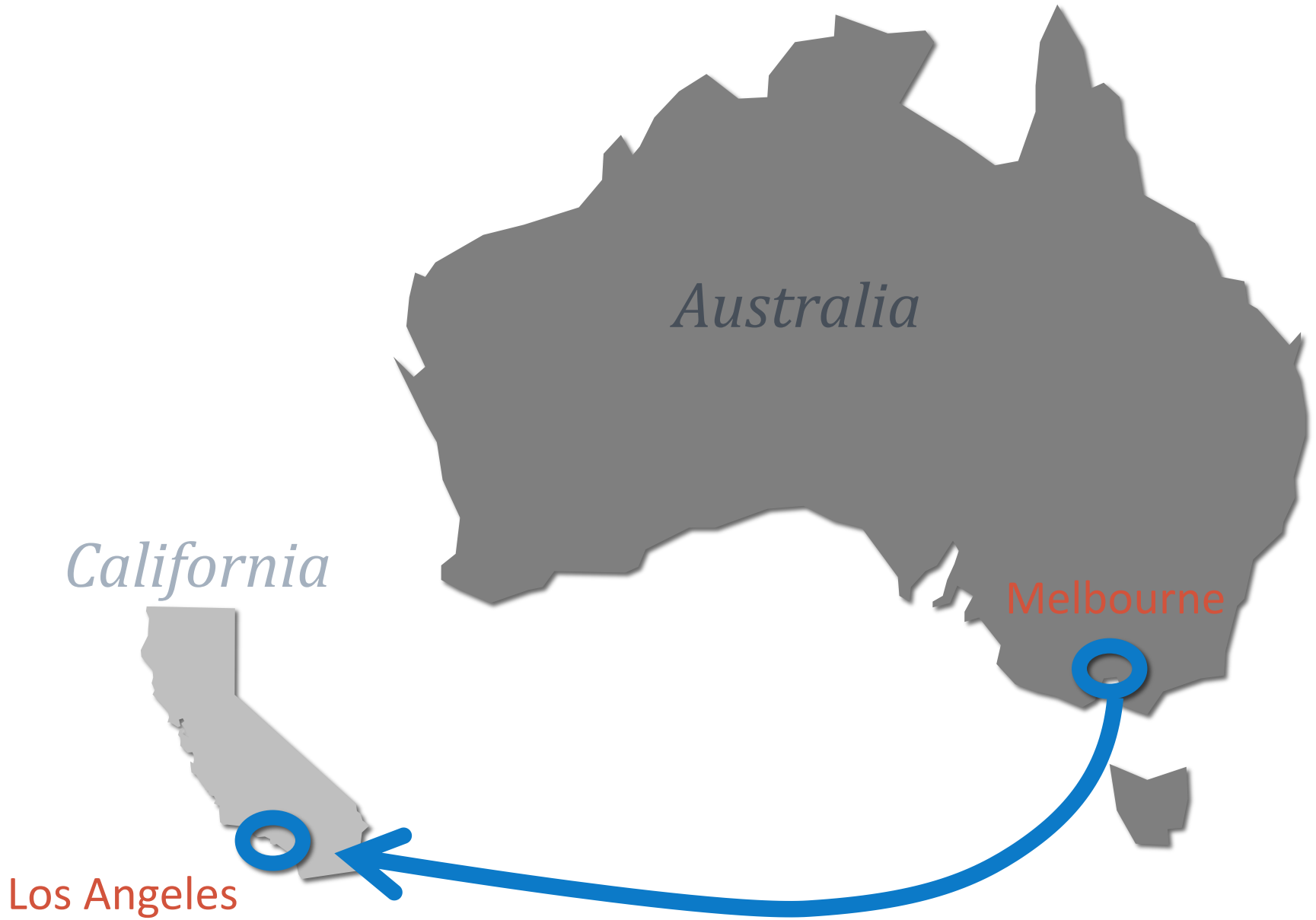


# URBAN WATER MANAGEMENT AND DROUGHT: WHAT CAN LOS ANGELES LEARN FROM AUSTRALIA'S MILLENNIUM DROUGHT?

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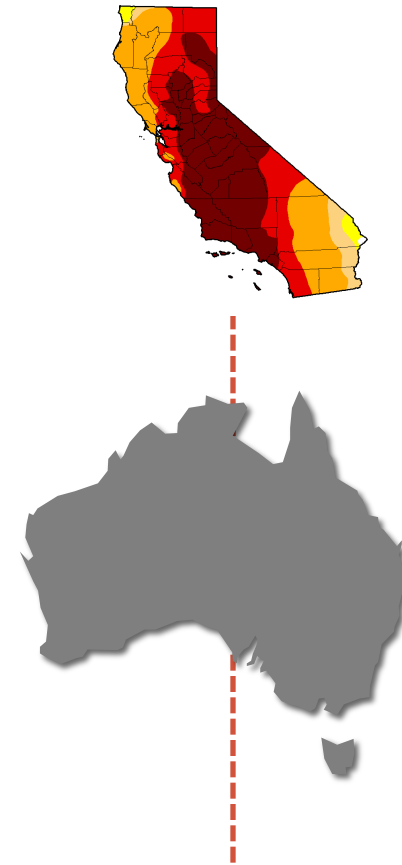


**“And if never failed that during the dry years the people forgot about