



 **GREENING HEALTH CARE**
working together for healthier communities

Getting Ready for 2018

February 28th, 2018

Sponsored by:



Program partners:





2017 Program in Review

- **Feb 15 Webinar: Class A Designation**
 - Global Adjustment overview
- **Mar 1 Webinar: Ready for 2017**
 - The power of energy components
- **Jul 12 Webinar: Fault Detection and Diagnostics**
 - BAS panel and Trillium case study
- **Oct 25 Webinar: Making Energy Efficiency Happen**
 - Markham Stouffville case study
- **Dec 13 Webinar: Making Energy Efficiency Happen**
 - Ventilation systems update and interval electricity and gas profiles
- **Apr 5 Workshop: Base Electricity – Where the Big Savings Are!**
 - Base electricity interval profiles and high performance cooling plants
- **Jun 7-8 Forum 2017**
 - Executive Panel, technical panels, case studies
 - Site tours
- **Sep 27 Workshop: Making Energy Efficiency Happen**
 - Facilities Management panel
 - Markham Stouffville Hospital case study
- **Nov 29 Workshop: Making Energy Efficiency Happen**
 - Interval gas and electricity analysis to locate savings opportunities



2017 GHC Member Feedback Survey

- Conducted one-on-one calls with 11 Member Hospital Organizations
- Feedback received will be utilized for the planning for GHC events for 2018
- Survey covered the following
 - Program strengths/opportunities improvement
 - Specific topics hospitals would like to see addressed in MMC for 2018
 - Conservation Potential Methodology (Targets, Adjustments)
 - Webinar and Annual Forum



2017 GHC Member Feedback Survey

Program strengths

- Benchmarking: comparison to your peers
- Enjoy the research studies (Boilers and water treatment, Operating Room Ventilation Guide)
- Case studies presented in webinars/workshops and annual forum
- Enjoy the technical content and discussions
- Great networking opportunities for hospitals and learning about what other hospitals are doing

Program Improvements

- Follow-up on GHC case studies with progress and updates from hospitals (Persistent savings, long term benefits/issues)
- More emphasis on water conservation in hospitals (water benchmarking)
- Arranging for additional site visits to learn how other hospitals are operating.
- More discussions on new and emerging technologies (e.g. battery storage)
- Having one on one sessions with hospitals after they receive their energy assessment reports

Specific Topics to address

- Internet of things (Smart Buildings)
- Building Automation System (scheduling, programming)
- Equipment load studies (e.g. usage patterns of MRI equipment, vacuum pumps)
- Cogeneration in hospitals (feasibility in hospitals, case studies)
- HEEP funding for 2018 (updates from Ministry)
- ECDM plan updates for 2019
- Occupant Awareness and Behavioral programs
- Energy efficiency in hospital re-developments
- Onsite Renewables



Agenda

9:00 Welcome and Introductions

9:05 Member Update

- Earth Week

9:20 Market Update

- IESO Energy Manager Program
- Toronto Hydro
- Enbridge
- City Toronto Water Update
- Peel Region Water Update

9:45 Performance Update

- 2017 energy, water, utility cost and emissions savings
- Case studies

10:15 Networking Break

10:30 HEEP Technical Panel

- Hospitals discuss projects, funding, forecast savings, and challenges

11:30 Water Conservation

- Water benchmarks
- Audits and water balance

12:00 Technical Corner

- Boiler Controls research update
- 2018 Project announcement

12:30 Closing Remarks and Lunch



Member Update

HEEP and HIRF

Retrofit projects

Operator initiatives & training

Staff engagement

Shaggy dogs

Successes!

Earth Hour/Week

New construction projects

Senior management engagement

Recognition



Market Update

- IESO Energy Manager Program
- Co-op programs
- Toronto Hydro OPsaver and more!
- Enbridge Programs; Matthew Cannon
- City of Toronto Water; Renee Chu
- Peel Region Water; Rebecca Winters
- 2019 ECDM Plan

City of Toronto

Water Efficiency Incentives & Sewer Rebate Programs

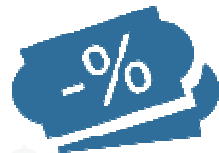
Renee Chu
Toronto Water
Customer Care Support

City of Toronto Water Efficiency Program

Why Save Water?



Reduce
Operating Costs



Environmental
Benefits



Capacity Buyback Program: Complimentary Water Audit



How?

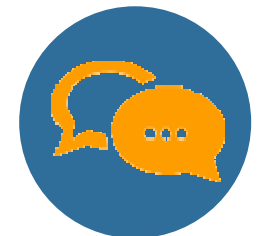
Technical consultant accompanied by a City representative to conduct a site visit for ~ 2 hours to record existing water uses and look for water saving opportunities.



What?

Audit Report to provide health care facilities with:

- water balance
- benchmark of their water use against similar facilities
- recommendations for site-specific water efficiency projects



Capacity Buyback Program: Cash Incentive



How?

