



Climate Change,
Healthcare &



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Carbon Footprints

It's the little things that make a
difference.

Reducing the Hospital Carbon Footprint in
existing facilities



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Issues preventing “Green” achievements in Healthcare

- Retrofitting in existing buildings is very expensive
- Failure of management to understand the whole picture
- Financial directives seeking a cost neutral or positive ROI
- New build is to a price not a standard
(build cost v’ operating savings)
- Purchasing practices







CHCS Approach

- Strategic plan based on facility analysis
- Building a staff culture through education
- Management developing understanding of the need to achieve results in this area for the future
- Develop the flexibility to work within the restrictions of existing inefficient building systems
- Creative solutions within the restrictions of limited budget opportunities,
- Adopting the 80/20 rule of achieving the little things first



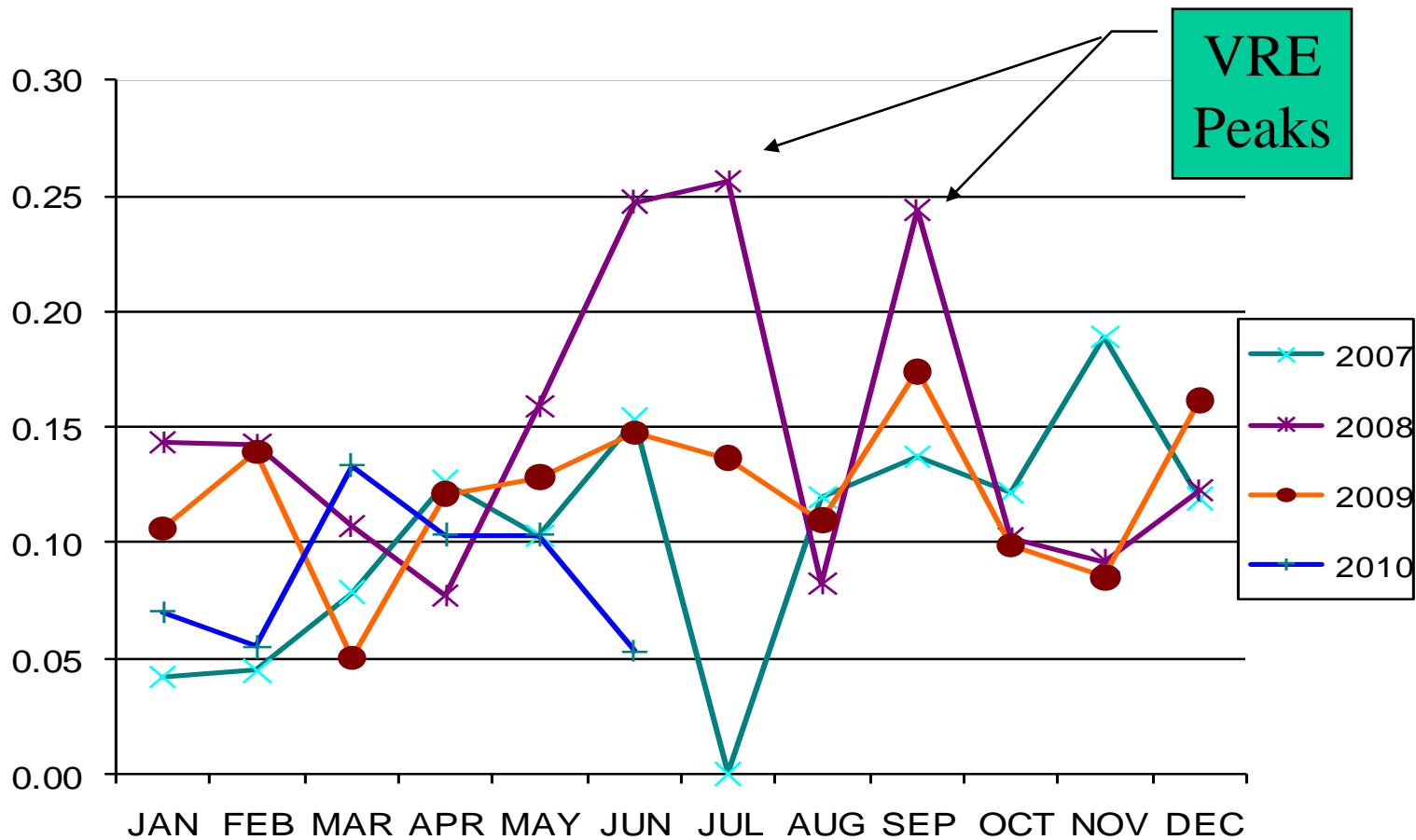
Waste Management – Recycling and Waste Management

