

# Energy Efficiency and Conservation



University Health Network

Toronto General Hospital Toronto Western Hospital Princess Margaret Hospital

**“Because Health Care should not create  
health problems”**

# Presentation Outline

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- Energy Initiatives at UHN
  - Peter Munk Cardiac Centre
  - diagnostic imaging
- New UHN Energy Program
  - retro commissioning
  - social marketing
  - employee engagement



# Healthcare and Energy Impact

In 2003, Canadian hospitals consumed nearly 52 million *GJ* and produced nearly 2.8 million tonnes of greenhouse gas emissions—an amount equal to the average annual energy consumption of approximately 450 000 Canadian households



Source: (Office of Energy Efficiency's *Consumption of Energy Survey for Universities, Colleges and Hospitals*, 2005).



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# Patient Care is Energy Intensive

- Example – Peter Munk Cardiac Centre
- Largest cardiac diagnostic imaging centre in Canada

Item	Energy	\$/year
Imaging Equipment (kWh)	2,696,906	\$258,903
HVAC electricity (kWh)	2,256,712	\$216,644
HVAC steam (lbs)	12,943,284	\$181,206
<b>TOTAL</b>	<b>17,896,903</b>	<b>\$656,753</b>



# The Goal is....

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- Overall we want to reduce our energy demand



# TLC – Care to Conserve

An engaged hospital community working together to make changes that increase awareness and reduce consumption of energy



# The Pilot Site

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- University Health Network
  - **Toronto Western Hospital (TWH)**
  - Toronto General Hospital (TGH)
  - Princess Margaret Hospital (PMH)
- 4.5 million ft<sup>2</sup> (TWH = 1.3 million ft<sup>2</sup>)
- 115 million kWh (TWH = 30 million kWh)
- 4.2 million m<sup>3</sup> natural gas (mainly TWH)
- 275 million lbs steam (TGH & PMH)
- 615,000 m<sup>3</sup> water (TWH = 260,000 m<sup>3</sup>)



# What Success Looks Like

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10% energy saving at  
TWH

- 6, 833,333 kilowatt hours of electricity
- 753 household electricity usage for one year
- \$500,000 saving



# 10% energy saving at TWH is....

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- 1600 tonnes of greenhouse gases
- 48 acres of forest preserved from deforestation



# The Paradox

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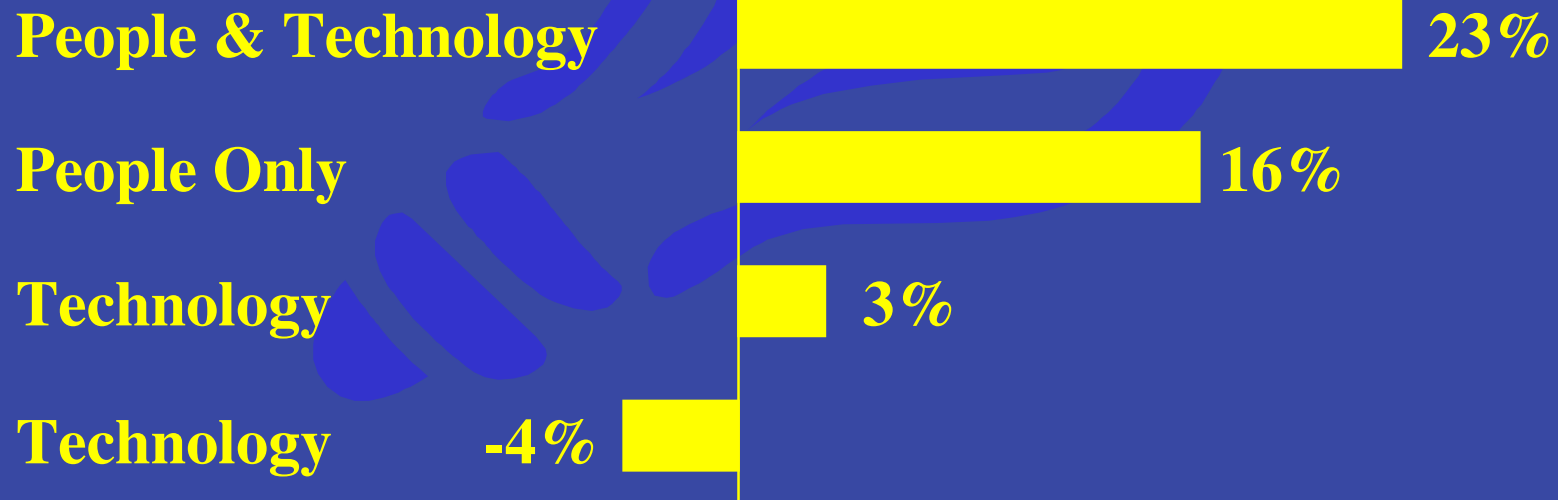
- We want the fast and easy to identify results that come with technology and we want to achieve the maximum energy savings.