Technical consultant determines previous water use, and performs a site visit (accompanied by a City representative) to verify the water use by newly installed equipment/process. An incentive cheque is issued for the difference between previous and current water use.



What?

Rebate of 30¢ per litre water saved (per average day) paid for equipment/process retrofits that save water



Capacity Buyback Program: Example



A hospital that changed out once-through cooling in refrigeration units and saved 2 million litres of water would be eligible for an incentive.



Sewer Rebate Program



What?

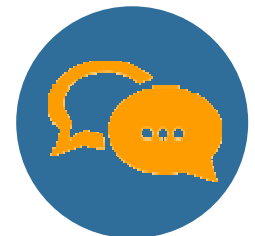
A rebate applying to **purchased water not discharged*** into the sanitary sewer system.

*e.g. water evaporated from cooling towers or used to make a product



How?

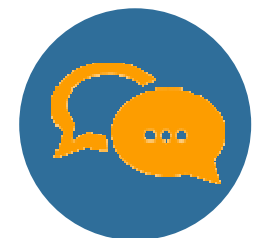
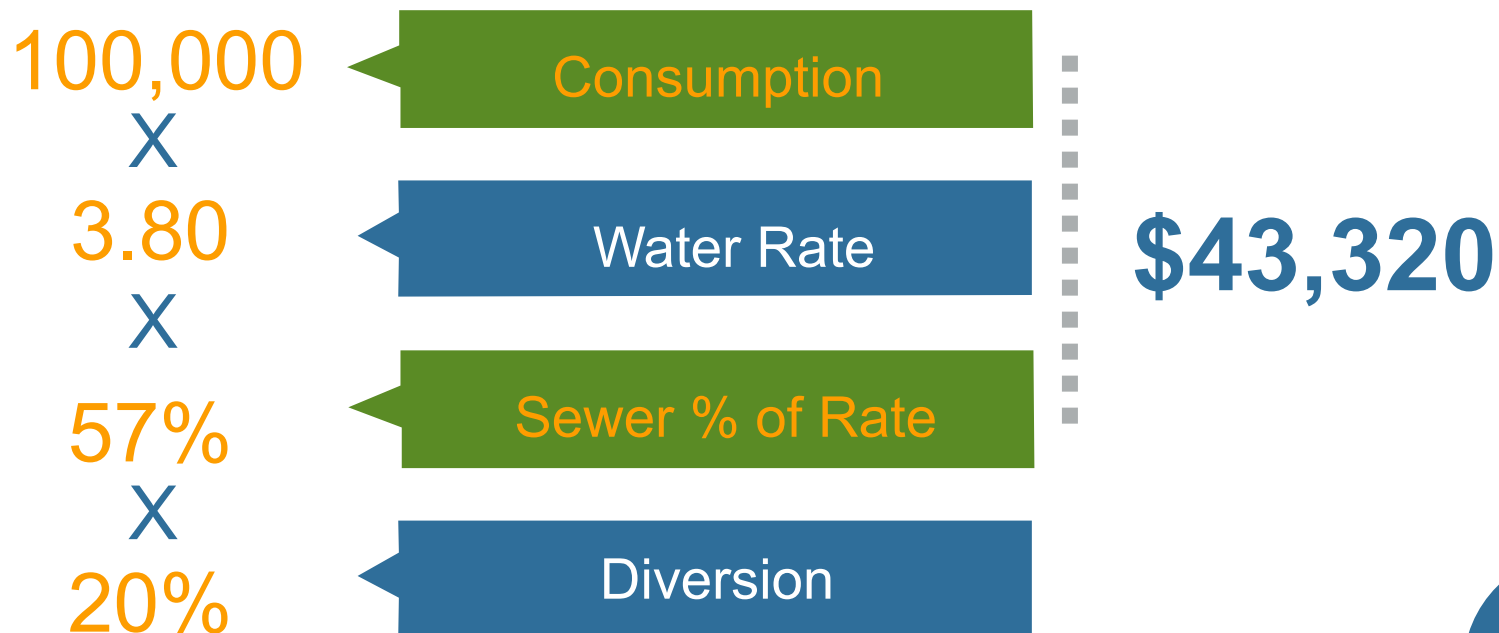
The rebate is calculated based on the percentage of water not returned to the sanitary sewer system, and is credited on the water bill based on the sewer portion of the water rate paid.



Sewer Rebate Program: Example



A facility consuming **100,000 m³** and diverting **20%** of purchased water.



Sewer Rebate Program

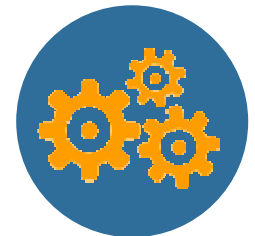


Initial Application

- Submit letter of intent
- Follow with complete report within nine months
- Rebate applied retroactively to date letter of intent is received

Ongoing Requirement

- Annual re-submission of complete report required February 1st to retain rebate



Questions?