Streaming

- Paper & Cardboard
- Clinical & Clinical Sharps
- Co-mingled recycle waste
- Other recycle streams
 - Kitchen Waste to worm farms
 - Fluorescent light tubes for gas scavenging
 - Office equipment pool
 - Older x-rays for silver scavenging
- Regular Audits
 - Clinical waste six monthly
 - Recycle waste monthly

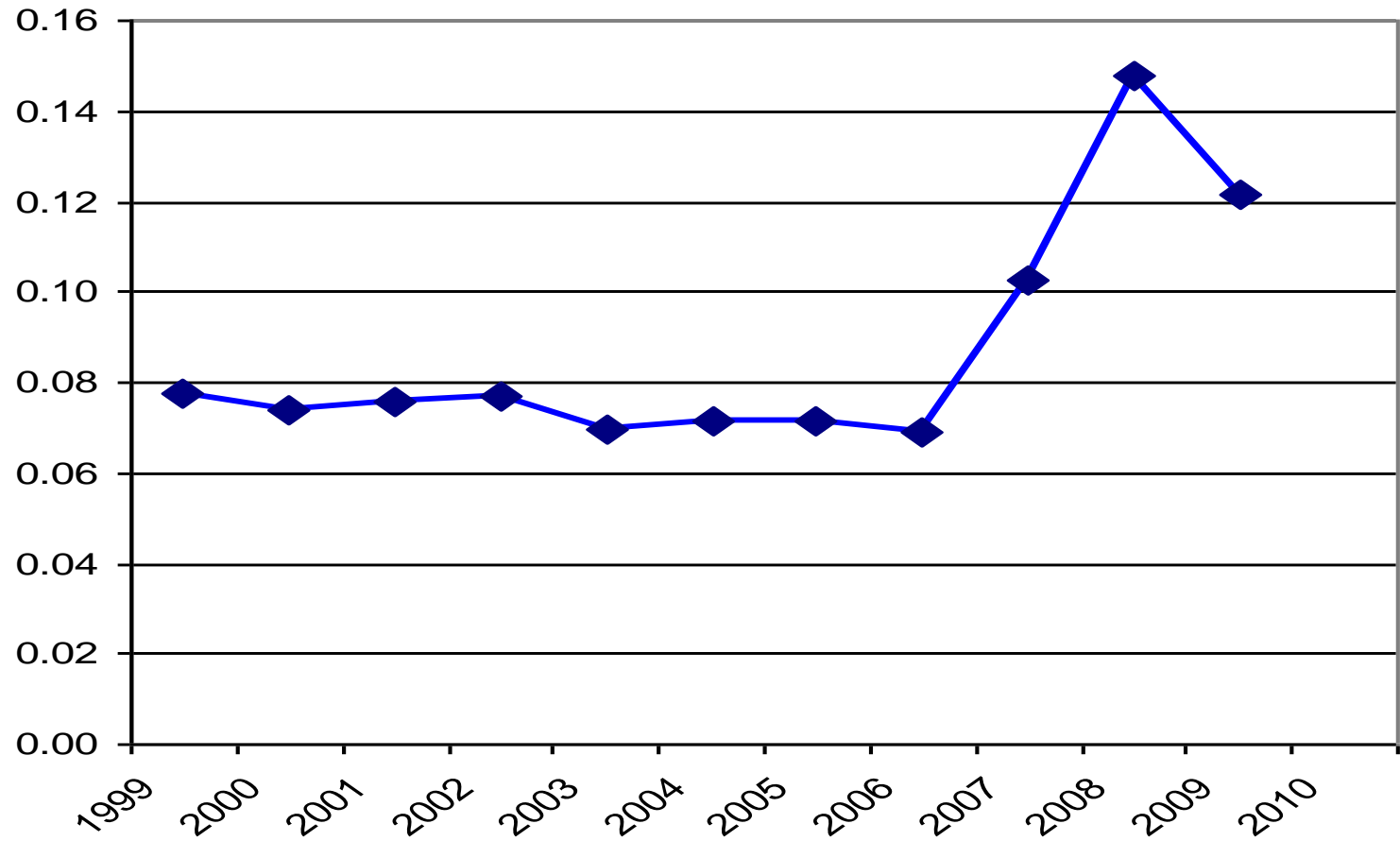


Clinical Waste Analysis PPD (kgs)





Clinical Waste Yearly Average Comparison kgs / PPD





