



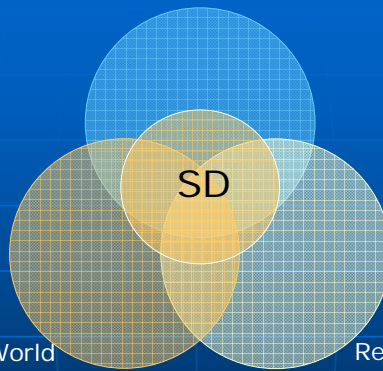
# Creating Sustainable Schools

Gary Johnson

Dearness Environmental Society



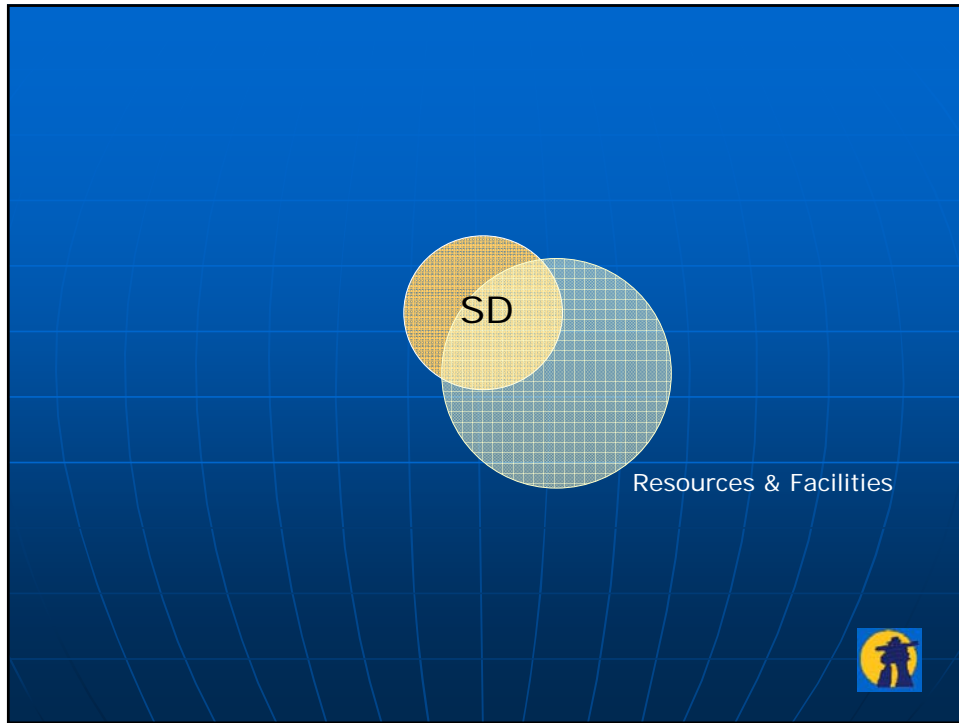
Learning & Teaching



Interfaces to the World

Resources & Facilities





## SD Themes

- Poverty • Natural hazards
- Economic development
- Governance • Atmosphere
- Global economic partnership
  - Health • Land •
- Consumption and production patterns
- Education • Oceans, seas and coasts
- Demographics • Freshwater
  - Biodiversity

## SD Issues

Agriculture • Freshwater • Oceans and Seas • Atmosphere • Health • Poverty • Biodiversity • Human Settlements • Sanitation • Biotechnology Indicators • Science • Capacity-Building • Industry • Small Island Developing States • Climate Change • Information for Decision-making & Participation • Sustainable Tourism • Consumption & Production Patterns • Integrated Decision-making • Technology • Demographics • International Law • Toxic Chemicals • Desertification & Drought • International Cooperation for an Enabling Environment • Trade and Environment • Disaster Reduction & Management • Institutional Arrangements • Transport • Education & Awareness • Land Management • Waste (hazardous, radioactive, solid) • Energy • Major Groups • Finance • Mountains • Forests • National Sustainable Development Strategies



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## View from Resources & Facilities Management



