

Going Green: the real benefits

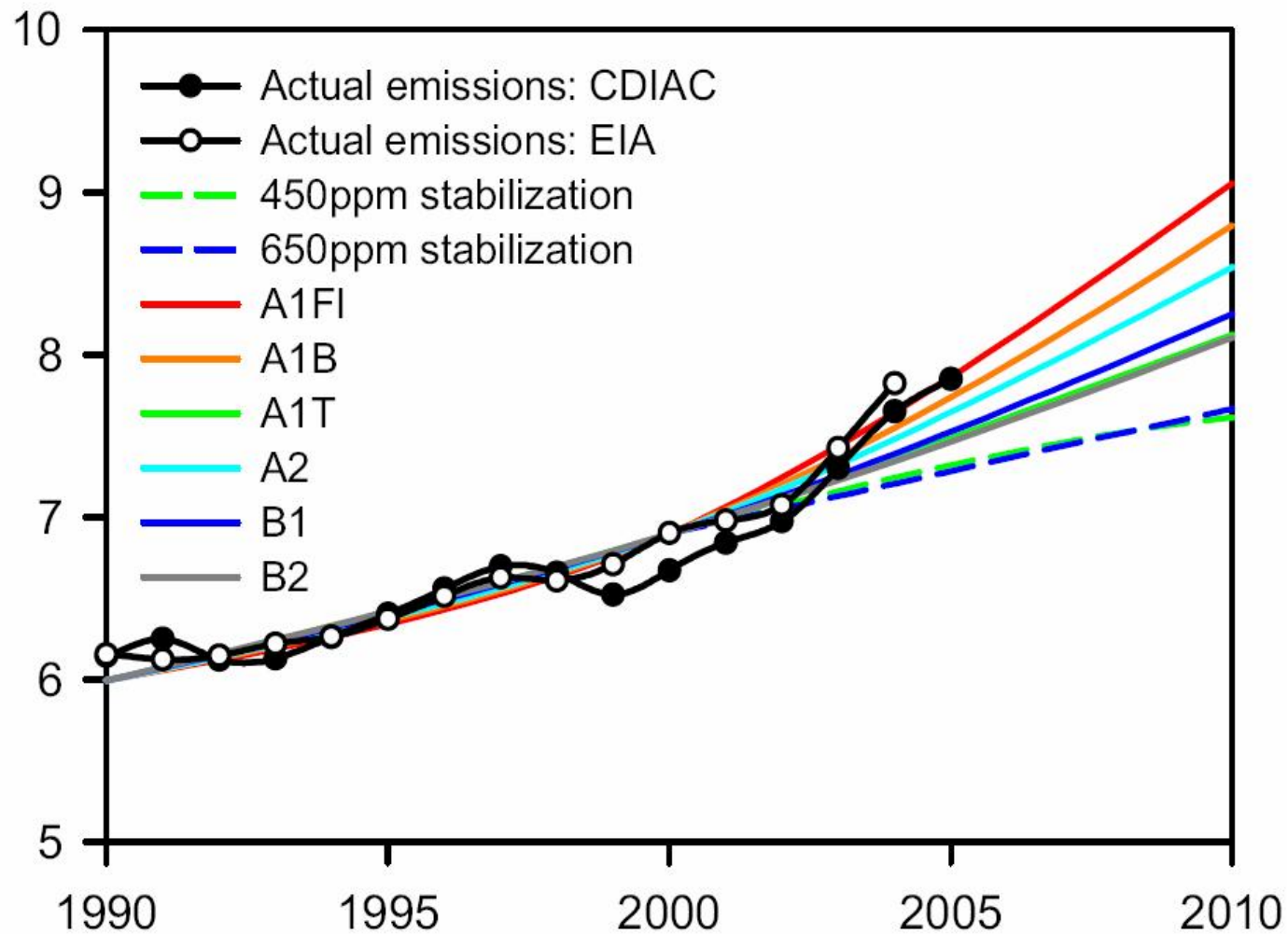


