The coast, the dam and in-between: issues for Manly's future

Manly Futures Forum

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In this presentation I propose that we are on the verge of a fourth generation of urban water service provision. The first generation (*unmanaged*) which relates to the period up to and after the industrial revolution, was associated with the growth of cities, including Sydney. The provision of water, sewerage and drainage provision was decentralised, but unplanned and unmanaged, and as a result there was a public health threat, especially cholera, as well as a fire and flooding risk. This generation was characterised by a low financial cost per household, a high localised environmental cost and a high social cost.

The second generation (*centralised*) represented the development since the late 1880's through to the late 20th century of centralised systems, based on the desire to improve public health. This allowed the further growth of modern cities. It is characterised by a high financial cost per household, high dispersed environmental cost, reduced social costs and reduced local environmental cost.

The third generation (*transition*) which represents the period from late last century to the present time, has the objective of environmental protection. It involves advanced centralised wastewater treatment and reuse, typically in large scale dual reticulation schemes, or reuse for environmental flow substitution, seawater desalination and rainwater tank retrofitting. It is characterised by very high financial cost per household, high energy use and greenhouse gas emissions but reduced environmental and social costs of other kinds. Options developed are designed to meet specific environmental objectives.

The fourth generation (*emerging*) has been developing since the beginning of the 21st century. The objectives of this generation have been integrative service provision and customer service. It is characterised by planned and managed distributed wastewater treatment and reuse, advanced water efficiency, distributed stormwater capture integrated into water supply. It has a medium financial cost per household and reduces the total financial and environmental cost of urban water service provision.

Some aspects of this fourth generation, including the role of rainwater tanks, improved water efficiency and community engagement will be discussed in more detail in the presentation.

In addition, the potential role of local government will be described. In particular, councils can play a role in:

- Setting an example for the community – through water efficiency and source substitution in buildings, interpretive displays, reporting, benchmarking.
- The use of development consent conditions - performance requirements.
- Working with utilities and state agencies - informed advocacy and collaboration.
- Stormwater responsibilities - raintanks as a hybrid on site detention and water supply source.
- Supporting innovation in new subdivisions and infill developments - fourth generation possibilities.

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Review of presentation

- **A bit of historical perspective and future visioning**
  - I propose that we are on the verge of a fourth generation of urban water service provision
  - There are some identifiable characteristics of this fourth generation that make it more sustainable
  - Some of these characteristics, both principles and practices, will be discussed
  - Some conclusions will be drawn for the future
- **The role of raintanks**
- **Supply curves of conserved water for Sydney**
- **Community engagement and decision making**
- **The role of local government**

First generation urban water service provision - *unmanaged*

- Up to and after the industrial revolution, the growth of cities
- Decentralised, unplanned and unmanaged
- Low financial cost per household, high social and high localised environmental cost
- Public health threat (eg cholera) fire risk, flooding

Second generation urban water service provision - *centralised*

- Late 1800's - Chadwick Royal Commission etc, through to late 1900's
- Objective: public health
- Centralised water supply and sewerage provision, and drainage, often combined sewers - drive to increase scale
- High financial cost per household, high dispersed environmental cost, reduced social cost and reduced localised environmental cost
- Allowed the growth of modern cities

Third generation urban water service provision - *transition*

- Late 1900's to present
- Objective: environmental protection
- Advanced centralised wastewater treatment and reuse in dual reticulation and environmental flow substitution, seawater desalination, rainwater tank retrofitting
- Very high financial cost per household, high energy use, reduced other environmental and social costs
- Meets specific environmental objectives