Contact us:

www.toronto.ca/water

416-392-7000

savewater@toronto.ca



Region of Peel Indoor Water Assessment Program

Trillium Health Partners
Water Saving Opportunities

Rebecca Winters, B.Sc.
Water Efficiency Analyst
Region of Peel



Water Assessment Findings & Completed Projects

Trillium Health Centre

- Initial assessment completed in 2011. Findings included the following:
 1. Water-cooled condensers for 7 walk-in fridges and 2 walk-in freezers
 - Pre-water consumption = 59,690 L/day (*for all 9 units*)
 2. MRI Compressor utilizing once through cooling water to cool helium.
 - Pre-water consumption = 27,900 L/day



Water Assessment Findings & Completed Projects

Trillium Health Centre

- Projects Completed to date:
 1. Replacement of 5 water-cooled condensers with air-cooled units
 - Post-water consumption = 0 L/day
 - Water Savings = 24,440 L/day (*or \$20,607/year*)
 - Region of Peel Incentive = \$6,110
 - ROI = 7.5 years



Water Assessment Findings & Completed Projects

Credit Valley Hospital

- Initial assessment completed in 2012, second assessment completed in 2017. Findings included the following:
 1. Two Steam Sterilizers that utilized water to create a vacuum and to cool discharge prior to entering the sanitary sewer
 - Pre-water consumption = 48,000 L per day
 2. Steam boiler utilizes water to cool boiler blowdown before it enters the sanitary sewer
 - Pre-water consumption = 9,800 L per day



Water Assessment Findings & Completed Projects

Credit Valley Hospital

- Projects Completed to date:
 1. Replacement of two steam sterilizers with more efficient models
 - Post-water consumption = 6,800 L/day
 - Water Savings = 41,200 L/day (*or \$34,738/year*)
 - Region of Peel Incentive = \$10,300
 - ROI = 7.3 years





2017 Savings - Recognizing Success

In 2017 we (you) achieved \$2,736,000 in utility cost savings!

2017 savings against 2016 baseline:

28 hospitals with electricity cost savings of \$1,723,000

29 hospitals with thermal cost savings of \$504,000

19 hospitals with water cost savings of \$509,000

Greenhouse gas emissions reduction: 5,266 tonnes



Rising Stars – over 5% since base year

Hospitals	Total Energy Savings	
	Baseline Year	
	2014	2012
CAMH - Russell St	19.4%	34.3%
Runnymede Healthcare Centre	19.6%	30.3%
Grand River Hospital Freeport Site	15.5%	26.2%
Huntsville District Memorial Hospital	17.1%	24.7%
SickKids - Annex		24.6%
Baycrest Terraces	11.1%	22.4%
WOHS - Etobicoke General Hospital	20.2%	22.1%
Stevenson Memorial Hospital		21.0%
Cold Lake Health Care		17.6%
WOHS - Brampton Civic Hospital	10.3%	17.2%
Grand River Hospital Main Site		13.5%
William J Cadzow Healthcare Centre	23.2%	13.5%
South Muskoka Memorial Hospital	7.6%	10.8%
CAMH - Queen Site		10.5%
Westview Health Care	10.6%	9.7%
Providence Main Hospital		9.5%
Orillia Soldiers' Memorial Hospital	6.0%	8.7%
Northern Lights	5.7%	8.4%
Alberta Children's Hospital	5.2%	7.9%
Rockyview Hospital		7.6%
THP - Mississauga Hospital		7.1%
HHS - Milton District Hospital		7.1%
West Park Healthcare Centre	6.5%	5.7%
North York General Hospital		5.4%
Drumheller Health Care	7.5%	5.0%
HHS - Georgetown Hospital	14.1%	
Ontario Shores	8.0%	
Wetaskiwin Hospital & Care Centre	5.9%	



Program Savings - Recognizing Success

Program savings against baseline of previous year:

Year	Electricity		Thermal		Water		Total	
	#	\$	#	\$	#	\$	\$	GHG Tonnes
2015	34	\$2,086,191	34	\$834,880	16	\$473,214	\$3,394,285	9,538
2016	39	\$2,998,000	24	\$783,000	16	\$310,000	\$4,091,000	7,033
2017	28	\$1,723,277	29	\$503,786	19	\$508,555	\$2,735,618	5,266
Totals (2017 vs 2014)		\$6,807,468		\$2,121,665		\$1,291,769	\$10,220,902	21,838



