



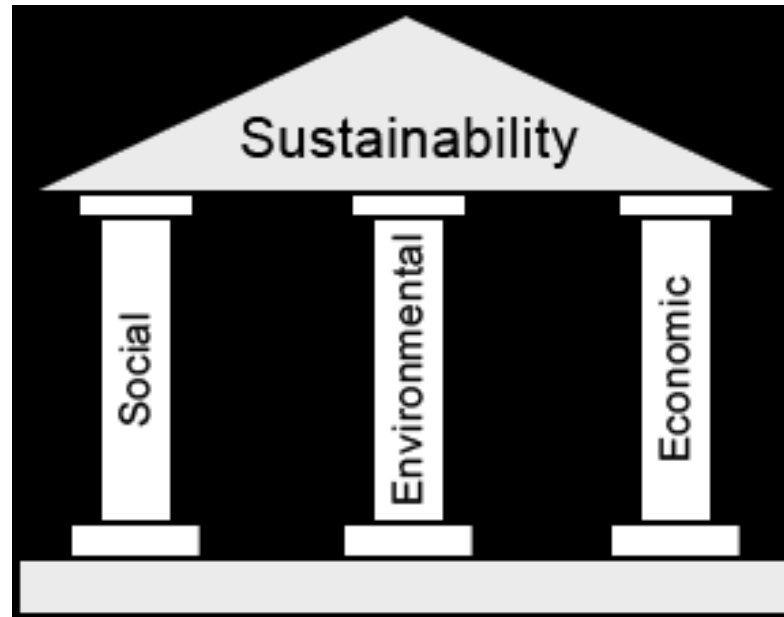
ST VINCENT'S
HEALTH AUSTRALIA

Sustainable healthcare through energy efficiency

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What is Sustainability?

- The ability to continue a defined “activity” indefinitely
- Sustainability Development has to cover the 3 pillars



Why move to a sustainable footing?

- **Because we live in a closed system where:**
 - **Most natural resources are finite, and many single use (e.g. oil / coal);**
 - **Everything you use comes from the earth;**
 - **Most products ultimately become waste;**
 - **Many production methods contaminate our environment;**
 - **We use energy inefficiently;**
 - **Recycling is not currently the answer;**

How do we become Sustainable?

- **Do more with less**
- **Embed sustainability in your organisation**
- **Avoid by working with your suppliers**
- **Drive energy efficiency**
- **Measure**
- **Innovate and seek out solutions**

Large environmental footprint

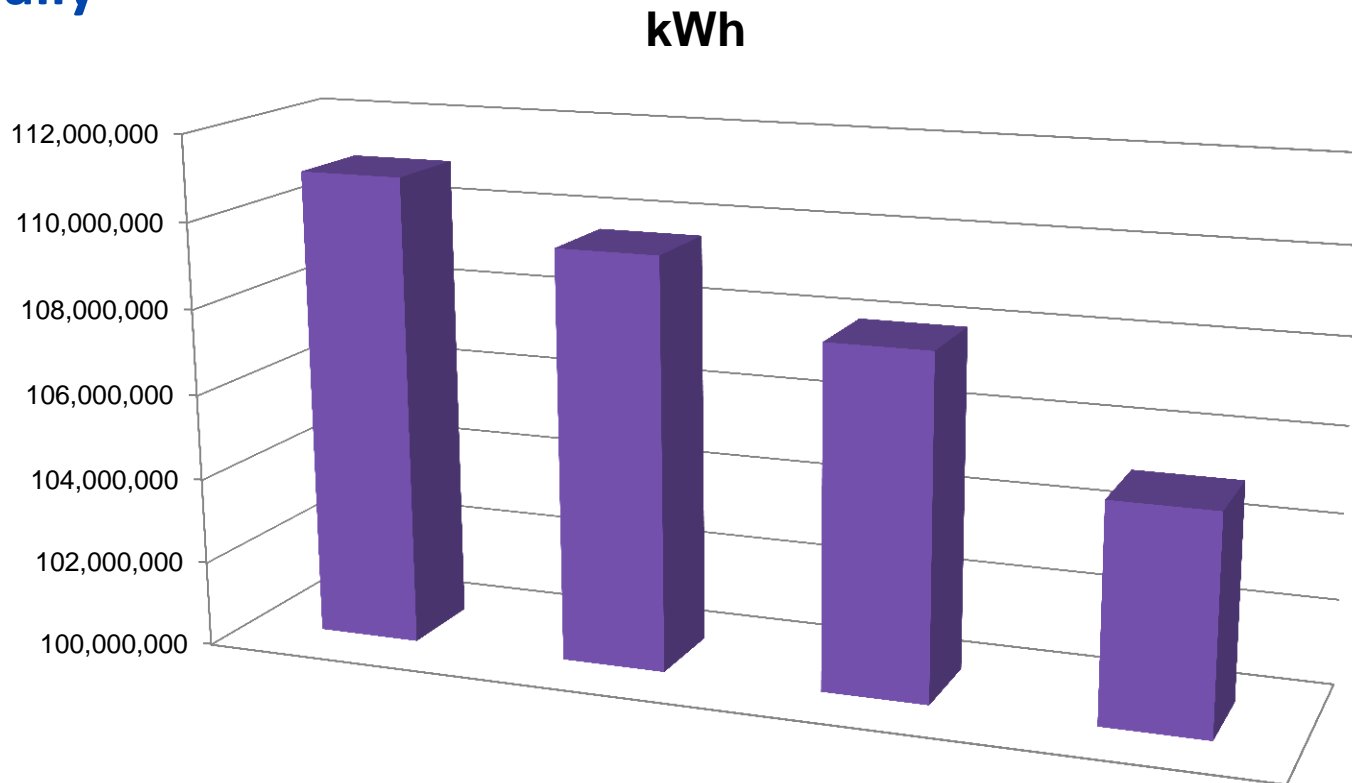
- **140,000 tonnes** of CO₂-e GHGs;
- **107,800,000** kilowatt hours;
- **192,090,057** MJ of natural gas;
- **700,000,000** litres of water;
- **5000** tonnes of general waste;
- **600** tonnes of clinical waste;