## The Facility Sustainability Paradigm

Design

Construction

Operations &  
Maintenance

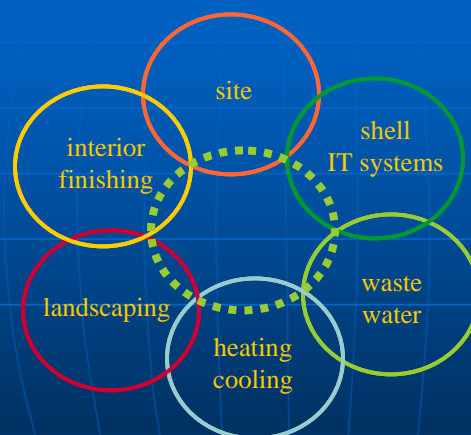


# Sustainable Design

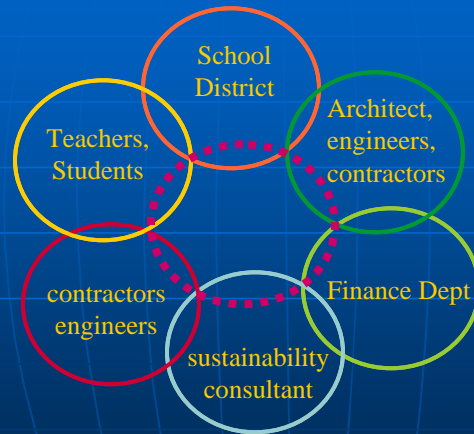
- To enhance a building's overall performance in an **environmentally responsible manner**, while improving
  - occupant comfort;
  - indoor air quality;
  - energy, water and materials efficiency; and
  - life-cycle operating costs.



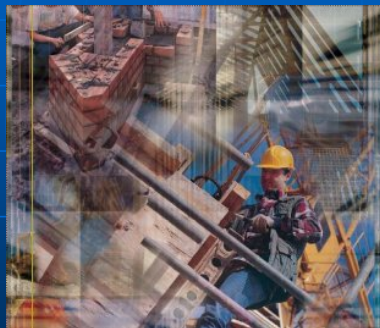
## Sustainable Design links PROCESS



## Sustainable Design links PEOPLE



## Sustainable Construction



- Integrated with Planning Process
- 'Green Specifications'
- LEED or other guidelines
- beyond materials – engendering a new paradigm in construction management



# Sustainable Operations & Maintenance

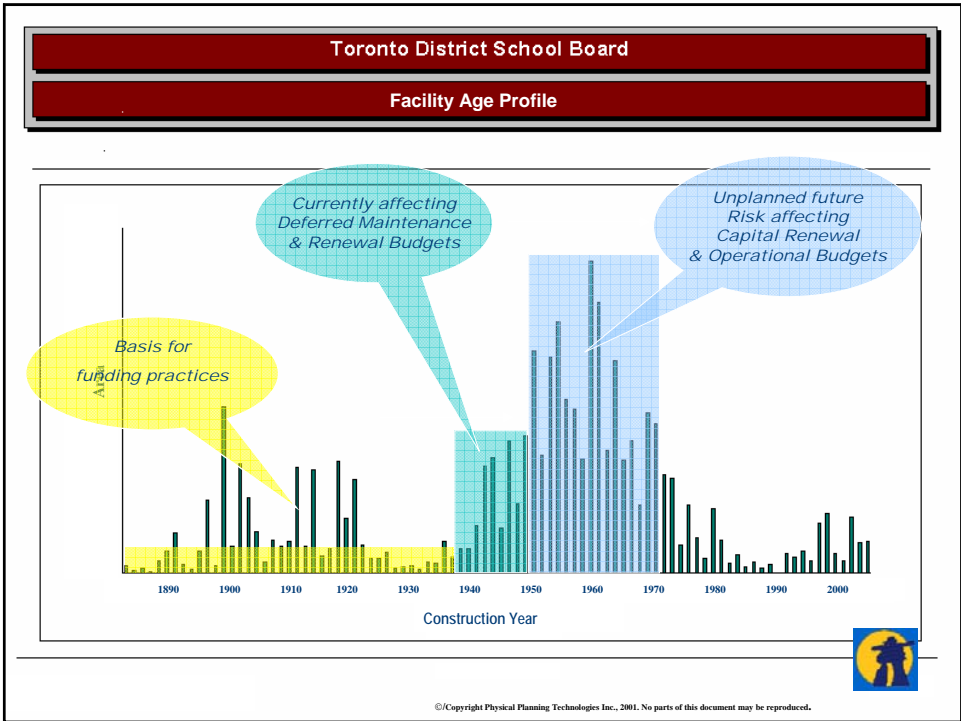
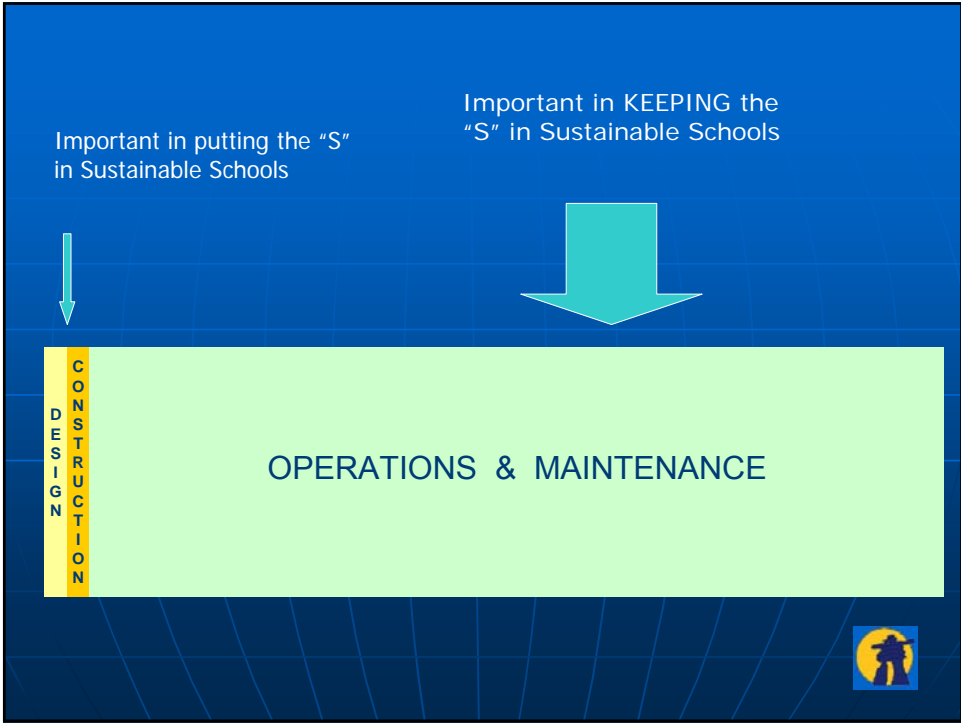
- Significant long-term impact
- Critical for securing operational and energy savings
- Significant underfunding of Maintenance & Renewal
- Blend of hi-tech and hi-touch