2017 Leaderboard - Electricity

Electricity

Sites:	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17	Total	kWh
Sacred Heart Community Hospital	8%	6%	10%	20%	36%	34%	-14%	13%	-12%	-8%	13%	28%	11%	195,686
Baycrest Terraces	12%	14%	15%	17%	10%	3%	15%	13%	4%	-4%	12%	13%	10%	379,015
Runnymede Healthcare Centre	2%	0%	-1%	3%	9%	11%	15%	17%	15%	15%	9%	8%	10%	336,670
Cold Lake Health Care	-9%	-1%	-2%	11%	17%	16%	12%	15%	12%	14%	10%	12%	9%	326,637
Humber River Hospital	8%	10%	12%	10%	9%	5%	2%	4%	8%	10%	9%	11%	8%	3,384,206
Markham Stouffville	7%	7%	7%	7%	8%	7%	6%	9%	8%	5%	5%	6%	7%	1,445,166
WOHS - Etobicoke General Hospital	0%	2%	0%	-3%	3%	9%	17%	18%	9%	4%	0%	-1%	6%	708,839
Baycrest	2%	2%	4%	6%	4%	1%	6%	3%	6%	6%	5%	6%	4%	645,237
South Muskoka Memorial	6%	6%	5%	0%	2%	4%	4%	5%	5%	0%	3%	8%	4%	135,925
Grand River Hospital - Main Site	4%	1%	1%	0%	1%	4%	5%	5%	6%	7%	0%	6%	4%	606,500
THP - Credit Valley Hospital	9%	10%	9%	4%	2%	-7%	-9%	-2%	0%	0%	12%	16%	3%	656,448



2017 Leaderboard – Thermal (Gas, Steam)

Natural Gas

Sites:	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17	Total	m3
William J Cadzow Healthcare Centre	23%	20%	8%	22%	9%	1%	0%	-2%	18%	18%	5%	11%	13%	60,083
Drumheller Health Care	-5%	10%	2%	-1%	8%	20%	30%	28%	23%	23%	12%	5%	10%	92,798
THP - Credit Valley Cancer Centre	15%	16%	20%	25%	13%	-90%	-69%	-23%	13%	27%	12%	10%	9%	105,094
CAMH - Russell Site	14%	13%	-4%	-28%	-83%	-19%	-11%	-9%	54%	19%	15%	13%	9%	27,728
WOHS - Brampton Civic Hospital	9%	9%	8%	1%	-11%	-5%	19%	26%	20%	13%	6%	5%	8%	417,479
Runnymede Healthcare Centre	7%	6%	7%	8%	4%	10%	16%	14%	9%	-1%	7%	5%	7%	35,388
Baycrest Terraces	11%	9%	13%	17%	19%	12%	1%	18%	2%	-10%	-8%	-9%	7%	38,522
Red Deer Regional	-9%	-6%	-1%	21%	5%	33%	-8%	-34%	16%	15%	21%	13%	6%	360,450
North York General Hospital	2%	2%	-1%	5%	12%	2%	8%	11%	10%	8%	9%	2%	5%	134,828
West Park Healthcare Centre	4%	5%	3%	7%	8%	10%	12%	13%	16%	3%	-8%	5%	5%	50,491
South Muskoka Memorial	12%	6%	4%	7%	1%	3%	2%	4%	-3%	14%	2%	1%	5%	34,109
Markham Stouffville	4%	4%	1%	-7%	0%	5%	22%	21%	17%	4%	-3%	1%	4%	154,901



2017 Leaderboard - Water

Water

Sites:	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Nov 17	Dec 17	Total	m3
Women's College Hospital	9%	6%	8%	20%	33%	22%	26%	18%	15%	22%	11%	29%	19%	5,665
Grand River - Freeport	-4%	12%	0%	17%	23%	25%	13%	29%	24%				18%	4,870
North York General Hospital	19%	11%	25%	19%	19%	15%	10%	11%					16%	22,463
West Park Healthcare Centre	15%	12%	12%	13%	42%	25%	14%	10%	17%	-6%	-3%	1%	14%	12,874
William J Cadzow Healthcare Centre	9%	9%	6%	6%	12%	-20%	2%	18%	19%	20%	15%	33%	11%	1,329
CAMH - College Site	7%	8%	0%	6%	2%	12%	20%	13%	13%	6%	12%	11%	10%	3,807
CAMH - Russell Site	7%	7%	-5%	10%	1%	11%	12%	4%	11%	4%	3%	21%	8%	777
Runnymede Healthcare Centre	4%	8%	9%	14%	21%	-11%	11%	8%	12%	18%	-7%	-4%	7%	1,875
Westview Health Care	7%	-38%	22%	0%	7%	11%	17%	18%	28%	2%	-30%	33%	7%	1,214
Baycrest	-4%	6%	3%	0%	26%	9%	-7%	-2%	1%	15%	30%	-3%	7%	12,279
Red Deer Regional	-19%	-2%	5%	8%	16%	16%	12%	13%	2%	15%	9%	0%	6%	20,083
South Muskoka Memorial	3%	3%	8%	8%	9%	9%	4%	4%					6%	1,192
Providence	1%	-8%	-3%	3%	25%	20%	14%	11%	9%	-2%	-5%	-8%	6%	5,224
THP - Mississauga Hospital	-1%	-4%	-1%	-1%	22%	7%	-5%	10%	7%	5%	11%		5%	9,230
Baycrest Terraces	-10%	-10%	-17%	-8%	36%	8%	1%	-1%	13%	26%	-27%	-12%	4%	1,285
Markham Stouffville	-6%	27%	-48%	-2%	5%	13%	16%	11%	1%	5%	5%	7%	4%	5,999
THP - Queensway Health Centre	11%	10%	13%	10%	28%	4%	0%	0%	-7%	13%	-37%	-7%	4%	3,113



Savings Summary – Toronto Hydro



THANK YOU everyone for all your contributions to cut energy use and carbon emissions throughout 2017!!