the rich years, and during the wet years they lost all memory of the dry years. It was always that way.”**

- John Steinbeck, East of Eden

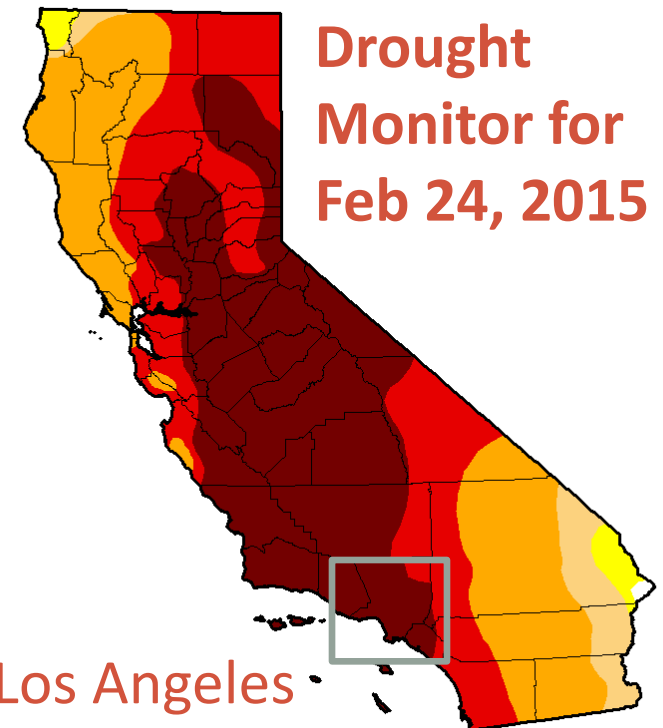
# Presentation Roadmap

- California and Australia droughts
- Why Melbourne?
- Research methods
- Lessons learned from Melbourne



