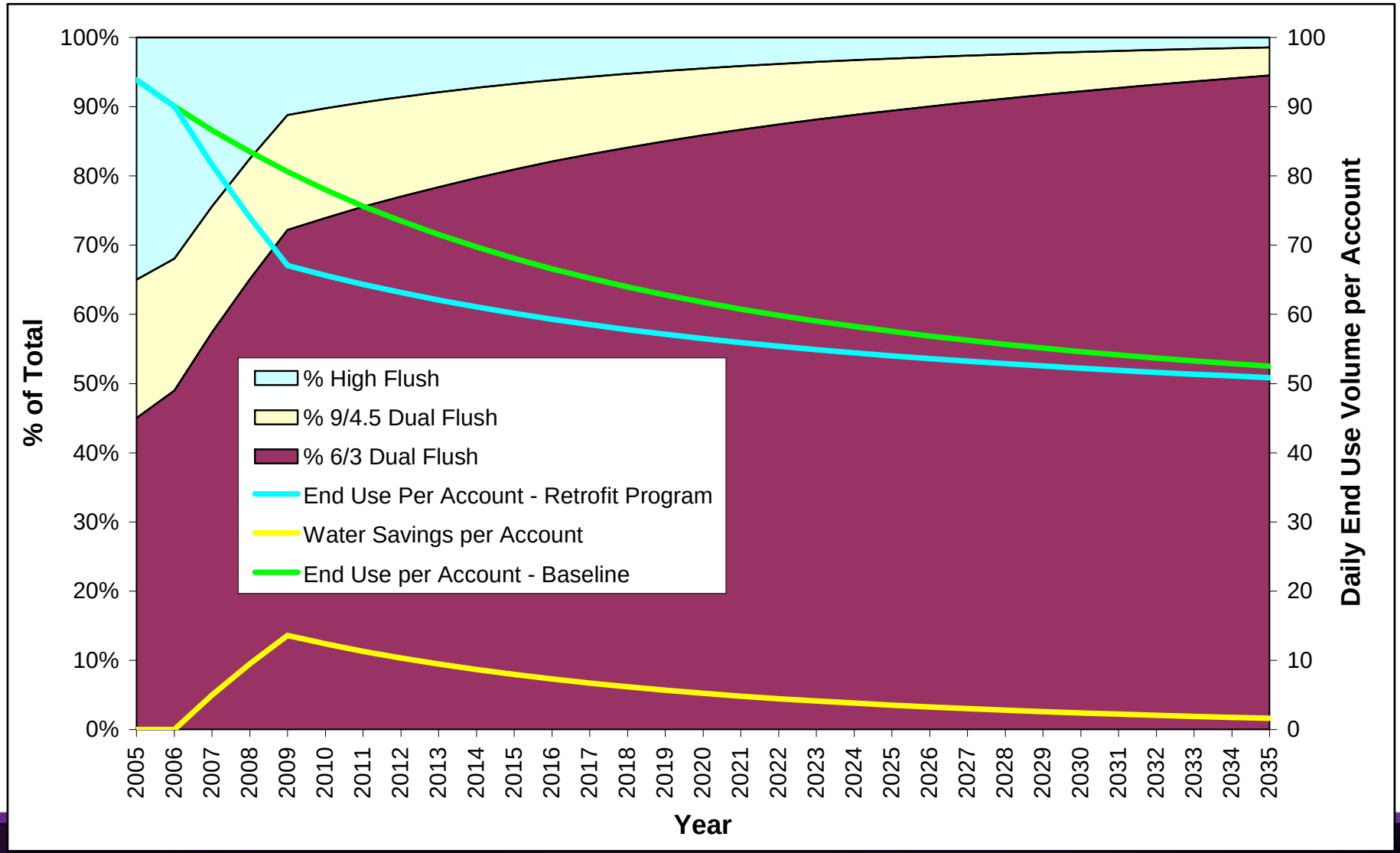
DSM DSS Model Structure



Savings Clawback - Baseline Case



Savings Clawback - Retrofit



Silk Purse?