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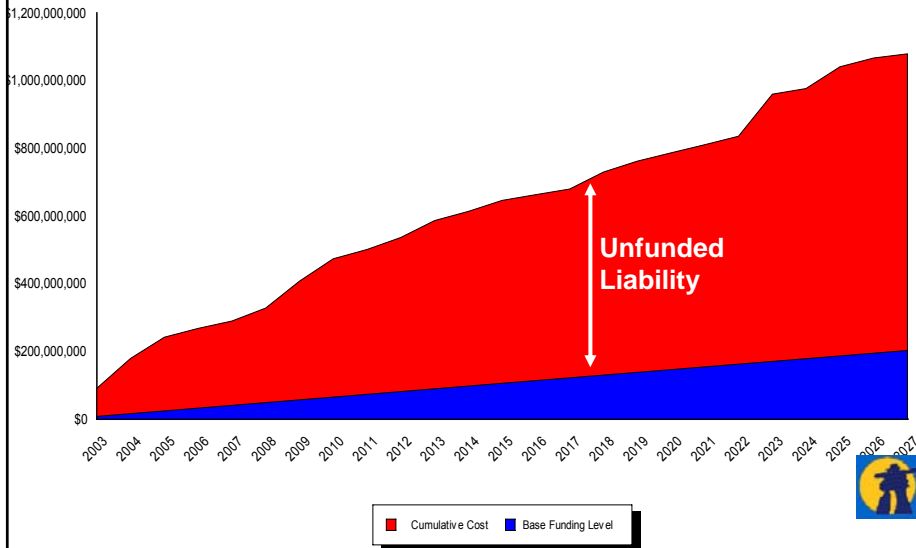
OPERATIONS & MAINTENANCE