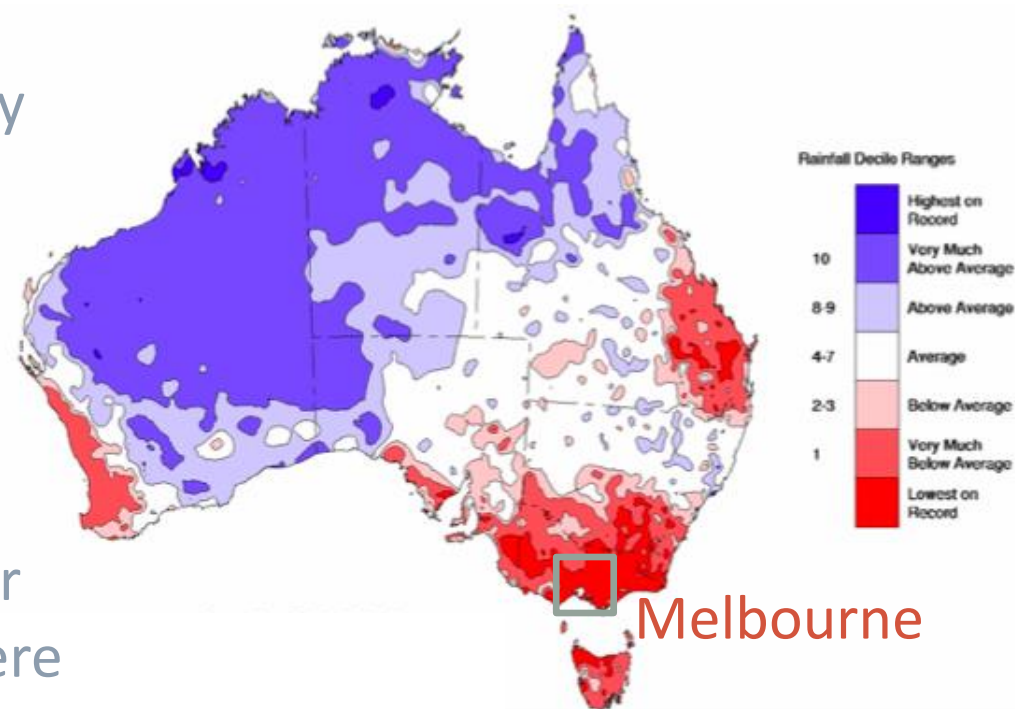
# California Drought

- Going into fourth consecutive year of drought.
- **2013** driest year on record; maybe driest in past 500 years.
- Reservoir storage capacity at **38%** in comparison with average conditions.
- **90%** 'severe to exceptional drought'
- **11 trillion gallons** to recover



# Australia's Millennium Drought

- **1997 – 2010:** longest period of rainfall deficit on record.
- Produced changes to the way Australia manages its water, and created a political atmosphere supportive of deep investment and rapid innovation.
- Accelerated reforms to water laws and institutions that were already underway.
- All of Australia impacted.



**Australian Rainfall Deciles  
1/1/97 – 12/31/2009**

# Why Melbourne?



Office of  
Living Victoria



- Water governance
- Scaled stormwater capture
- Water behavior change
- Desalination cautionary tale

**Melbourne**

# Research Methods

1. Informal interviews with urban water management representatives from government, academia, and industry.







2. The Energy Coalition and TreePeople sponsored California delegation to Australia.



# Research Questions

Three Focal Areas:

## 1. Collaborative Governance:

*How did the Melbourne water management integration model help the city respond to drought?*



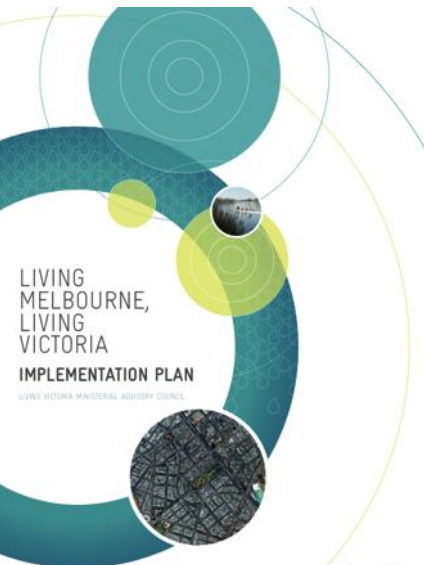
## 2. Fostering Public Stewardship:

*What were the methods, incentives, disincentives, and public education campaigns that created significant shifts in public behavior around water stewardship in Melbourne?*



### 3. Deploying Technologies to Scale:

*How can decentralized, locally-sourced water supplies – such as stormwater capture and reuse, and rainwater harvesting – improve regional water supply reliability?*