Utilities Monitoring

- Water consumption
 - Peak and minimum flow Litre / min each day
 - 24hr usage patterns
- Electricity
 - Daily variances



Water Management

AIMS

- reduction in potable water usage
- recycling of water where possible



Water Management

Internal review of facility water usage

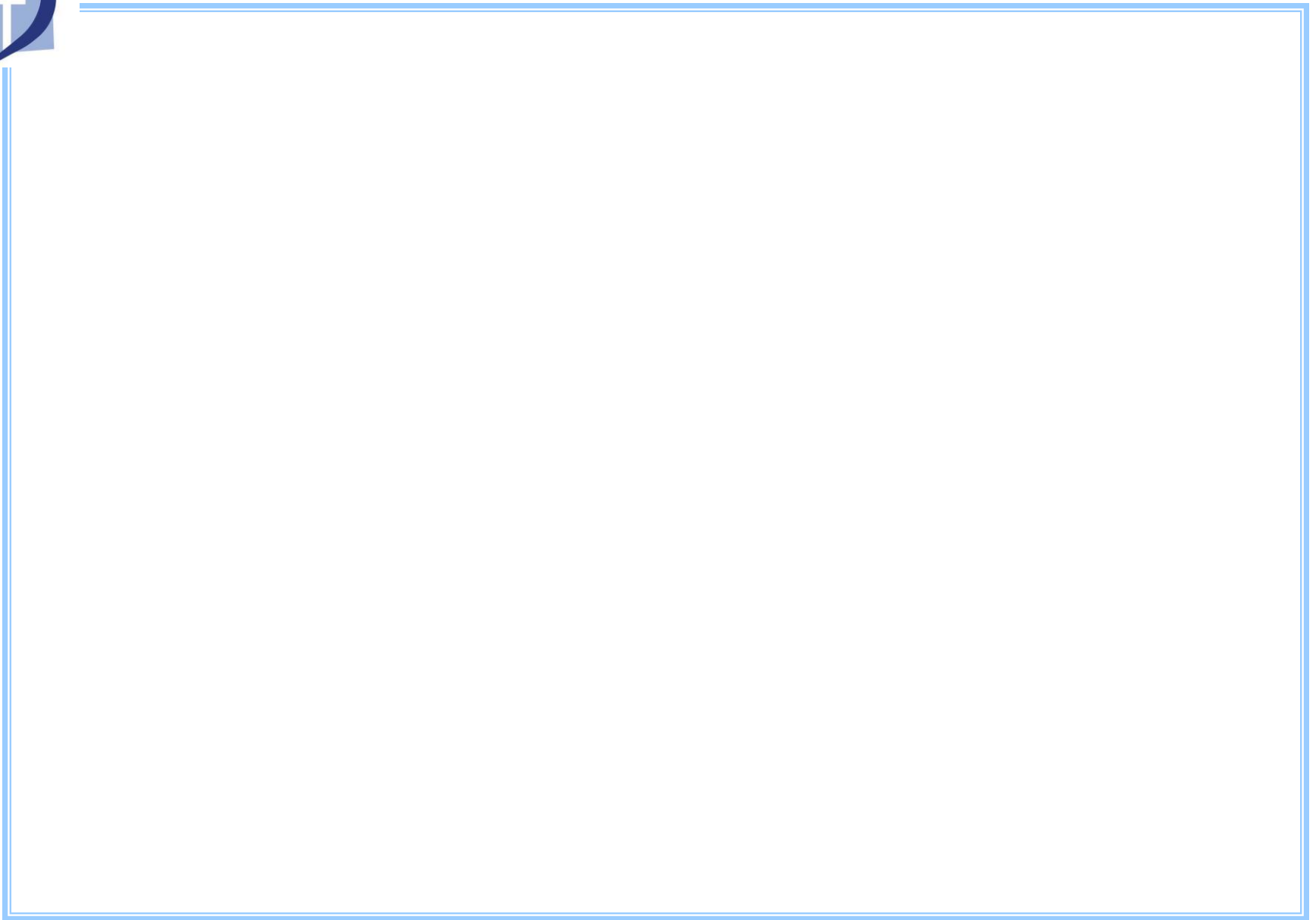
Area	% of Use
Staff Hand Basins	55%
Patient amenities	30%
Gardens	7%
Kitchen	5%
Other	3%
TOTAL	100%