While receiving over **\$1.4 million** in incentives through the Save On Energy Program, Toronto hospitals saved

22,000,000 kWh

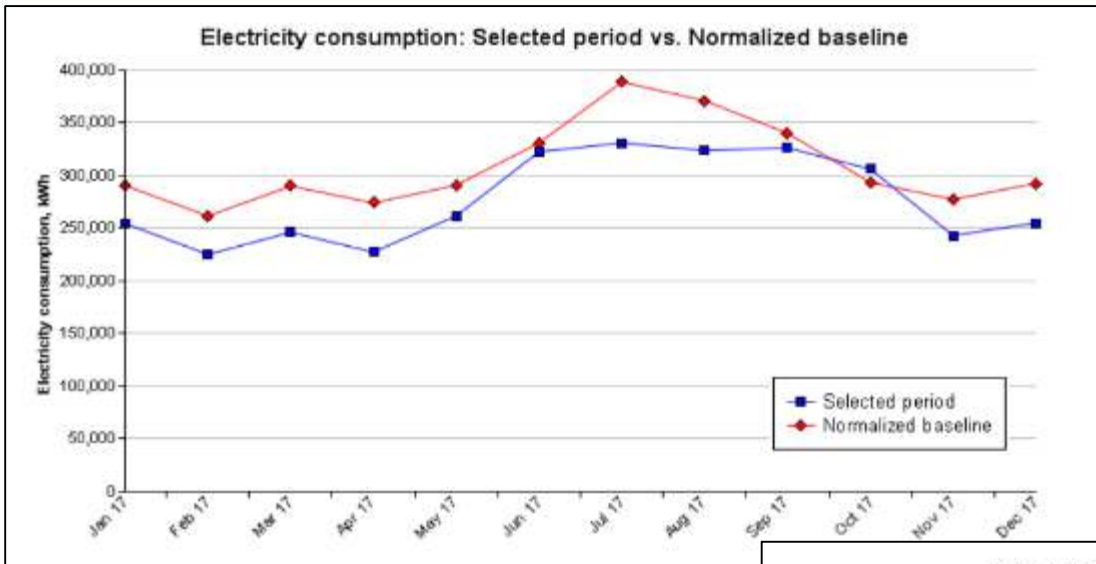
That's the equivalent of

- 1,700 tonnes of CO₂
- Or like taking 1,833 homes off the grid
- Or like planting 46,938 full-sized trees

It has been an absolute pleasure working with you last year and looking forward to another great year in 2018!!