# Lessons Learned from Melbourne

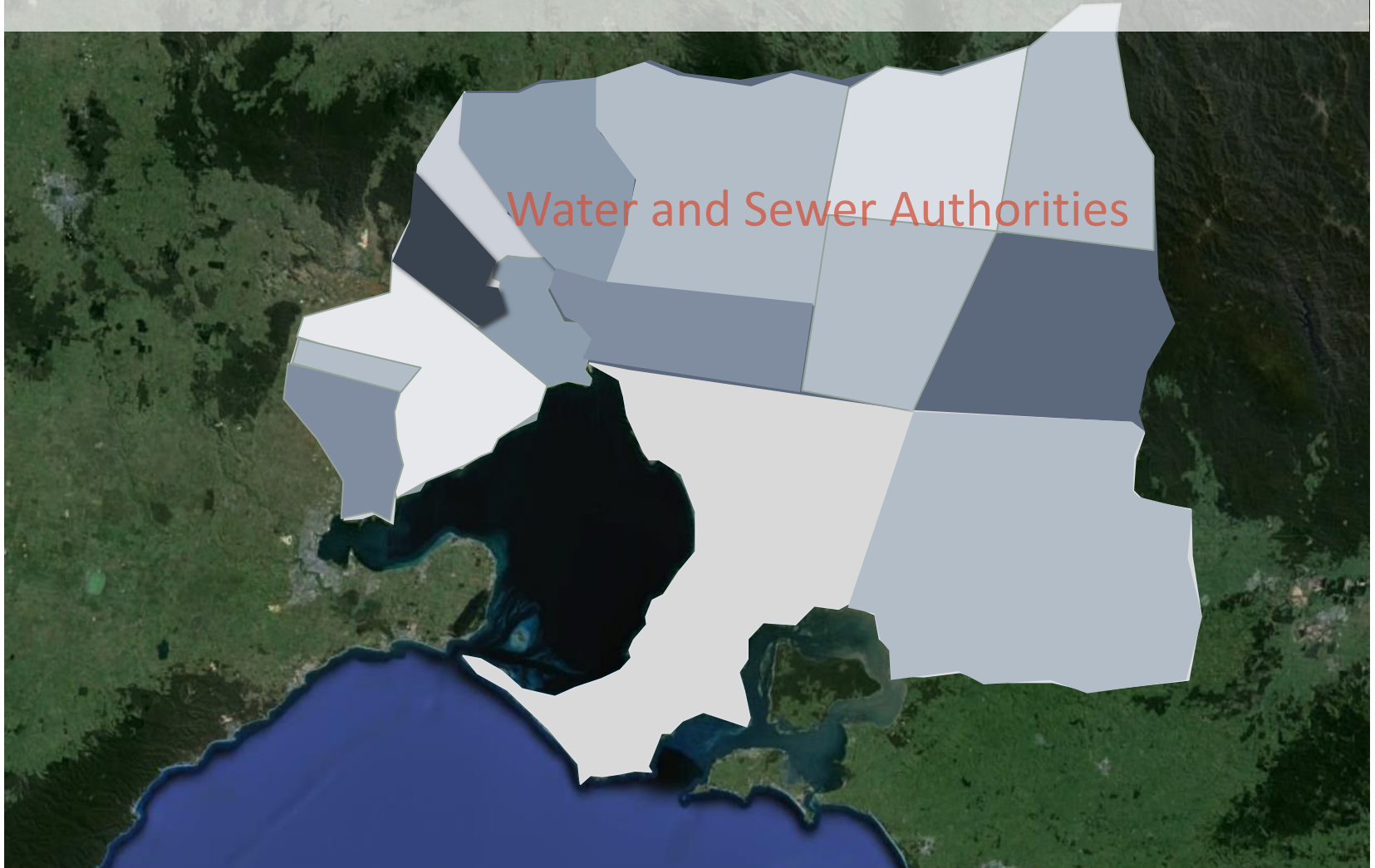
- Collaborative Governance

1. Whole-of-water-cycle planning is effective, but the transition takes time.



## Melbourne in 1980s

- Fragmented approach to water cycle system.