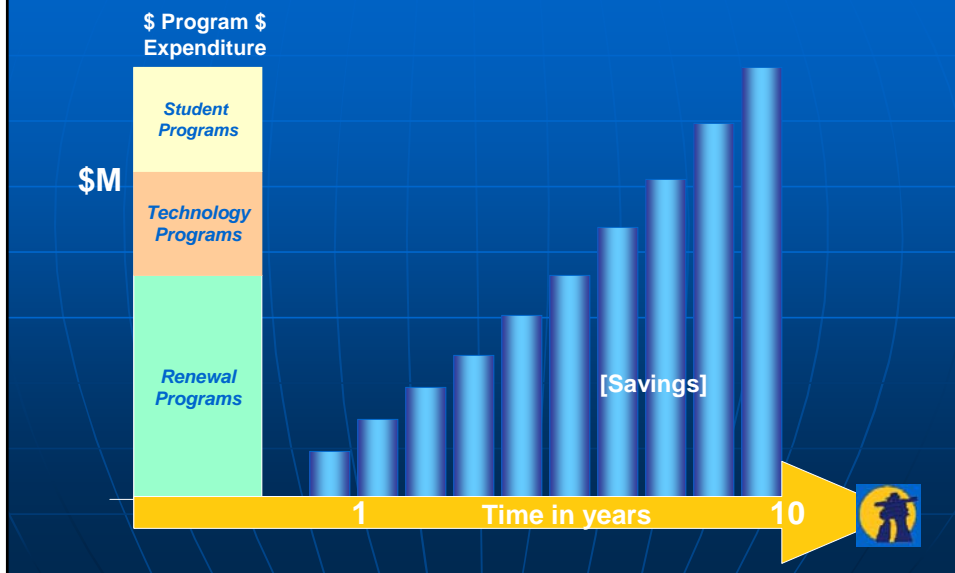


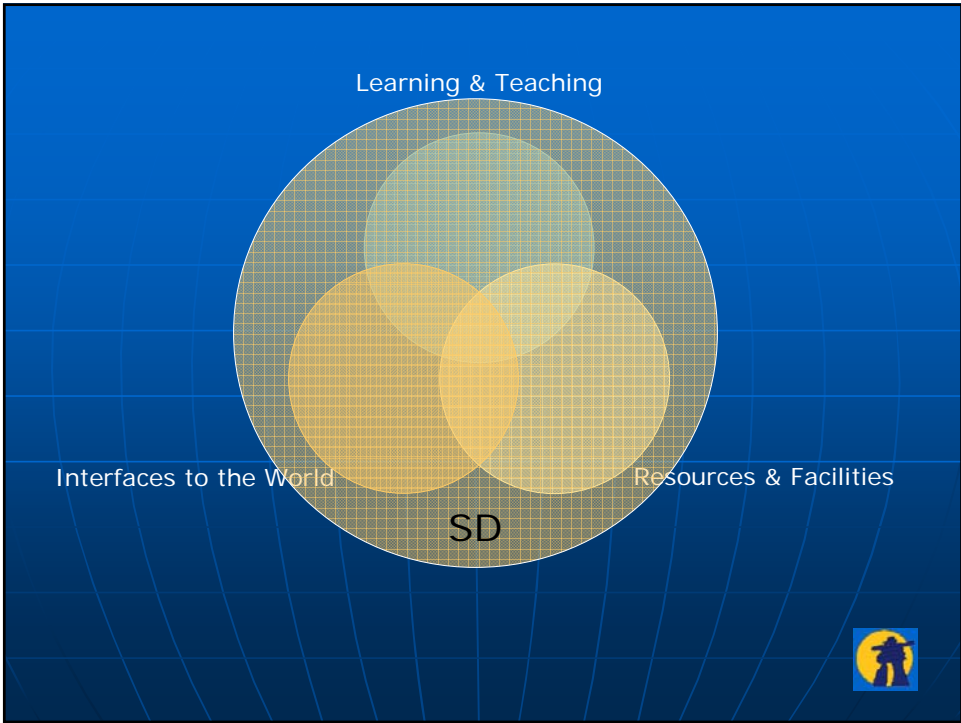
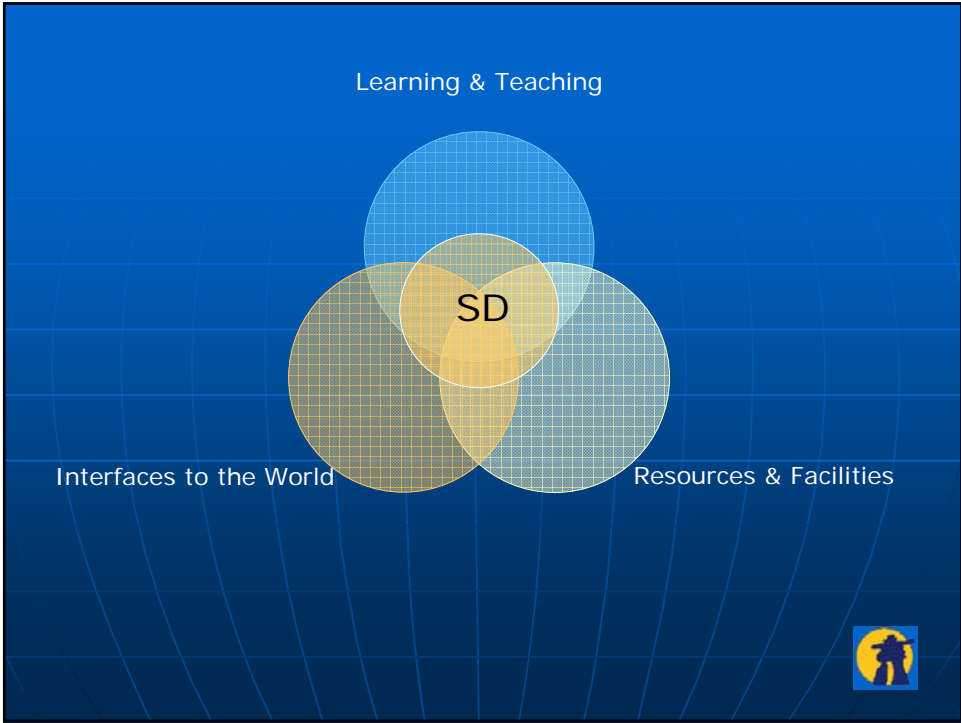