So What is St Vincent's Doing?

- Energy is our largest source of environmental impact – CO2 emissions
- Electricity rising at 3% average YoY
 - The turning point 2011/12
 - **Reduction of 0.71% OR 3.7% against trend**

Heading in the right direction...

Since C2011 down by 5.5 M kWh, \$750K and 5000t of CO2-e annually



Making a difference in Energy

- How?
- Lighting and AC upgrades at just one site!
- But it was a big site...

Lighting

- **9000** lights changed
- Combination of T5s and LED
- Cost - **\$300K** down to **\$65K** using ESS certificates
- Payback **3 months & 584%**
- **Savings** annually around **\$350K p.a.**



Lighting Results

- **Lighting technology**
 - T5 adaptors = 50%
 - LED vs. Twin 18W CFLs = 70%
 - LED vs. Twin 26W CFLs = 80+%
- **Overall Confirmed Results:**
 - 2.6 Million kWh ~ 18% reduction against total consumption
 - Reduction of 2,300 tonnes of CO₂-e

Air Conditioning

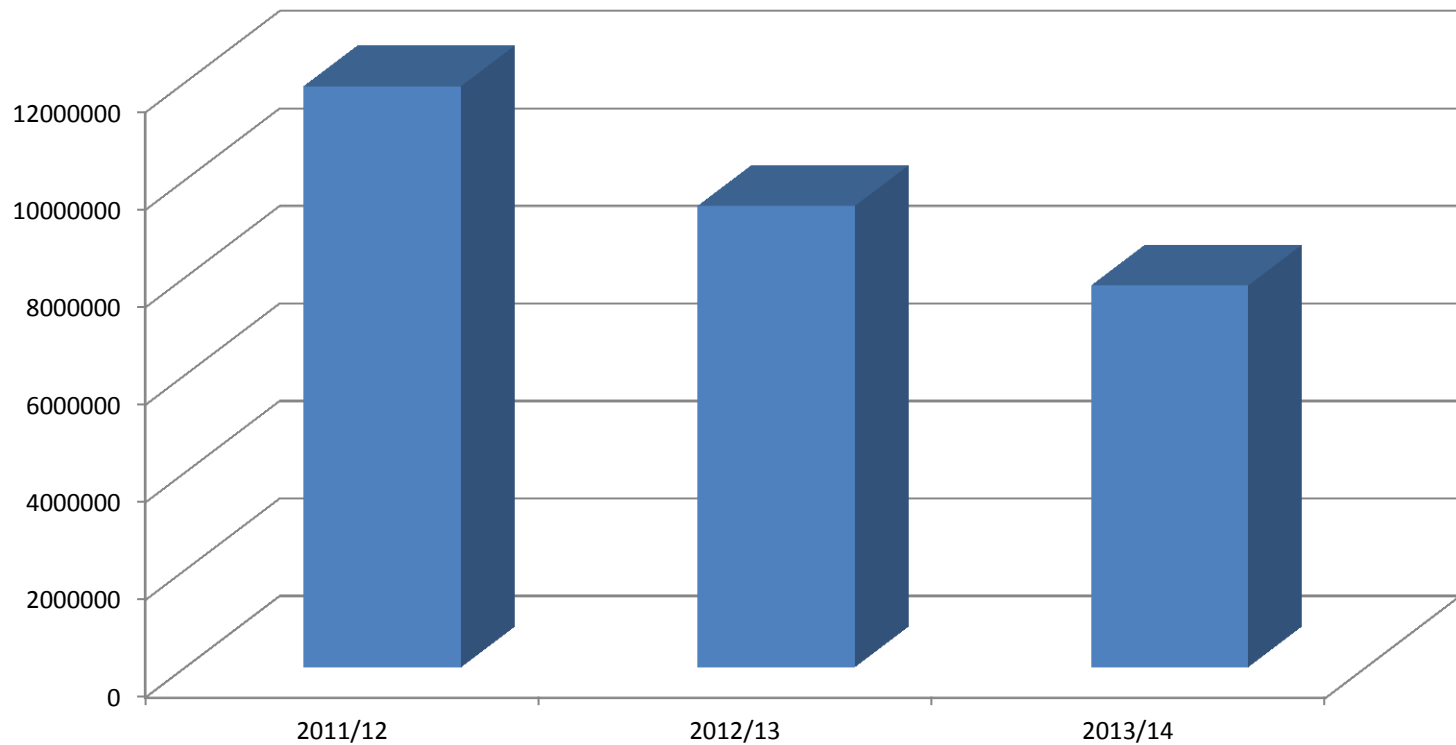
- **AC controlled by a 12 y.o. Building Management System (BMS);**
- **Meaning poor control of AC = inefficient systems;**
- **Introduced a layer of control software by 'Entropy' to the system;**
- **Better control but also greater comfort levels;**
- **Based on rising and falling rather than fixed set points (e.g. 22 deg + or – 1.5 degs).**

Xavier – Final Outcome

- **Total Savings in Energy:**
- **4.1 million kWh**
- **\$561K**
- **From 11.9 to 7.82 M kWh in 2 yrs**
- **34% reduction in just one building**

Xavier – Final Outcome

Savings over 2 years – Xavier Building



Water

- **Water is a bit trickier**
- 3 possibilities:
 - Store it (Potable Water Issues)
 - Restrict it
 - Recycle it – very popular