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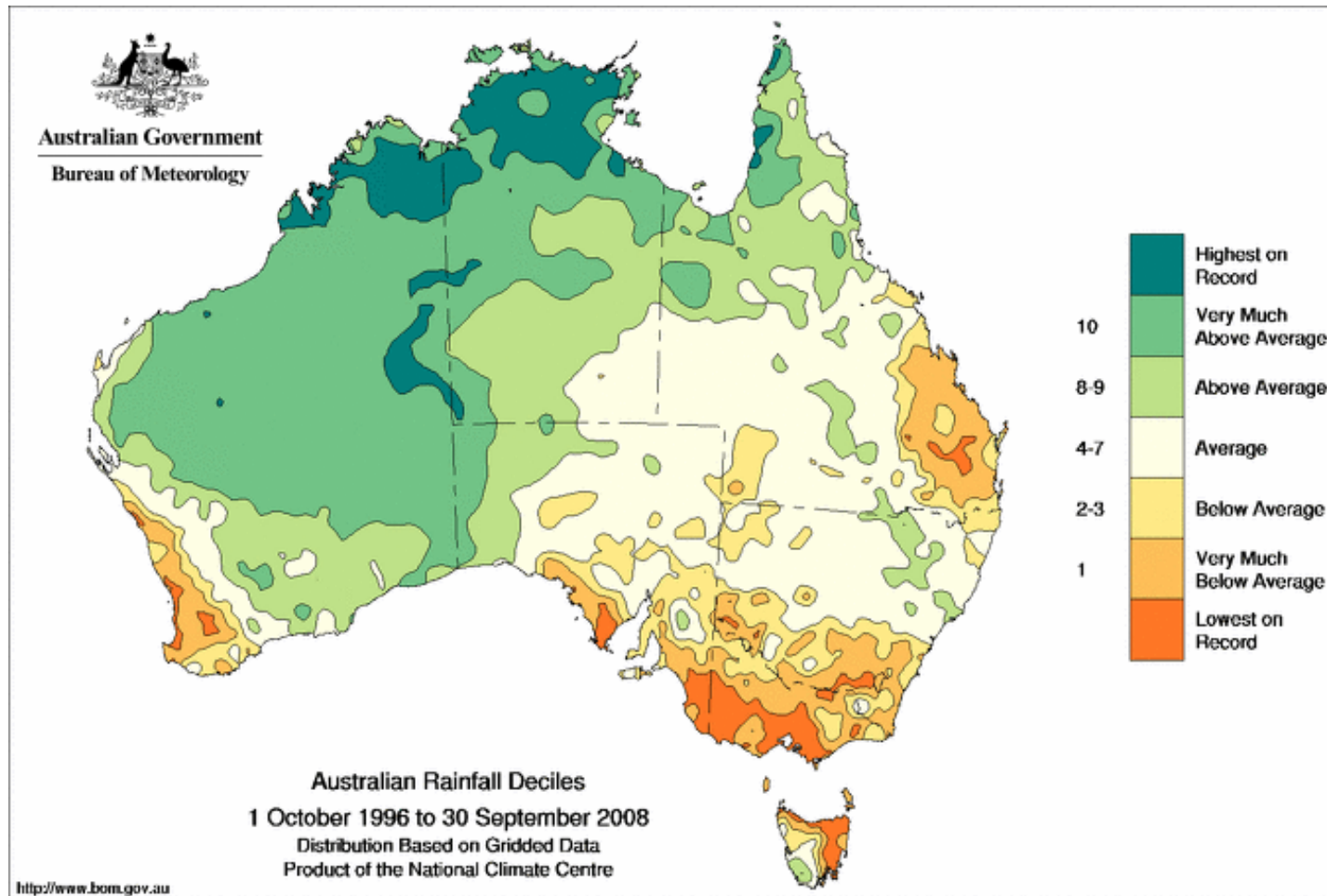
Overview