# Cumulative Cost vs. Funding



# Financial Opportunity





## Sustainable Schools...

- Sustainable schools cost less money to operate and use less water and energy.
- Sustainable schools on average save \$100,000 per year



## Sustainable Schools...

- Sustainable Schools are not only better for the environment, they are also healthier for students and teachers



## Sustainable Schools...

- Have better lighting and temperature controls, more comfortable indoor environments, improved ventilation and indoor air-quality – all of which contribute to positive health benefits



## Sustainable Schools...

- Have higher teacher retention.
- Demonstrate increased performance on reading tests by 20% and on math tests by 24% compared to students in classrooms without daylight.
- Experience fewer sick days and instances of asthma are 38.5% lower.



## Sustainable Schools...

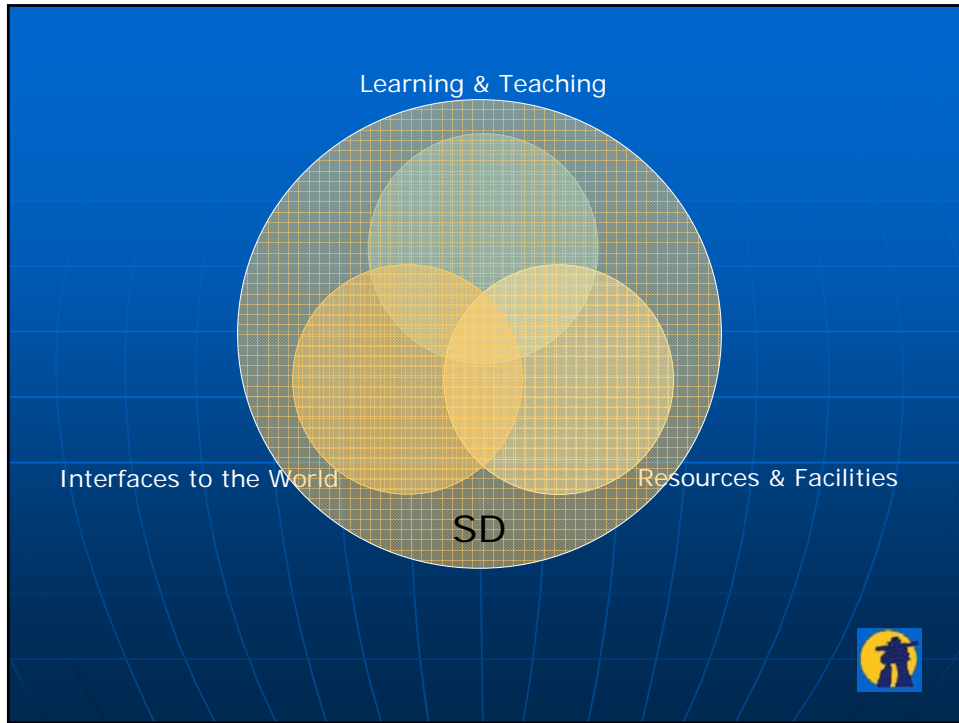
Sustainable schools on average save \$100,000 per year—enough to hire 2 new teachers, buy 1000 new computers, or purchase 5000 new textbooks.



## Sustainable Schools

- \$2B savings in next 10 years (\$25B in North America) for New Design
- Retrofit & Rehabilitation of existing structures is SIGNIFICANTLY larger
- Savings potential increases as energy costs increase





Now its your turn .....

In 2020 –

What do you expect from your facilities and their operation ?