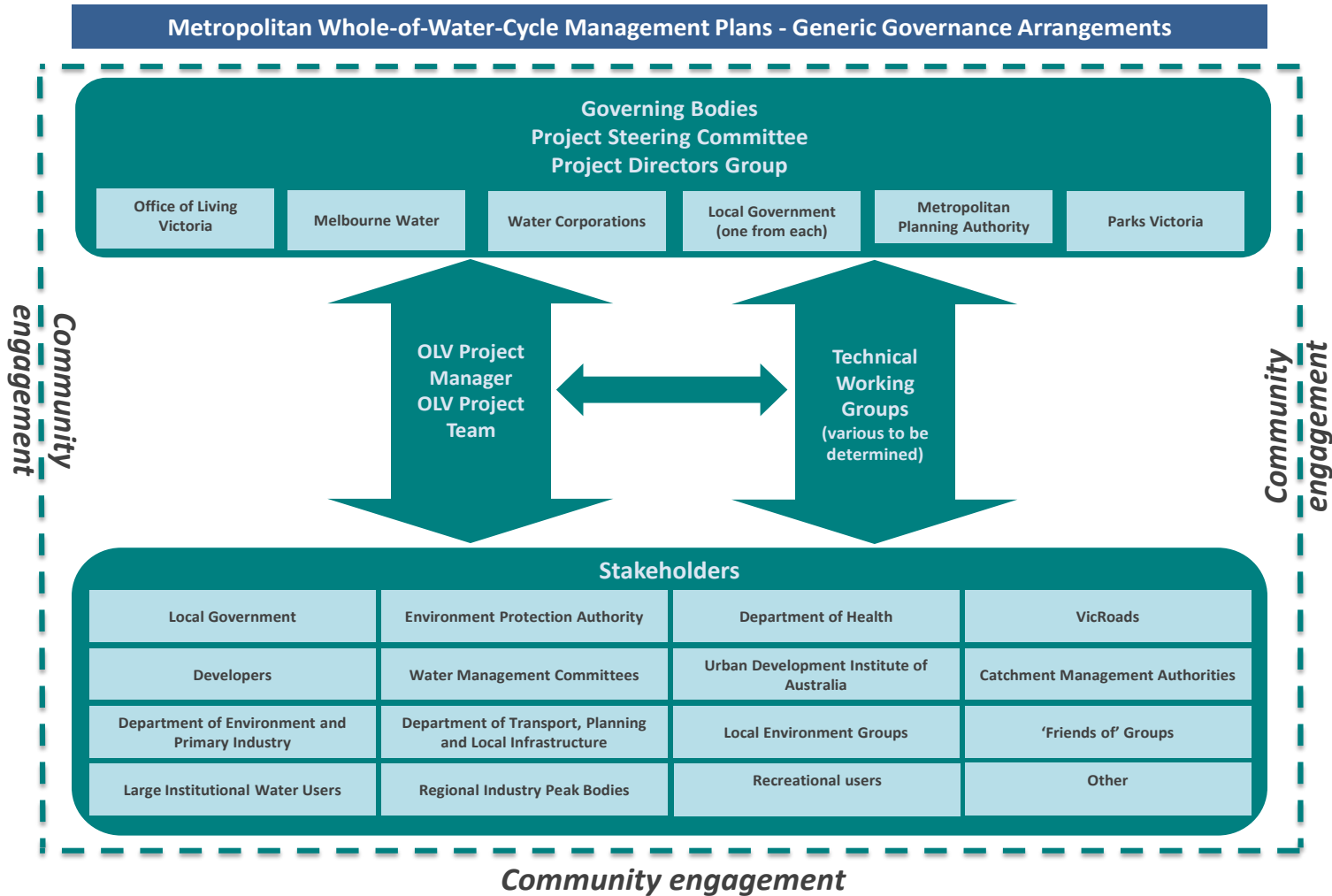
## Melbourne During Drought

- Water and sewer authorities merged together (Melbourne Water) and water corporations formed