1. Why “green” hospitals?
2. GreenStar Healthcare cost benefit analysis
3. Standard sustainability initiatives
4. Quantitative benefits
5. Qualitative benefits
6. Other DHS sustainability projects

Observed Greenhouse Gas Trends

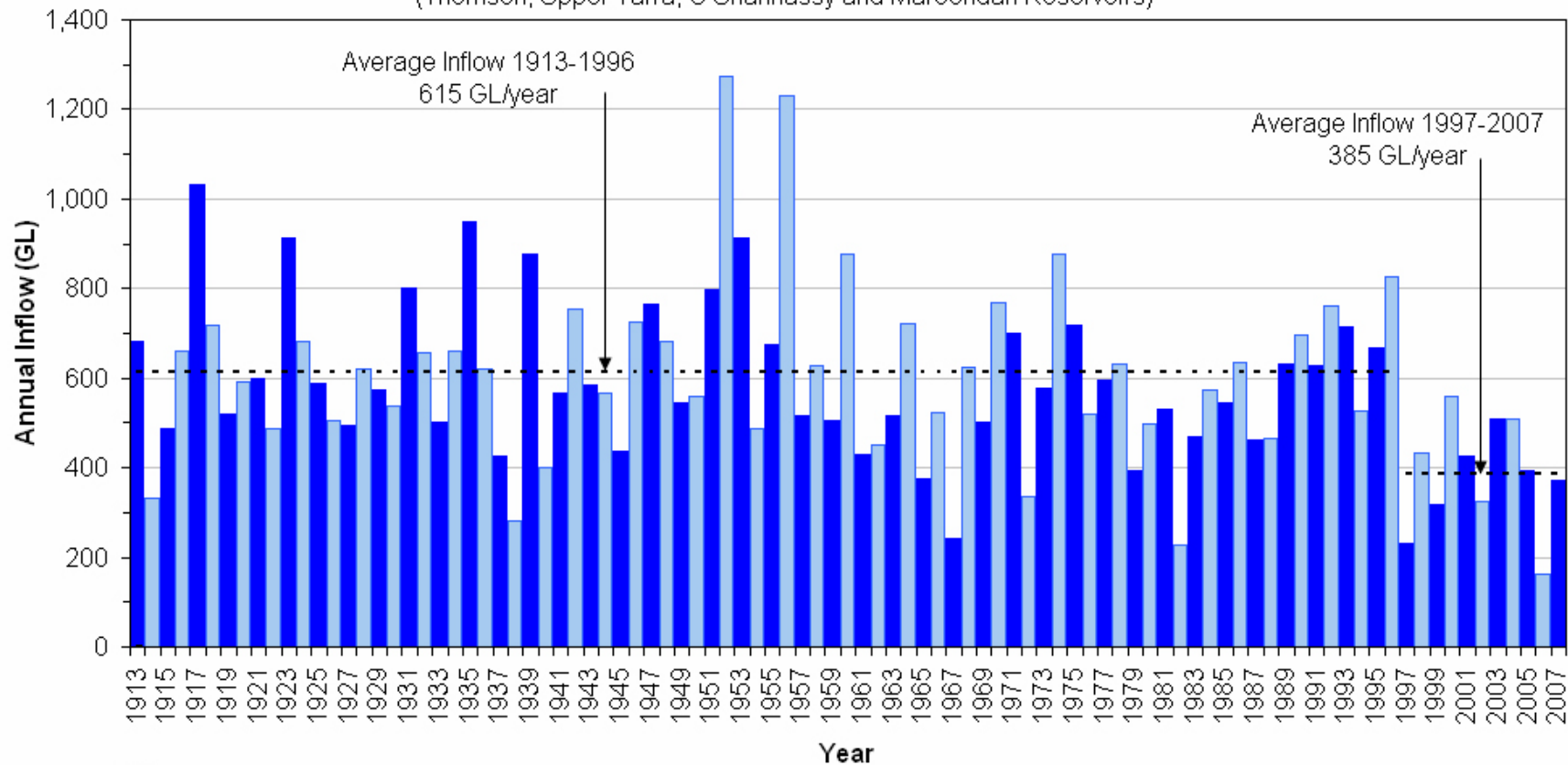