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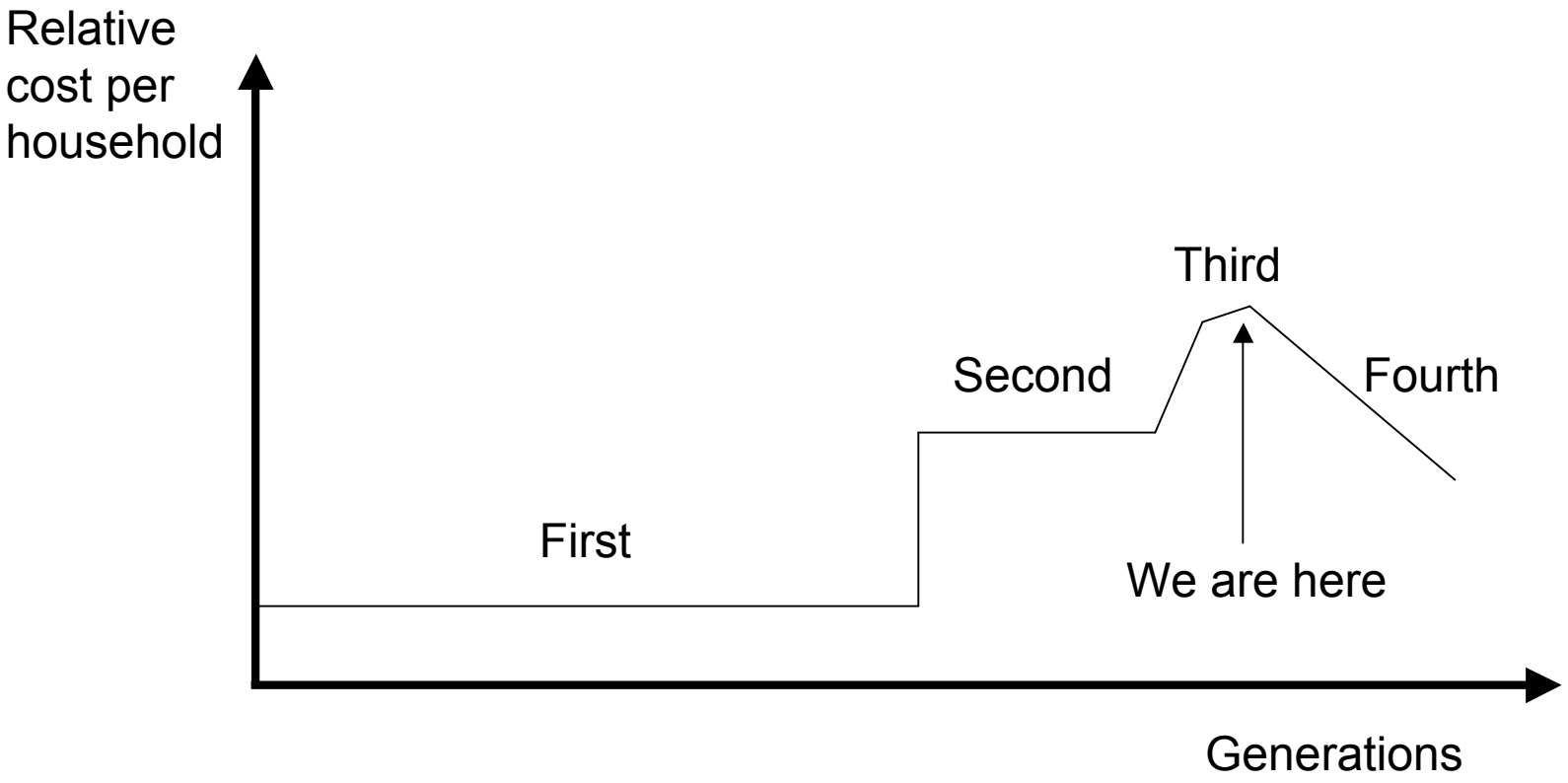
"The crisis consists precisely in the fact that the old is dying and the new cannot yet be born. In the interregnum, a variety of morbid symptoms appear"

Antonio Gramsci, Letters from Prison

Fourth generation urban water service provision - *emerging*

- Emerging from the beginning of the 21st Century
- Objectives: integrative service provision, customer service
- Planned and managed distributed wastewater treatment and reuse, advanced water efficiency, distributed stormwater capture and management integrated into water supply
- Medium financial cost per household
- Reduces total financial and environmental cost of urban water service provision

