ENERGY RETROFIT

MILLIKEN MILLS COMMUNITY CENTRE

General Committee

May 5, 2008

ENERGY RETROFIT

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BACKGROUND

- An energy audit was conducted in August 2006
- Milliken was chosen due to its size and age
- The greatest potentials for cost effective energy savings were identified in:
  - Boiler upgrade
  - Heat recovery from swimming pool drain
  - Solar heating of swimming pool water
  - Building automation system (BAS)
  - Corridor lighting retrofit

Implementation began fall 2007

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Boiler Upgrade

- Replacement of old inefficient boilers with modern high efficiency ones
- Modification of heating system to achieve maximum output from the new boilers

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Heat Recovery from Swimming Pool Drain Water

- Recovering 70% of waste heat from drain water
- Preheating the incoming cold water to save energy
- Year round application

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Solar Heating of Swimming Pool Water

- Heating pool make up water in summer
- No additional pumping cost
- Water directly circulates through the solar panels on roof
- Designed for quick payback

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Solar Collectors on Roof

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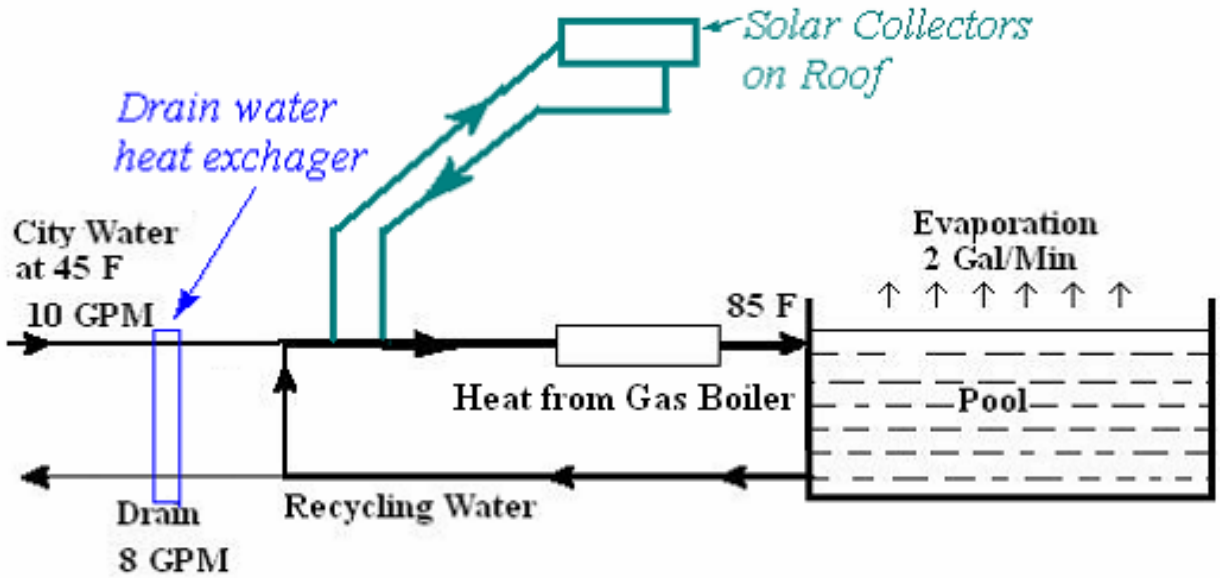
Modified Pool Water Heating System



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Building Automation System (BAS)

- Integration of all individual control systems
- Automated equipment shut down during non occupancy hours
- Maximize the level of comfort by prohibiting overheating or overcooling
- Ability to control and monitor the system remotely

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Corridor Lighting Retrofit

- Replaced inefficient lamps with higher efficiency Compact Fluorescent Lamps (CFL)
- Automated lighting system switches off all lamps when sufficient daylight is available and during non occupancy hours

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Corridor Lighting Retrofit

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Individual Energy Savings and Payback

Energy Saving Measure	Savings / year			Cost of Retrofit	Pay back (Yr)	GHG Reduction (Tonnes CO2)
	Elec. (kWh)	Gas (M3)	Dollar			
Boiler upgrade		68,000	$27,000	$169,265*	6.3	128.5
Drain Water Heat Recovery from Pool		17,000	$6,800	$17,500	2.6	32.1
Solar Heating of Pool Water		5,600	$2,240	$11,750 **	5.2	10.6
BAS	150,000	40,000	$29,500	$83,000	2.8	111.8
Corridor Lighting Retrofit	63,000		$5,700	$11,450	2.0	15.2