Australian Rainfall 1996-2008



Melbourne Water Supply Annual Inflows

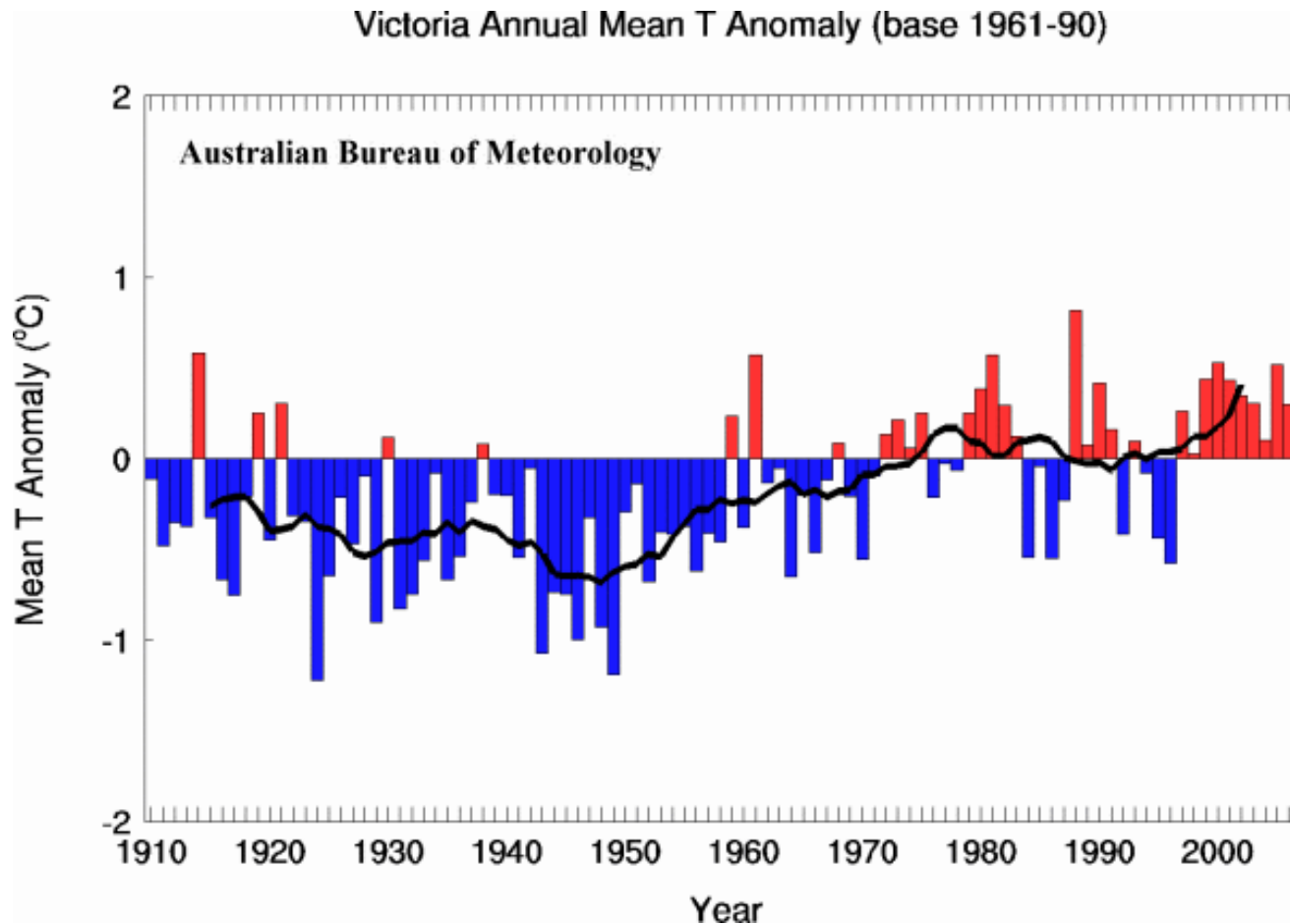
Total annual water flowing into Melbourne's main water supply storage reservoirs
(Thomson, Upper Yarra, O'Shannassy and Maroondah Reservoirs)