# The Reconciliation

- address staff awareness/engagement and technological opportunities simultaneously

*Energy management is a process, not a project!*



**Actual Energy Savings**

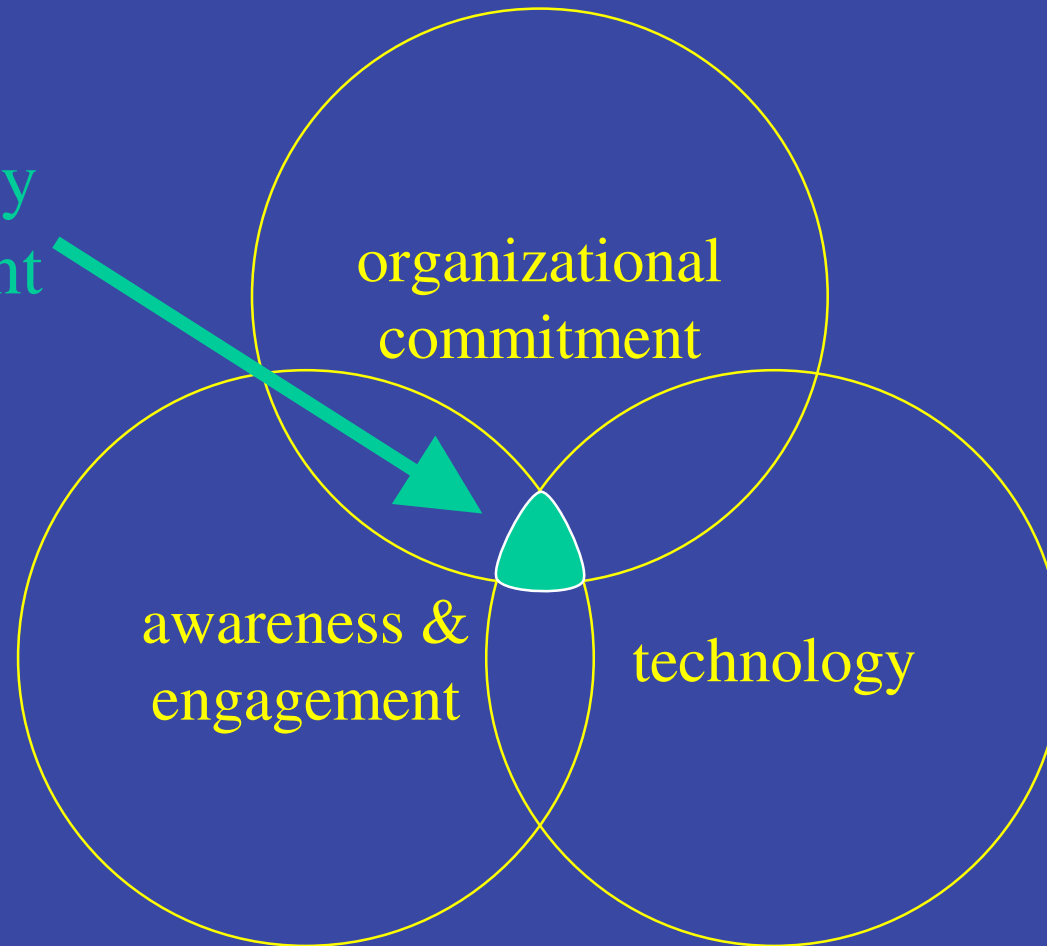
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# The Premise

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good energy  
management



# Organizational Commitment

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Kathy Sabo – Executive Director of TWH says...