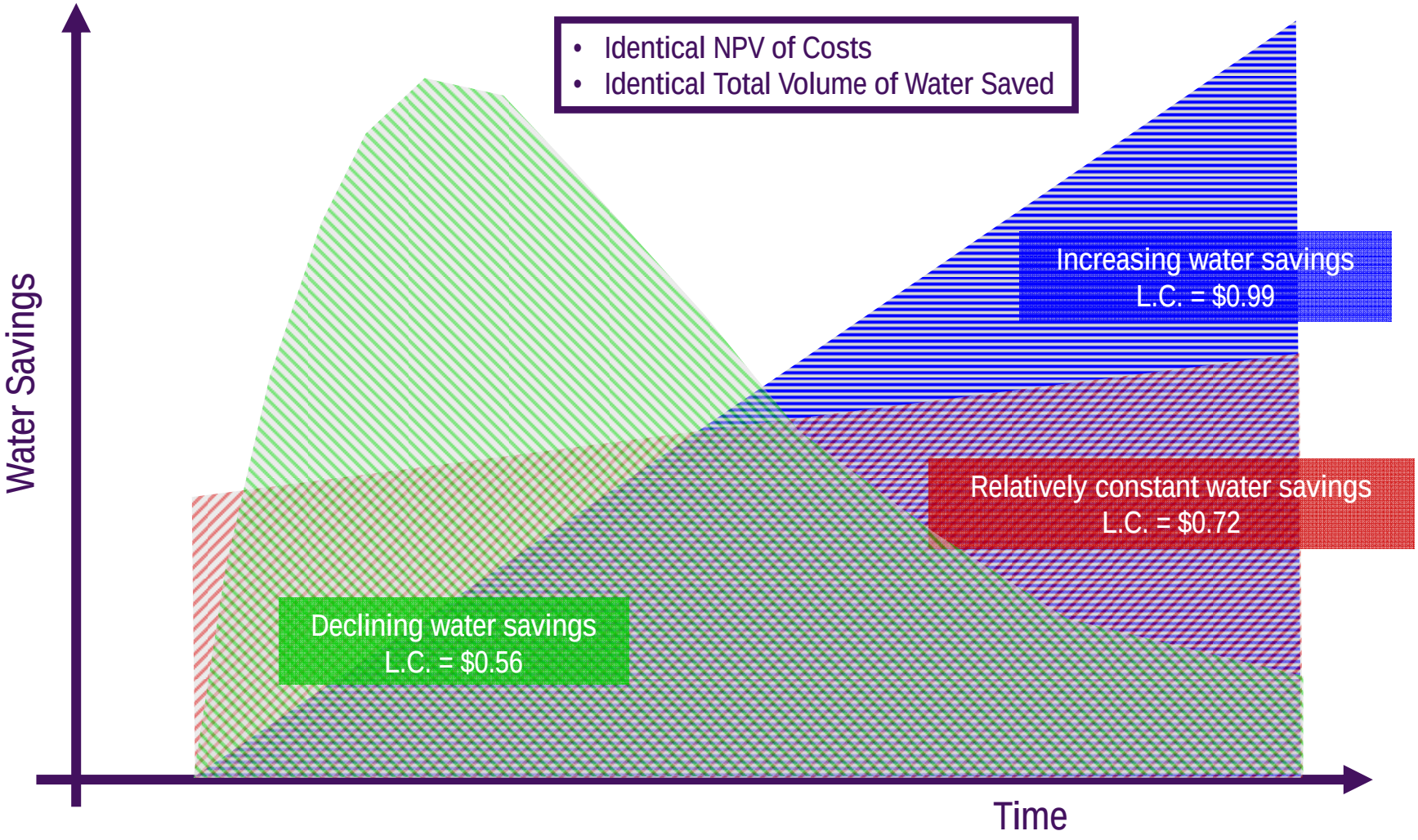
2.95 Litres, 86 kW @ 4,000 rpm

3.0 Litres, 152 kW @ 5,900 rpm

- **Extractors (+10%)**
- **Double valve springs (+5%)**
- **Engine blueprinting (+10%)**
- **350 Holley carburettor (+10%)**
- **Turbocharger (+20%)**

144 kW

Problems with Levelised Cost



Available End Use Models

Model	Platform	Hard-coded Architecture	Fixture and Appliance Stock Modelling	Benefit-Cost Analysis (avoided costs)	Continuity of End Uses	Interaction of Measures	User Friendly?
iSDP	Excel/Access ✗	✓/✗	✓	✗	✗	✓	✗
DSM DSS	Excel ✗	✓	✓	✓	✓	✓	✓/✗

- ➔ The above table is <u>not</u> intended to highlight the benefits of one model over the other
- ➔ It should highlight that such an important focus area in water planning still does not have a workable software package

What we are Getting Wrong

- Falling per capita baselines used in planning
  - Rightly recognises impact of appliances and household size trends
  - Fails to recognise the impact of income, lifestyle aspirations, lost economies of scale in smaller households
- Climate influences not well understood
- Optimism in “conservation only” outcomes
  - Optimistic rates of uptakes and water savings
  - Failure to recognise interactions of conservation measures with fixture and appliance markets
  - Failure cater for interactions of multiple measures targeting the same end uses
- Failure to integrate demand and supply modelling
- Inappropriate use of Average Incremental Cost (AIC) in comparison of supply and demand options

Thank you.

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