Notes:

1. Annual inflow is taken as calendar year inflow (January to December) and is calculated using hydrological methods and gauging records.
2. Inflow at the four main harvesting reservoir sites represents the main sources of streamflow from Melbourne's water supply catchments that are not impacted by upstream diversions, but may be impacted by changes to catchment and climate conditions.

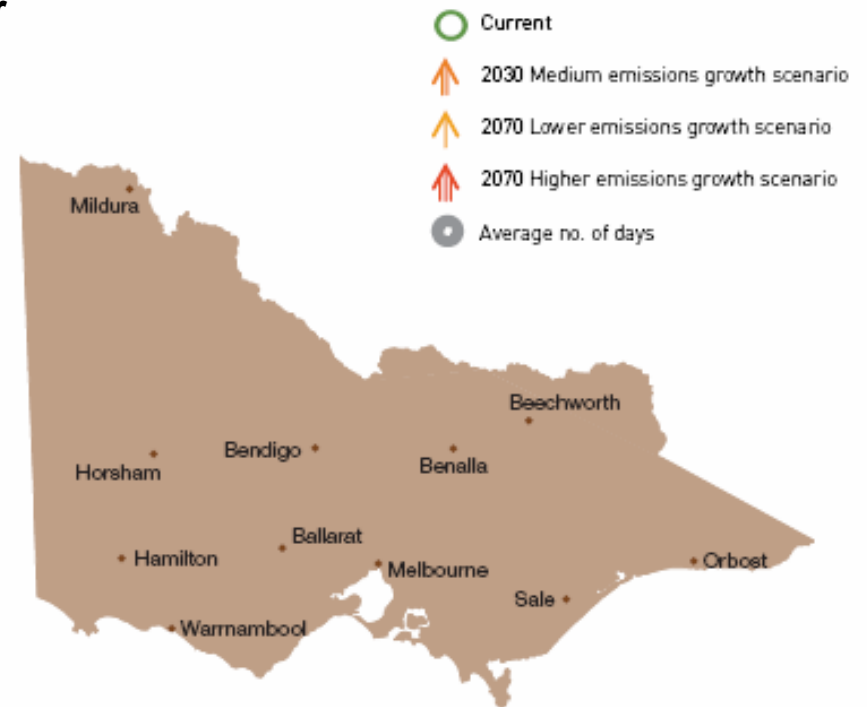
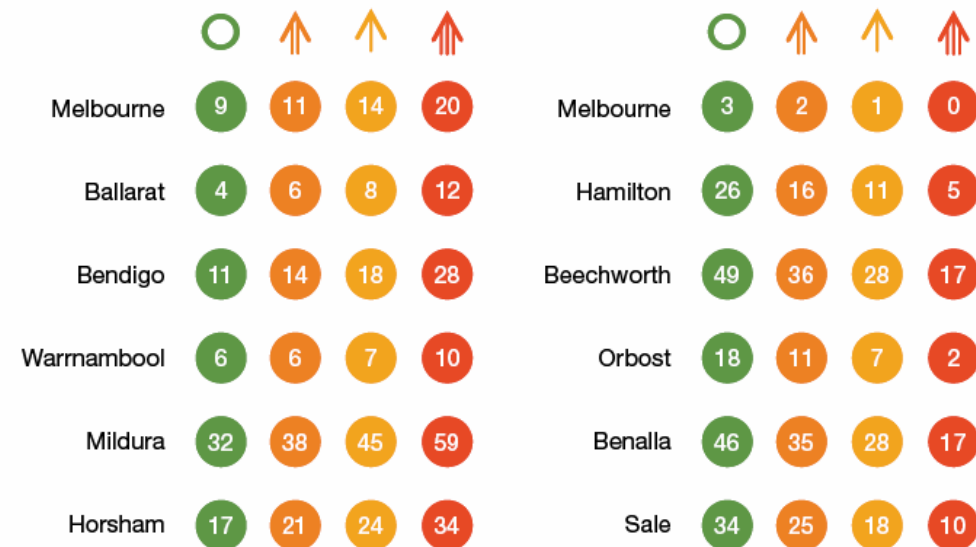
Victorian Temperature Anomalies 1961 - 1990