* After $12,735 Enbridge Incentive

** After $11,750 (50%) Federal Incentive

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Energy Consumption, Savings and Payback Summary

2005 Consumption			Savings / year			Cost of Retrofit	Pay back (Year)	GHG Reduction (Tonnes CO2)
Elec. (MWh)	Gas (M3)	Dollar	Elec. (MWh)	Gas (M3)	Dollar			
2,059	382,305	$318,819	213	130,600	**$71,240**	$328,965 ***	**4.6**	298.2 (Or 54 cars off road)

*** Total Cost includes $24,000 for consultancy and $12,000 for Energy Audit

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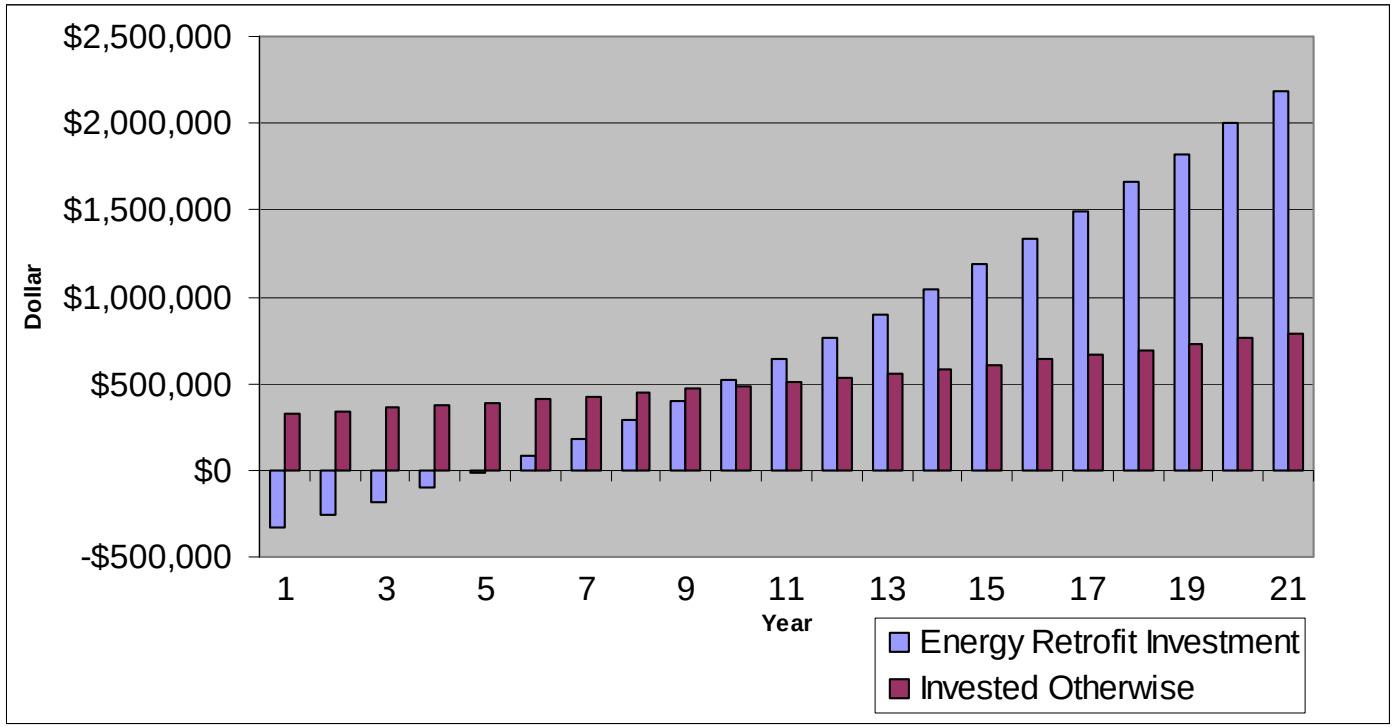
20 Year Financial Benefit



Annual Return on Investment (ROI): 21.7%

If invested otherwise: 4.5%

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CONCLUSION

- First comprehensive energy retrofit in a Town facility
- Project was jointly undertaken by Asset Management, MECO and Recreation Department
- Successfully secured Enbridge incentive dollars for projected gas savings as well as Ontario Solar Thermal Heating Incentive (OSTHI) and NRCan incentive for solar collectors
- Staff will measure and monitor energy savings
- Staff is continuously exploring energy saving opportunities in other Town Facilities