A Conversation About Conservation - Facilities Services Consultation September 27, 2019

Summary of Results

Question 1: *What are the challenges and opportunities with respect to reduction of energy consumption in TCDSB schools?*

	Challenges	Opportunities
Commitment	People not caring about energy use, lack of political will, getting admin support on target and education of staff	Assign staff or department dedicated to energy consumption Board-wide
Conditions	Aging infrastructure, not built for efficiency, not easy to retrofit, low occupancy of some buildings	Revise standards and expectations, comprehensive assessment of buildings, review systems for efficiency when replacing, proper mechanical system design and installation
Controls	Behavioural challenges, technology needs to work better	Extend BAS to all buildings, opportunity for separate BAS for individual spaces, increased monitoring of consumption, daylight sensors
Cost	No targeted funding for energy conservation, evaluation on immediate costs, short term pain vs. long term gain	Evaluate projects on life cycle cost, federal funds/grants, charge-back energy us during permits
Curriculum	Lack of knowledge of building systems, unrealistic expectations	Invest in the new generation, issues integrated in curriculum, make conservation a program component

Question 2: *On average, how would you rate the knowledge of school staff about energy production, distribution and consumption and the effects of occupant behavior and habits on energy consumption? How might knowledge gaps be addressed?*

Knowledge of custodial staff is very good, often they are the "watchdog" for energy use in their buildings and may be able to help encourage students and teachers to conserve. Knowledge of teachers and administrators thought to be "medium." It was noted that teachers and principals may not prioritize conservation because the cost of energy is not theirs and they may be overwhelmed/distracted by more pressing issues.

Ways to address knowledge gap and commitment to conservation:

- More training for custodians on equipment and visual inspection of buildings
- Logging and communication of energy use data – energy dashboard
- Competition to reduce consumption
- Involve students in care of the school
- Include energy conservation in curriculum
- Expand Eco-schools program
- Principals' meetings
- Attend environmental conference
- Encourage accountability

Question 3: *How might we make use of Renewal Funding and the Renewal Plan to carry out energy retrofits so that all schools become more energy efficient over time? How long do you think this would take?*

1. Planning:
    - Carry out building assessments (infrared scanning)
    - Start with the worst performers
    - Evaluate financial viability of projects
    - Combine projects at a school.

2. Priorities:
    - HVAC – replace with efficient equipment, add BAS
    - Lighting – replace with LED, controls (daylight/occupancy sensors)
    - Roofs – add insulation
    - Water consumption

3. Funding:
    - Increased Ministry Renewal funding needed
    - Ministry mandate to improve energy efficiency factored into VFA, e.g. to include insulation/caulking/sealing with exterior brick replacement

4. Timing:
    - 10-15 years to implement
    - 25-35 year payback

Question 4: *(i) How could training of custodians and maintenance trades help reduce energy use in schools?*

- Behaviour – more ownership/accountability
- Knowledge – better awareness put into practice, training to better understand their buildings could lead to reduction in operating/repair costs
- Communication – sharing of knowledge, need to include all staff in school
- Preventative Maintenance rather than reactive, ability to prioritize some maintenance issues that appear small but have large energy implications, e.g. window caulking

(ii) How might training be carried out?

- Head caretaker meetings/workshops – mandatory annual training, bi-annual lunch n' learn, Professional Development days and incentives
- Involve and empower caretakers and trades – share knowledge with staff in schools, partnership with union, seek feedback from custodians and maintenance trades
- Training Committee as part of dedicated Net Zero/Energy Conservation staff/department
- Improve delivery of training – skype, shorter, more compact, smaller classes, more time to exchange experiences, reviews/surveys

Question 5: *How can we change the design and specifications of new schools to help reduce energy consumption with the funding provided by the Ministry? If additional funding was provided, where would it be best spent?*

Passive:

- Orientation to minimize heat gain in summer, maximize passive solar in winter
- Shading – building (canopies, window shading), site (trees, orientation)
- Natural cooling/ventilation
- Better envelope – more insulation, triple glazing, weatherstripping, better quality

Active:

- Displacement ventilation, in-floor heating (current standard)
- HVAC zoning and controls
- LED lighting, lighting controls
- Investigate geothermal
- Solar panels, solar walls
- Water cooling
- Interactive energy creation (e.g. bicycle generation)

Soft Factors:

- Exceed current building code, e.g. insulation level
- Get Ministry support for unique site costs for Toronto Green Standard tiers 2-4
- LEED certification
- Put usage statistics on public display

Question 6: *How important do you think occupant behaviour is in reducing energy consumption vs. building design? How might we encourage greater commitment amongst school staff to look for ways to reduce energy consumption in their schools?*

Workshop participants felt that occupant behaviour is very important and that maximum expected energy reductions from more efficient equipment and building design will not materialize if occupant behaviour does not support energy conservation.

Suggestions to increase commitment to energy conservation:

- Incentives
    - Water bottle filling stations for Eco schools
    - Board recognition for leadership/success in energy conservation
    - Retrofits to further reduce energy use
    - Lieu time for staff leaders
- Information
    - Information sessions
    - Continuing Education
    - "Green/Sustainable Event"
    - Curriculum

- Enforcement
    - School Energy Monitors
    - Remove inefficient equipment installed by occupants to circumvent controls, replace with energy efficient equipment that occupants have some control over
    - Awareness of min/max temperature policies, use of equipment (e.g. do not block air flow)

Additional Questions arising from the discussion:

1. *Is it worth the effort?*
2. *How does permit use affect level of annual energy consumption?*
3. *How do we prioritize schools for energy audits?*
4. *How can we develop better standards for new schools? Should we hire an external consultant to develop standards and details? How can we make sure all internal departments have the required input into building standards?*
5. *How do we rationalize the dichotomy between energy conservation and the installation of cooling centres and air conditioning in all portables? Why do we spend so much money on air conditioning for a few days a year? Is this taking us in the wrong direction?*

General Themes for Action

- Education and communication to increase awareness
- Involve students
- Enhance curriculum
- Dedicated Energy Conservation staff/department
- Incentives for conservation
- Building assessment and retrofits
- Revise standards for new buildings
- Train staff
- Funding

Immediate Specific Action Items

1. Carry out blower door tests/infrared scans of selected schools.
2. Retain a consultant to develop a new energy efficient building standard.
3. Group Renewal projects at schools and look for opportunities to include energy use reduction measures such as caulking, weatherstripping and increased insulation.
4. Track energy savings from Renewal projects
5. Provide energy use data displays in schools.
6. Build life cycle costing case for additional Capital/Renewal funding
7. Involve and empower caretakers and trades to share knowledge with staff in schools