Extreme Daily Temperatures

Annual average number of days over 35°C

Annual average number of days below 2°C



The current method may over-estimate the reduction in frosts

5-40% more extreme fire-weather days by 2020

15-50% more extreme fire weather days by 2050 for low emissions

80-230% more extreme fire weather days by 2050 for high emissions

GreenStar Healthcare Cost Benefit Analysis

- Complex project with multiple partners
- Evolving GreenStar Healthcare tool
- Quantitative and qualitative benefits
- Completion June 2009



Government of South Australia
Department of Health



SILVER
THOMAS
HANLEY



Umow Lai

RLBI | Rider Levett Bucknall

Project Objectives

- Review 'standard' sustainability initiatives
- Model costs for 4, 5 & 6 Star hospital
- Model savings for 4, 5 & 6 Star hospital
- Methodology for quantifying the costs and benefits of building 4, 5 & 6 Star hospital
- Qualitative benefits from sustainable healthcare facilities

Standard Sustainability Initiatives

- **What is standard?**
 - Constantly changing
 - Different between SA, Vic & the ACT
 - Can it be delivered within budget?
- **If not standard how is it achieved?**
 - Ring-fenced ESD budget
 - Government grants
 - Project savings
 - Specify higher outcomes

Standard Sustainability Initiatives

ISSUE	VICTORIA 2004 (STANDARD)	PROPOSED 2009 (STANDARD)
Energy	9	37
IEQ	3	15
Management	2	14
Water	2	10
Materials	1	10
Emissions	1	5
Transport	-	6
Ecology	-	5

Delivering beyond 'standard'

- **Ring-fenced ESD budget:**
 - Victoria allocates 2.5% ESD
 - 2009/10 = c.\$4.5 million
- **Government grants:**
 - Match funding
 - Reporting requirements
 - Not guaranteed
 - Timing not always suitable

Delivering beyond 'standard'

- **Project savings:**
 - Not guaranteed
 - Usually identified at project end
 - ESD not always a priority
- **Specify higher outcomes:**
 - Minimum GreenStar Healthcare targets?
 - What are the costs / benefits?

Quantitative Benefits (energy)

- Easily quantifiable
- 'Example' hospital energy:
 - 10% reduction = \$8,328 p.a. savings
 - 20% reduction = \$16,656 p.a. savings
 - 30 % reduction = \$24,984 p.a. savings

Quantitative Benefits (water)

- Water efficiency = standard practice
- Water capture / treatment / re-use
 - DHS Consultation Guidelines
 - Infection control & end use
- Water prices 48% - 60% rise over 4yrs
- Easily quantifiable but.....water = licence to operate

Water Efficiency Case Study

- 'Example' Hospital:
 - Ozone technology in laundry
(334 kL p.a.)
 - RO & steriliser water recovery
(1,780 kL p.a.)
- Cost = \$74,762
- Savings = \$3,433 p.a. = 22yr payback

Quantitative Benefits (energy & water summary)

- 'Example' hospital
 - Energy & water = 1% total costs
 - 20% reduction = \$18,938 p.a.
 - 40% reduction = \$37,876 p.a.
- = 0.1% - 0.3% of total expenses

Qualitative Benefits

- Water
- Indoor Environment Quality
 - Improved staff productivity
 - Improved staff retention
 - Improved patient well-being
- But.....can it be quantified?

