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watersmartinnovations.com



The New IWA Best Practice Guide for Preparing Urban Water Use Efficiency Plans

> Water Smart Innovations 2014 October 8, 2014 Bill, Lisa & Michelle Maddaus Maddaus Water Management and Bruce Rhodes - Melbourne Water

> > MADDAUS WATER MANAGEMENT

Agenda

- **1**. Why This Guide
- 2. Contents
- 3. Sample Case Studies &
- 4. Melbourne Case Study
- 5. How to Order



Preparing Urban Water Use Efficiency Plans

A BEST PRACTICE GUIDE

Lisa Maddaus, William Maddaus and Michelle Maddaus, Maddaus Water Management, Inc.





Why This Guide?

- There are others but not for an international audience
- Similar manual written for United Nations in 2001 but out of print
- Water demand continues to grow and efficiency needed to stretch existing supplies
- Water efficiency often the quickest and most cost-effective option to meet new demands



Water Conservation



Who Should Purchase & Use This Guide?

- Water System Government Agencies and Regulators
- Water Resource Planners
- Consultants
- Public Interest Groups





Contents of the Guide

- Assess current water supply sources and the benefits of water efficiency
- Evaluate current water use and develop a demand projection
- Develop water efficiency goals
- Identify/evaluate water use efficiency measures
- Evaluate cost-effectiveness of measures
- How can water efficiency be financed?
- Implementation planning and public participation
- Case Studies



25 Case Studies

Asia		Middle East	Latin America	North America	Europe	Africa
•	Using water wisely Climate change Singapore & Sydney programs CII benchmarking CII Cost effectiveness Partnerships Integrated programs Stakeholder participation	 Reuse in Jordan 	 Public school programs in Brazil 	 State scorecard Plumbing codes Assessing Baseline Survey Rain barrels Conservation pricing Government financing Self funding Public participation CII reduction 	 Appliance and fixture labeling Rainwater harvesting 	 Pressure management Leakage reduction
Guide also includes additional 15 Box Story Examples and links to hundreds of						

online examples and resources

<u>CASE STUDY 5:</u> Singapore's Water Demand Management Programme

- Singapore PUB achieved a significant reduction in
- per capita water use using:
 - Water pricing
 - Encouraging water conservation
 - Mandating plumbing and appliance standards
- Water use declined 13%
 since 1994 and 8% since 2003



CASE STUDY 8: Water Use Reduction in Public Schools, São Paulo, Brazil

- Companhia de Saneamento Básico do Estado de São Paulo S.A (SABESP) and Miya Corp
- Achieved reductions of water consumption through:
- High efficiency toilets
- Automatic taps
- Leak detection services and leak repairs
- Infrastructure maintenance
- Water consumption decreased by 30% within 12 months



Replacement taps with automatic shut-off taps



<u>CASE STUDY 12:</u> Cost Effective Domestic Rain Barrel Education Honolulu Board of Water Supply, Hawaii, USA

- 4-5 workshops per year attended by total of 150 persons and distributed
- 150 rain barrels at a cost of \$35 each
- 5-yr program total barrels = 775
- Total annual water savings =

6.1ML/yr

- Total lifetime savings (15-year life)= 91.5ML
- Utility Benefit to Cost

Ratio = 3.1

- Discounted cost of water
 saved (Utility perspective) = \$28.80/ML
- Net Present Value (NPV) to the Utility = \$47,000





<u>CASE STUDY 22:</u> Leakage Reduction Through Pressure Management in Khayelitsha, South Africa

- Two stage pressure management project
 - Reduce pressure at night
 - Reduce pressure at periods of low demand
- Results
 - 1. Stage 1: 24% reduction
 - 2. Stage 2: Added 16% reduction
 - Overall 40% reduction in water supplied







Case Study 4 – Changing Water Use – Melbourne Australia

Bruce Rhodes Manager Water Resource Management Melbourne Water





Millennium drought bought about significant and sustained water use changes and a driver for whole of water cycle water management



Rainfall deficiency Oct 96 to May 2010

Source: Bureau of Meteorology, Australia

The Millennium Drought



Storage Volumes and demand since 1960



Note: Thomson Reservoir built in 1984. Filled in 1996.

Millennium Drought – Melbourne Responses

Permanent Water Savings Rules (from 2005) Drought Plan Response – 2002-2005, 2006-2009

- Staged water restrictions
- Domestic Water Use Target

Demand Management Initiatives

- Domestic and Industry programs
- Shower and toilet exchange
- Social marketing
- Government rebate programs Supply Side
- Operational efficiencies
- Leak and pressure reduction
- Reinstatement low level diversion weirs
- Environmental flow qualifications
- Water quality management
- Access to low reservoir levels
- System Augmentation

Other

- Research studies
- Water pricing
- Water Efficiency Labelling (WELS)



National Water Efficiency Labelling





2008 Print advertisement

Stage 3a Water restrictions



2009 Victorian Government Advertisement Target 155 I/c/d (40 G/c/d)

Communications and Engagement

Website **Daily storage information** Water Bill Information **Advertising Campaigns Media Advice Education Brochures and Booklets Partnerships** Research **Stakeholder Engagement**



3

Restrictions

are still in place

Please Save Water Now





Changing trends in demand - Melbourne



g/p/d

Melbou

Case Study Commonalities

- Many agencies looking to expand water supplies
- Where the new supply projects are controversial and or expensive lessons learned include:
 - Water efficiency programs are often the least expensive way to increase water supplies or accommodate system growth is established before actively seeking new supplies.
 - 2. Droughts show effectiveness of water conservation.
 - Assess the water use profile and opportunities and pick the "low hanging fruit"
 - Public Involvement is a fundamental need at all stages of water planning – the earlier the better!

How to Get the Guide

- Order the Guide from IWA or Amazon
 - Price: US\$ 153.00 (IWA) \$117 (Amazon)
 - IWA members price: US\$ 114.75
 <u>http://www.iwapublishing.com/template.cfm?name=isbn978</u>

 <u>1780405230</u>
 - http://www.amazon.com/Preparing-Urban-Water-Efficiency-Plans/dp/1780405235
- Check IWA Water Efficient Specialist web site for updates and additional information including benefit-cost analysis spreadsheet that goes with the Guide.
 - http://www.iwaefficient.com

Contact Information

Bill Maddaus, P.E. Maddaus Water Management +1 (925) 820-1784 bill@maddauswater.com www.maddauswater.com

Bruce Rhodes Melbourne Water 011+61+03 9679 6848 bruce.rhodes@melbournewater.com.au