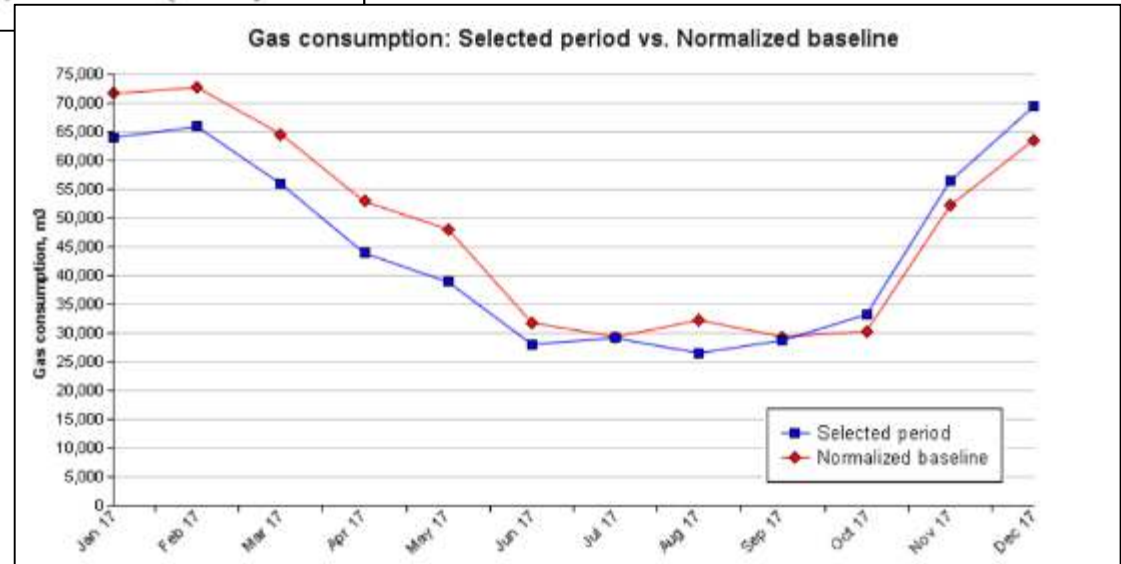


Case Study: Baycrest Terraces



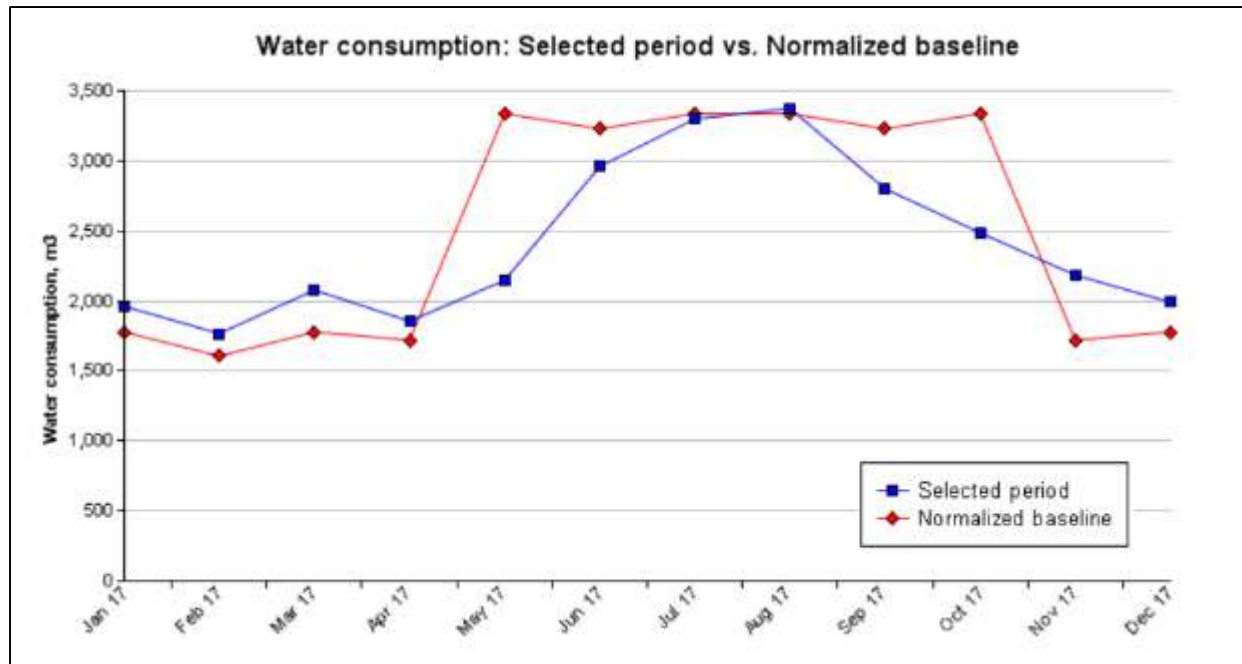
Electricity: 10.2% Savings
379,015 kWh; \$56,852