Flow Nebuliser

Cost	\$30 / unit (CSIRO design)
Savings	1.1 M litres based on 40 showers = 20% reduction
Total Cost	\$1600 = \$5500 saving saves on HW too
Big Picture	500 locations = 14,500,000 litres 60K in savings, 400% ROI and 3 mth payback

So what's stopping us?

- **Cost – but solutions are there;**
- **To be truly effective needs to be done on a large scale;**
- **Fear of failure;**
- **Needs to be driven at an Executive Level;**
- **Need detailed info on each facility (mainly through audits);**
- **View that money better spent on direct health outcomes;**
- **Energy represents about 1% of revenue.**

The Future

- Opportunities abound at St Vincent's
- Through the following technologies savings of:

38% =

Measure	Saving %
Lighting	9
Voltage Optimisation	5
BMS / HVAC Control	5
Solar Panels (PV)	4
HVAC Air-Pre-treatment	4
Solar Hot Water	3
Power Factor Correction	3
Roof Paint	2
UV Sterile Air Treatment	2
Submetering	1
TOTAL	38

The Future

- **But isn't that going to be expensive? – Yes! But...**
- Total Cost estimate around \$10.3 Million:
- Likely return per annum \$3.6 Million
- Payback 2.9 years
- Ongoing clear savings per annum:
 - 41,000,000 kWh
 - 36,500 tonnes of CO₂-e
- Savings over 10 years after payback \$25.7
- Some measure payback for 20 to 50 years...

“We can't solve problems by using the same kind of thinking we used when we created them”

Albert Einstein

"When I look at America, also my own homeland (South America), so many forests, all cut, that have become land ... that can longer give life. This is our sin, exploiting the Earth and not allowing her to her give us what she has within her,”

Pope Francis

Thank You