“Congratulations, TLC is an excellent program and reflects TWH's commitment to demonstrating leadership and innovation”

Doug Shiozaki - Director, Facilities & Support Services says....

“I recognize that commitment to the TLC program and communication between TWH staff means that we can make a difference”



# Technology

## Retro-commissioning (RCx)

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### Characteristics

- Systematic and documented process
- Low-cost operational and maintenance improvements
- Raises building operations to design intentions
- Optimizes existing system performance



# Technology – RCx

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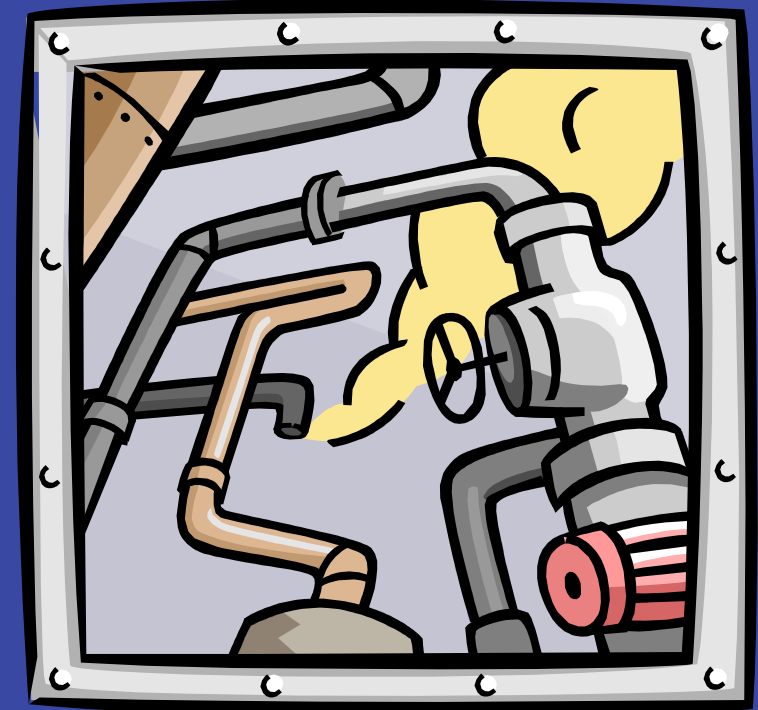
## Targeted systems

- Building automation
- Chillers and towers
- Boilers
- Steam systems
- Air handling units
- Exhaust air systems
- Portable water systems
- Lighting systems



# Energy Savings Identified from RCx

- Adjusting schedules and controls on HVAC
- **Updating operation and maintenance protocols**
- Providing operator and manager training modules