The economics of generational change



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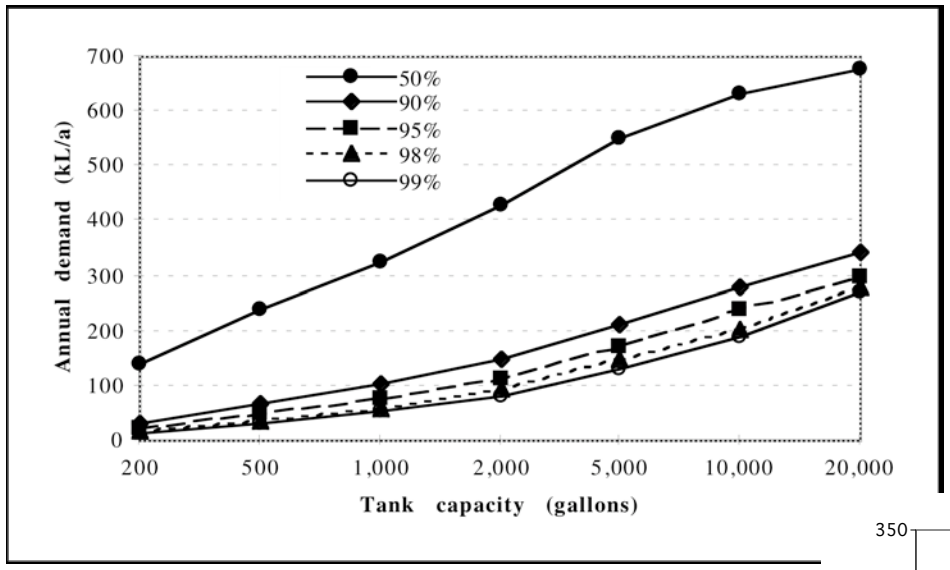
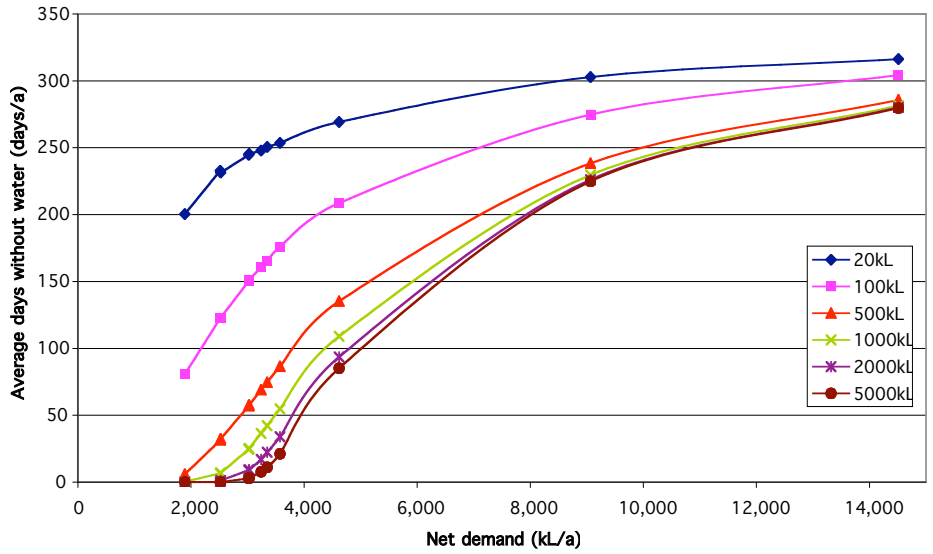
Characteristics of fourth generation urban water service provision

- Integrated - not just water, wastewater and stormwater, but also energy, materials, waste, transport
- Least cost - applies an integrated resource planning approach
- Maximises efficiency of water use
- Maximises source separation
- Mimics biological systems
- Invests in treatment over transport
- Ensures participatory decision making