Water Management

Key Opportunities Identified

- Flow restrictors on basin taps
- Installation of Low flow shower heads
- Recycling storm water for facility grounds environment
- Consideration of grey water systems in future building developments





Gardens Water Management Project

- Harvesting storm water run off
- Installation of 60,000 ltrs of storage
- Installation of reticulation system to water gardens and grounds
- Installation of ag lines to recapture any excess watering
- Use of drought tolerant plants



Energy Usage

- Electrical Systems Management

AIM

- Reduce the amount of energy usage across the facility
- Reduce the amount of fuel consumption



Electrical Systems Management reduction in overall power usage

Key opportunities identified

- Lighting – conversion to 2-to-1 x 36W linear fluorescent fittings, 50-35 dichroics, fixed dimming – **payback 7.5 years**
- Pumps: VSD control of chilled water and condensed water pumps – **payback 3.1 years**
- Ventilation: VSD control of multi-zone AHU fans – **payback 7.3 years**



Identified Energy Consumption by Equipment

Equipment	% Energy Use
Electric Cooling / refrigeration	28%
Ventilation / Fans	22%
Pumps	16%
Machinery & Equipment	15%
Lighting	14%
Electric Heating	3%
Computer Equipment	2%
TOTAL	100%



Electrical Systems Management

Actions undertaken (1)

LIGHTING

- Review Lux levels across the facility
 - Focus on general offices and corridors
 - Rearrange light placement as appropriate
- Increase use of
 - Movement sensors, installed in tutorial, dining, meeting, conference, change rooms
 - Dimmers
 - Daylight sensors
- Lighting type
 - Change down light to fluorescent where appropriate
 - Tube changeover to high efficiency TS tri-phosphor tubes, electronic ballasts



Electrical Systems Management Actions Undertaken (2)

- BMS Air Conditioning
 - Shut down admin areas after hours
 - Shut down vacant wards and rooms
 - Check and adjust all thermostat set points
 - Constant monitoring with alarms
- Hot water
 - Reduce set points by 1 degree
- Lifts
 - Converted from simplex to duplex control



Electrical Systems Management Future Plans

- Pumps: VSD control of chilled water and condensed water pumps
- Ventilation: VSD control of multi-zone AHU fans
- Replacement of BMS



Fleet footprint reduction

- Review of fleet vehicles use
- Trial of smaller / greener alternatives
- Programmed change over to Toyota Yaris
- Switch to E10 as primary fleet fuel source



Opportunistic Purchasing Decisions

- Is your supplier Green rated
- Is the product environmentally friendly
- Can the packaging be reduced or recycled by the supplier



Education Factors

- Specific waste reduction education at new staff orientation
- Reinforced at mandatory annual training
- Department / discipline specific education
- Regular ECO TIPS emails to all staff



Success Factors

- Organisational culture
- Realistic view of what can be achieved
- Executive commitment to the program
- Action not talk
- Education & communication