Four water corporations buying water from Melbourne Water

# Melbourne Today: Office of Living Victoria

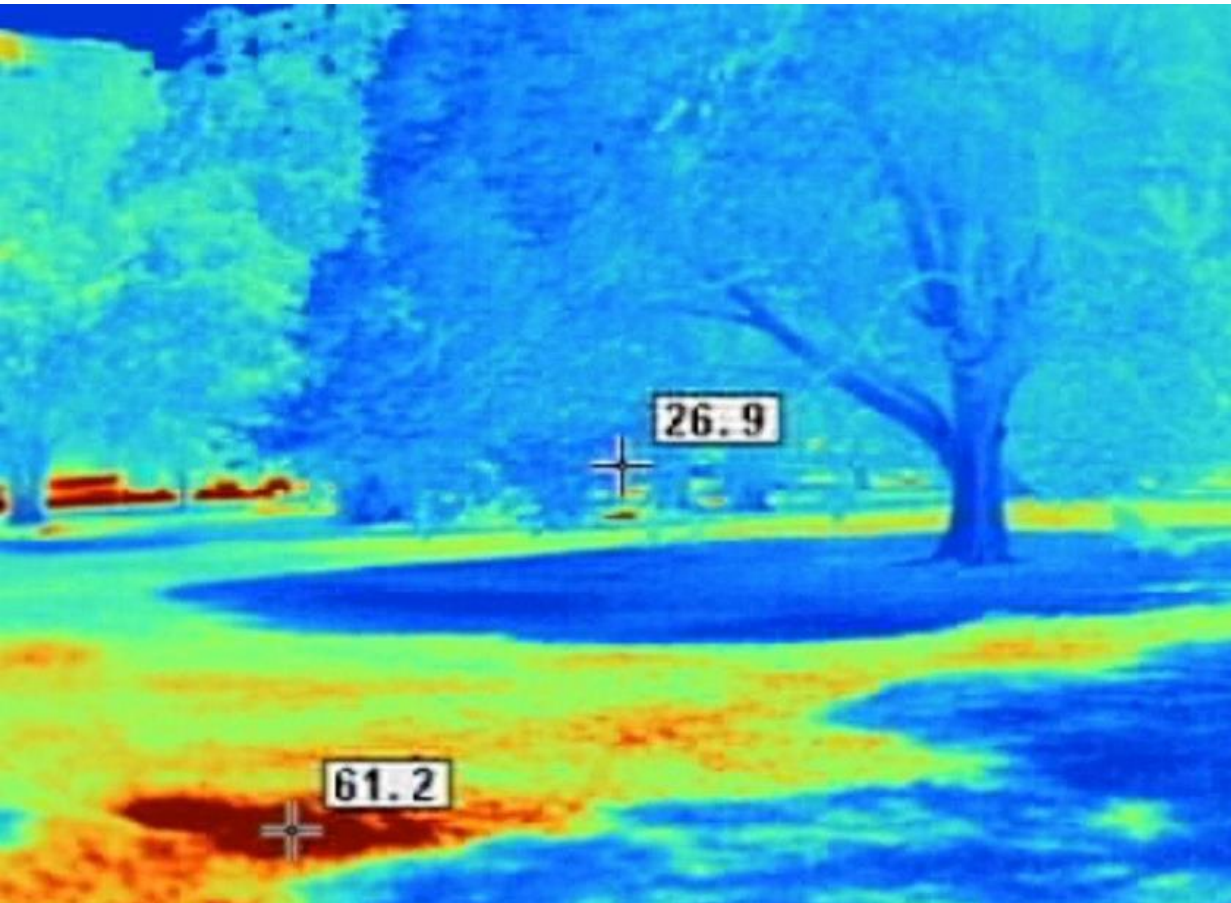


... result: multi-benefit projects that maximize water resources



- Collaborative Governance

- 2. **Water is a vital component to climate adaptation strategies.**



## Adaptation Strategies

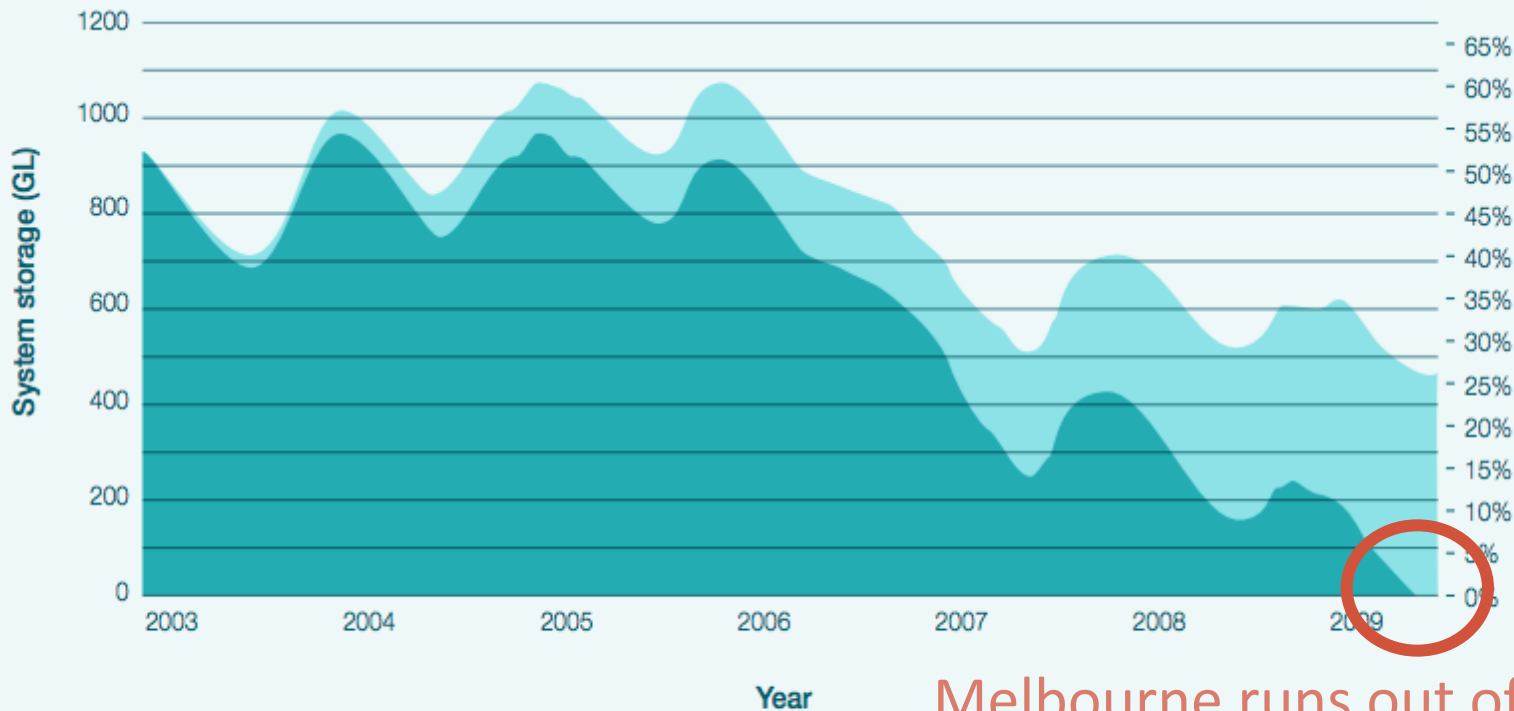
- Capture and store stormwater runoff to irrigate public green space during times of drought.
- Provide for public recreation and respite.
- Mitigate urban heat island effect.

**Goal:** cool the city by 39 degrees Fahrenheit

- Public Stewardship

- Behavior change programs focused on water conservation strategies work.

Melbourne Water System Storage 2003 - 2009



Melbourne runs out of water

- Recorded storage volume after water conservation, restrictions and reduced environmental flows
- Estimated storage volume without water conservation, restrictions and reduced environmental flows

## To facilitate behavior change, use all the tools available.



Establish an emotional connection to water.

Coordinated and sustained mass media campaign.



Public education.



**47 percent reduction in per capita water use in 2010 compared to 1990 levels (121 to 65 gallons per person per day)**

Rebates.



Set aggressive targets



- Decentralized Technologies

1. **Governments need certainty during times of drought; bundle big infrastructure packages (short term) with decentralized solutions (long term).**

Plan guiding integrated projects that maximize rainwater, stormwater, and recycled water resources.

Wonthaggi Desalination Plant commissioned during drought. However, has not supplied Melbourne with water due to drought ending.



# Next Steps



- Develop policy recommendations for LA's urban water management system with TreePeople based on Australia's experience.
- Complete white paper with TreePeople outlining these policy recommendations.