**Results - Saving \$150,000 a year**



# Awareness and Engagement

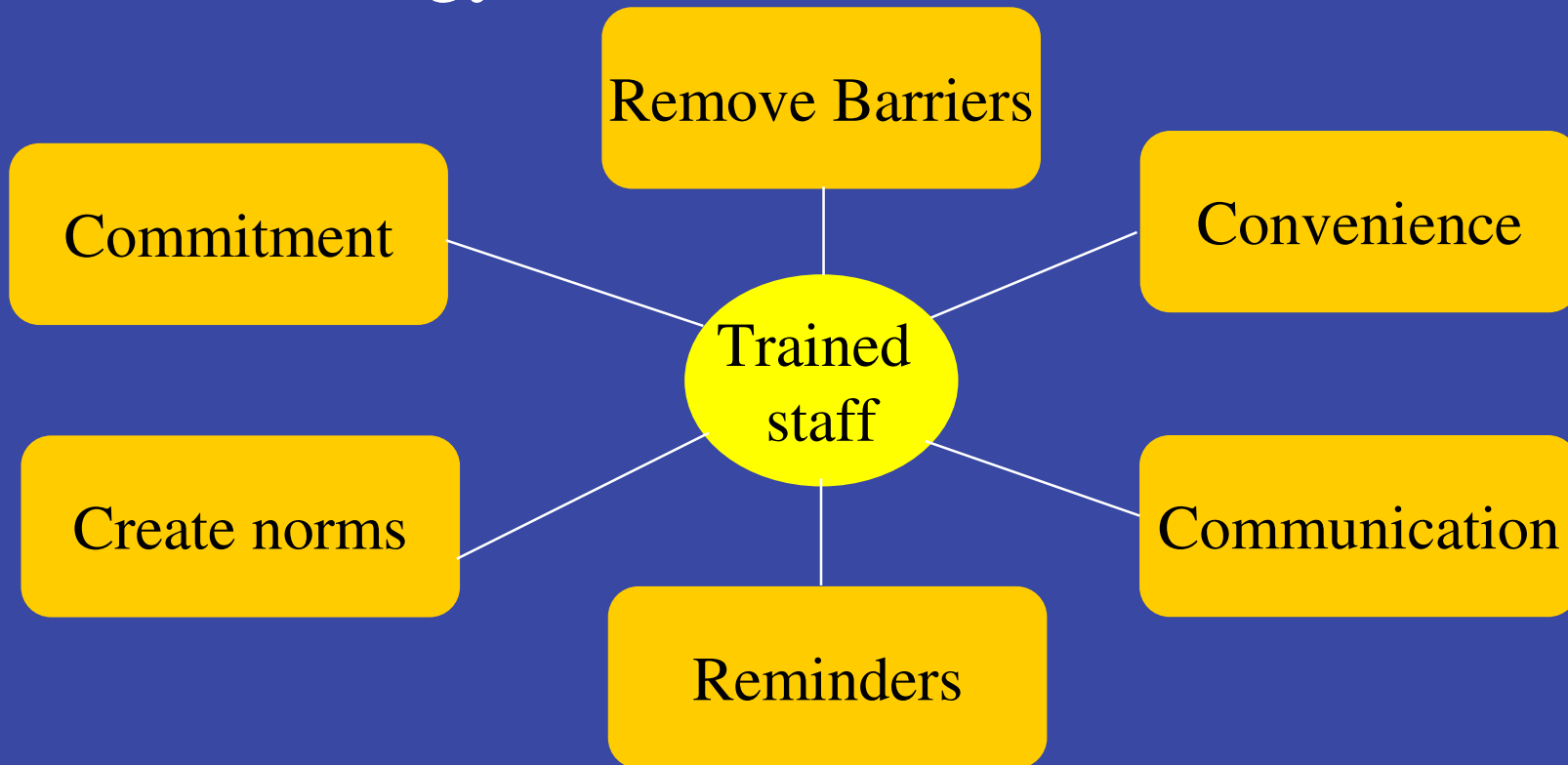
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- Transcend the technology mindset
- Account for the real impacts of human behaviour
- Empower staff to make changes and offer solutions



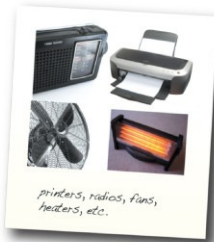
# Social Marketing

- How can we encourage staff at TWH to save energy?



# Poster

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## Turning Off Lights Saves Lives

Turning off lights and cutting back on excess electricity consumption is a good way of reducing air pollution emitted by coal fired power plants - a major source of smog and greenhouse gases in Ontario. According to the Ontario Medical Association, air pollution in Ontario leads to 17,000 hospital admissions and 60,000 emergency visits every year. So, next time you leave your workspace or a vacant room, turn off the lights to save lives and protect the environment.

Every Kilowatt Counts



# Sign the TLC Pledge!

I will participate in the University Health Network's TLC project by conserving energy and electricity at work to demonstrate my commitment to a more sustainable workplace.



**Sign Here:**



# Employee Engagement



An inclusive process intended to reflect staff expertise and interests from across the entire hospital.



# The Challenge

TLC is not looking at medical devices...

...can we design and operate our medical and imaging equipment more efficiently, without compromising patient care?

Peter Munk Cardiac Centre		
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as much as 20% of consumption is in standby mode



# End Result

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- We have a system wide approach
- Technology and Awareness intersect and interact
- Results are achieved that are greater than your expectations
- Shift the expectation of immediate results to long term sustainability



# More Information

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Ed Rubinstein

[edward.rubinstein@uhn.on.ca](mailto:edward.rubinstein@uhn.on.ca)

Kady Cowan

[kady.cowan@uhn.on.ca](mailto:kady.cowan@uhn.on.ca)

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