Natural Gas: 6.7% Savings
38,522 m³; \$11,557





Case Study: Baycrest Terraces

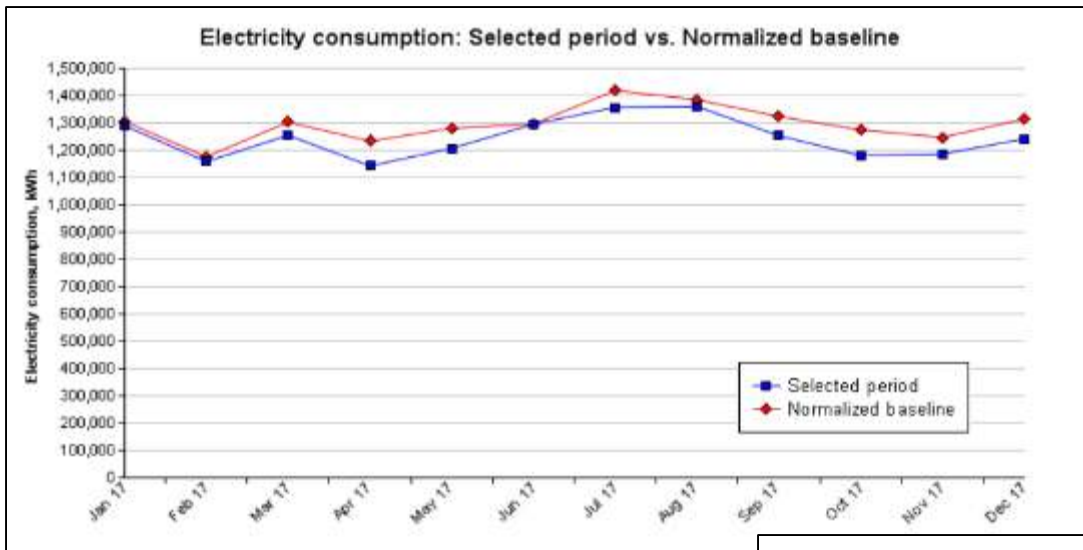


Water: 4.3% Savings

1,285 m3; \$4,665

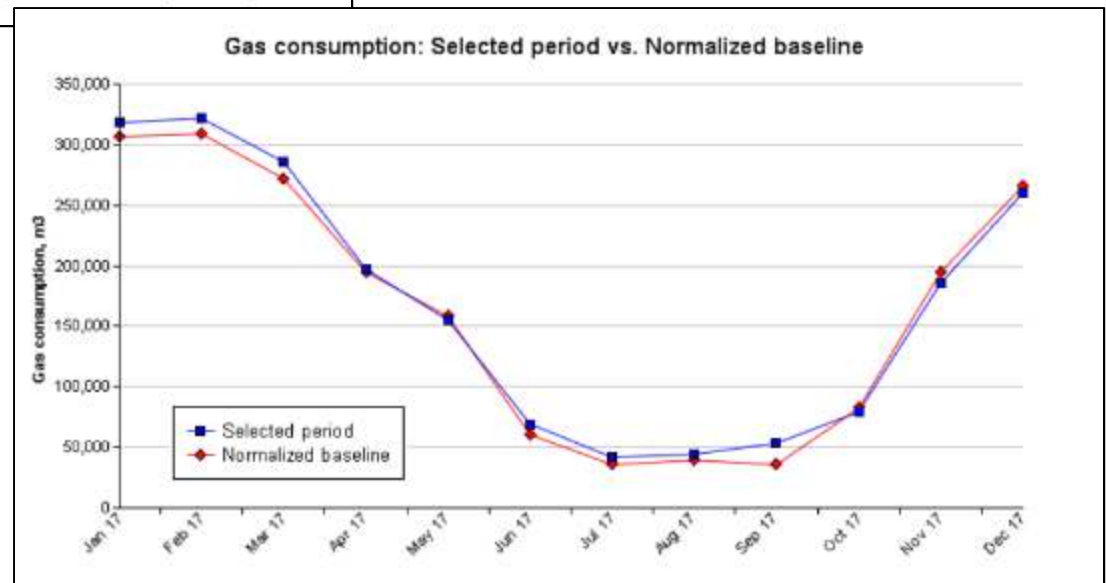


Case Study: Baycrest Main Hospital



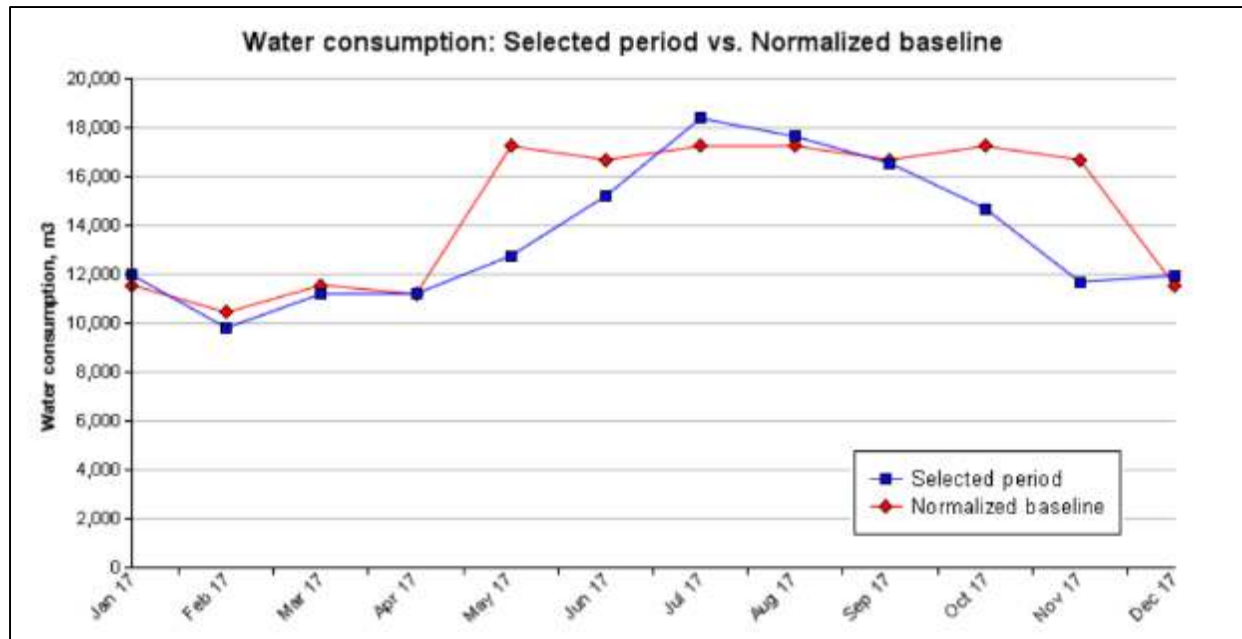
Electricity: 4.1% Savings
630,901 kWh; \$94,635