The role of raintanks

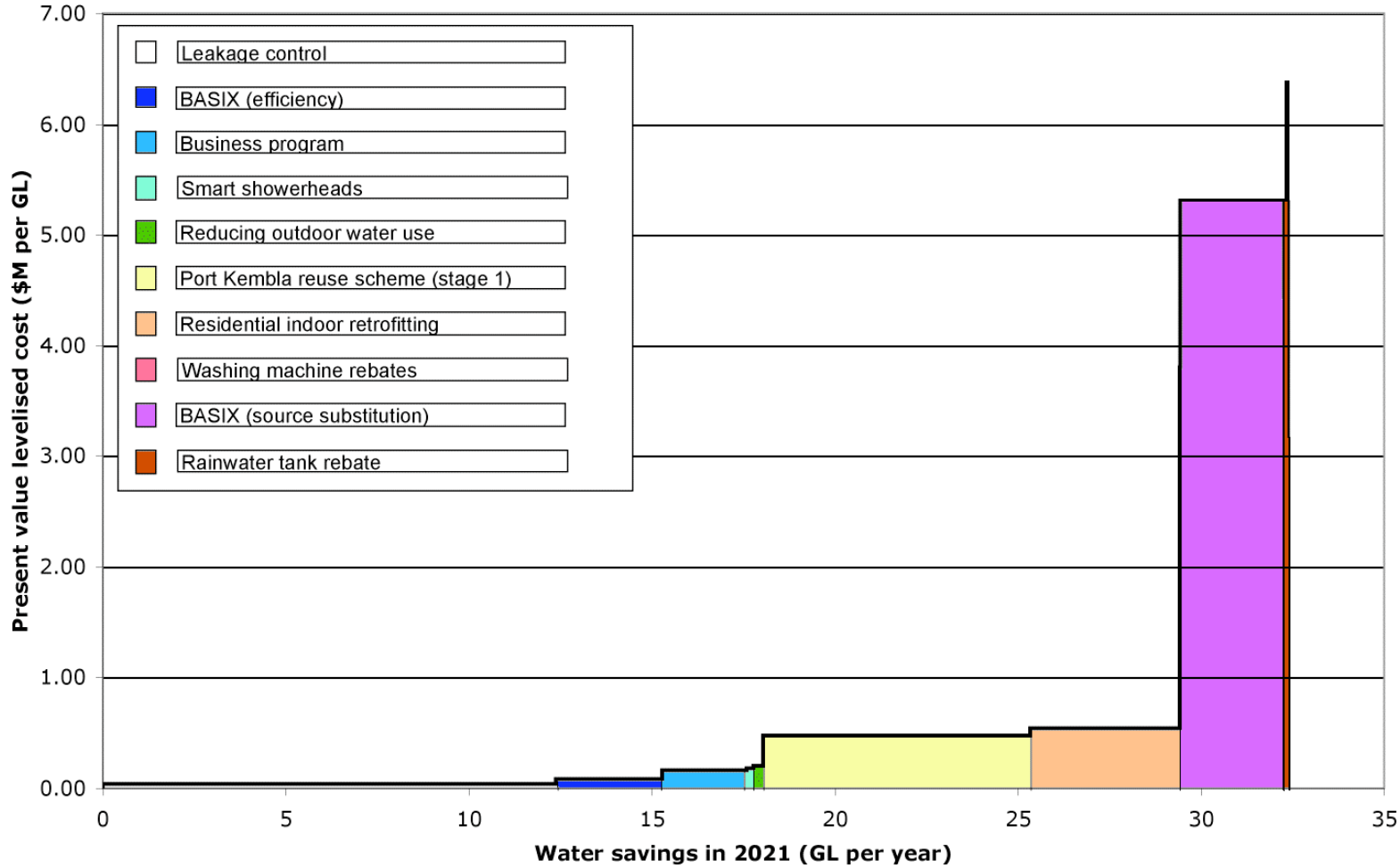


See White (1997)



See Chanan, White, Jha and Howe (2003)

Supply curves of conserved water for Sydney



From Hawkesbury-Nepean Environmental Flows Expert Panel (2003)

Community engagement and decision-making

- Innovative approaches involving random selection (representative), informed dialogue (deliberative) and making real decisions (empowered) (eg citizen juries, consensus conferences)
- Value judgments regarding public goods need citizen input, in addition to experts or ‘stakeholders
- Resolving trade-offs
- Setting directions, determining the vision for the future, strengthening regulatory arrangements
- A way for elected representatives to ‘contract out’ the difficult decisions
- Increasing our understanding of how people use water and relate to water
- Innovative ways to influence the way people think about and use water

The role of local government

- Setting an example for the community - water efficiency and source substitution in buildings, interpretive displays, reporting, benchmarking
- The use of development consent conditions - performance requirements
- Working with utilities and state agencies - informed advocacy and collaboration
- Stormwater responsibilities - raintanks as a hybrid OSD/ supply
- New subdivisions and infill developments - fourth generation possibilities

More information

http://www.isf.uts.edu.au