Qualitative Benefits (water)

- **Availability of water:**
 - Licence to operate
 - Leadership in the community
 - Community expectations
 - Government commitments
 - “Moral” obligations
- **Difficult to quantify.....but we still do it**

Qualitative Benefits (IEQ)

Poor IEQ is considered to be the principal cause of Sick Building Syndrome. A NSW Government report estimated the cost to the Australian economy through increased absenteeism and reduced productivity at over \$125 million a year.

Qualitative Benefits (IEQ & productivity)

- Improved ventilation rates:
 - 50% - 150% above code =
0.1% - 0.3% productivity increase
 - 0.2% increase = c.\$200 per FTE
- Reduced indoor pollutants:
 - c.\$160 – c.\$640 per FTE

Sources: Fisk (2000, 2002 & 2004), Chaudury et al (2006), Wargocki (1998)

Qualitative Benefits (IEQ & absenteeism)

- Improved ventilation rates:
 - 50% above code =
c.\$115 reduction in staff costs
 - 100% above code =
c.\$217 reduction in staff costs
- Provision of plants:
 - 25% reduction in sick leave =
c.\$320 per FTE

Sources: Fisk (2002 & 2004), Ampt et al (2008)

Qualitative Benefits (IEQ & staff retention)

- **Improved day-lighting:**
 - Increase staff retention up to 10% =
c.\$1,176 per FTE

Source: Cassidy (2003)

Qualitative Benefits (IEQ summary)

- 'Example' Hospital"
 - Plants & places of respite (staff) = \$25,600
 - Improved individual thermal comfort = \$32,000
 - 100% above code ventilation rates = \$33,360
 - Reduced indoor pollutants = \$51,200
 - Improved day-lighting = \$94,080
- Potential "qualitative" savings = \$236,240
 - = 3.5% of salary/wages expenses
 - = 2.1% of total expenses

Qualitative Benefits (non-quantifiable)

- **Ventilation rates / air change:**
 - Reduced communicable respiratory illness
 - Reduced Sick Building Syndrome symptoms
- **Daylight:**
 - Reduced requirements for prescription drugs
 - Positive effect on work life balance

Qualitative Benefits (non-quantifiable)

- **External views:**
 - Reduced Average Length of Stay
- **Indoor pollutants (VOCs):**
 - Reduced Sick Building Syndrome symptoms
 - Reduced cancer rates
- **Mould prevention:**
 - Reduced acute respiratory infections

Qualitative Benefits (non-quantifiable)

- **Individual thermal comfort control:**
 - Reduced Sick Building Syndrome symptoms
- **Places of respite / access to nature:**
 - Reduced blood pressure
 - Reduced cholesterol
 - Reduced stress
 - Better 'outlook' on life

Other DHS Sustainability Projects

- **Greening Our Hospitals**
- **ResourceSmart Healthcare**
- **Waste Minimisation in Healthcare**
- **Eco-footprinting Project**

Greening Our Hospitals

- **Part of Environmental Sustainability Action Statement:**
 - \$3.3 million for energy (06/07 – 10/11)
 - \$3.9 million for water (06/07 – 10/11)
- **Energy and water audits**
- **Implementation of projects**
- **Energy funding allocated**
- **Water funding – some still available**

ResourceSmart Healthcare

- **Environmental capacity building program providing:**
 - Training / workshops
 - Individual agency coaching
 - Toolkit & guidance
 - Ongoing support
- **Roll-out to agencies over 09/10 & 10/11**

Waste Minimisation

- **Waste minimisation pilots:**
 - Food & garden waste (Goulburn Valley)
 - Recycling in theatres (Austin)
 - PVC recycling (Western)
 - Batteries & mobile phones (Peninsula)
- **Sustainable procurement pilots:**
 - Developing KPIs (Southern)
 - Life-cycle assessment of single vs multi use items (Western)

Eco-footprinting

- Measure inflows & outflows
- Expanding beyond energy & water:
 - What is the impact of procurement?
 - What is the impact of transport?
 - What are the impacts on biodiversity?
- Two pilot agencies

Thank You

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