Natural Gas: -3.0% Increase
-57,667 m³; -\$12,450





Case Study: Baycrest Main Hospital

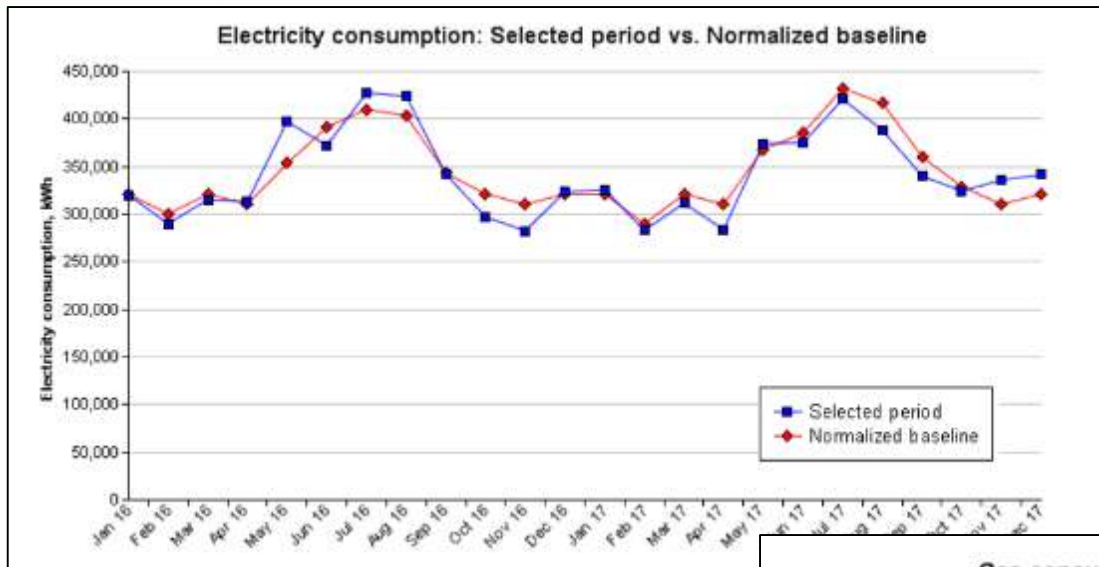


Water: 7.0% Savings

12,279 m3; \$44,573

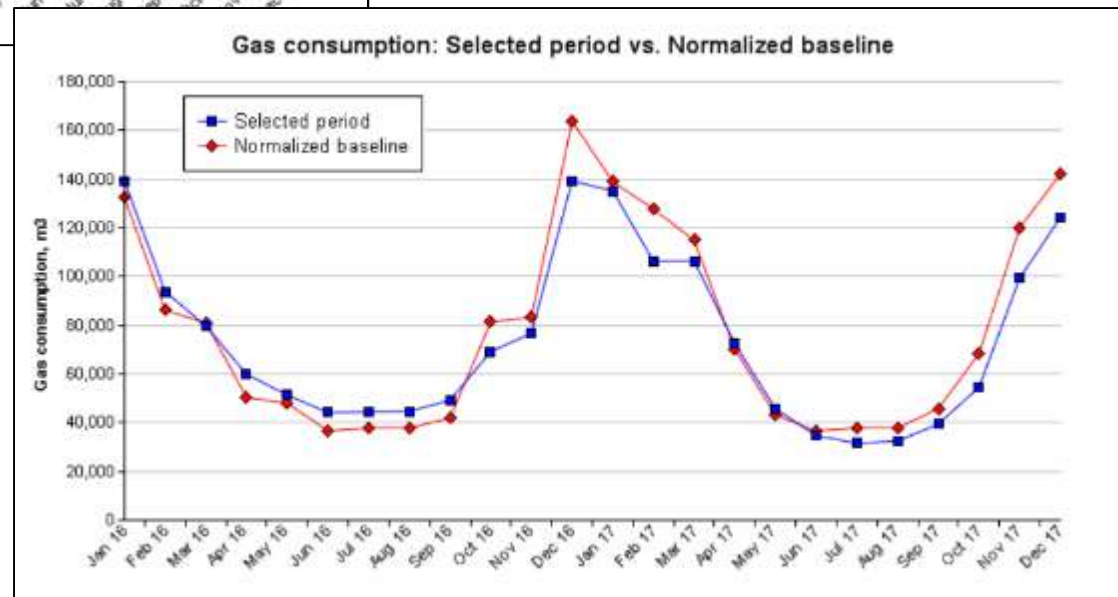


Case Study: Drumheller Health Care



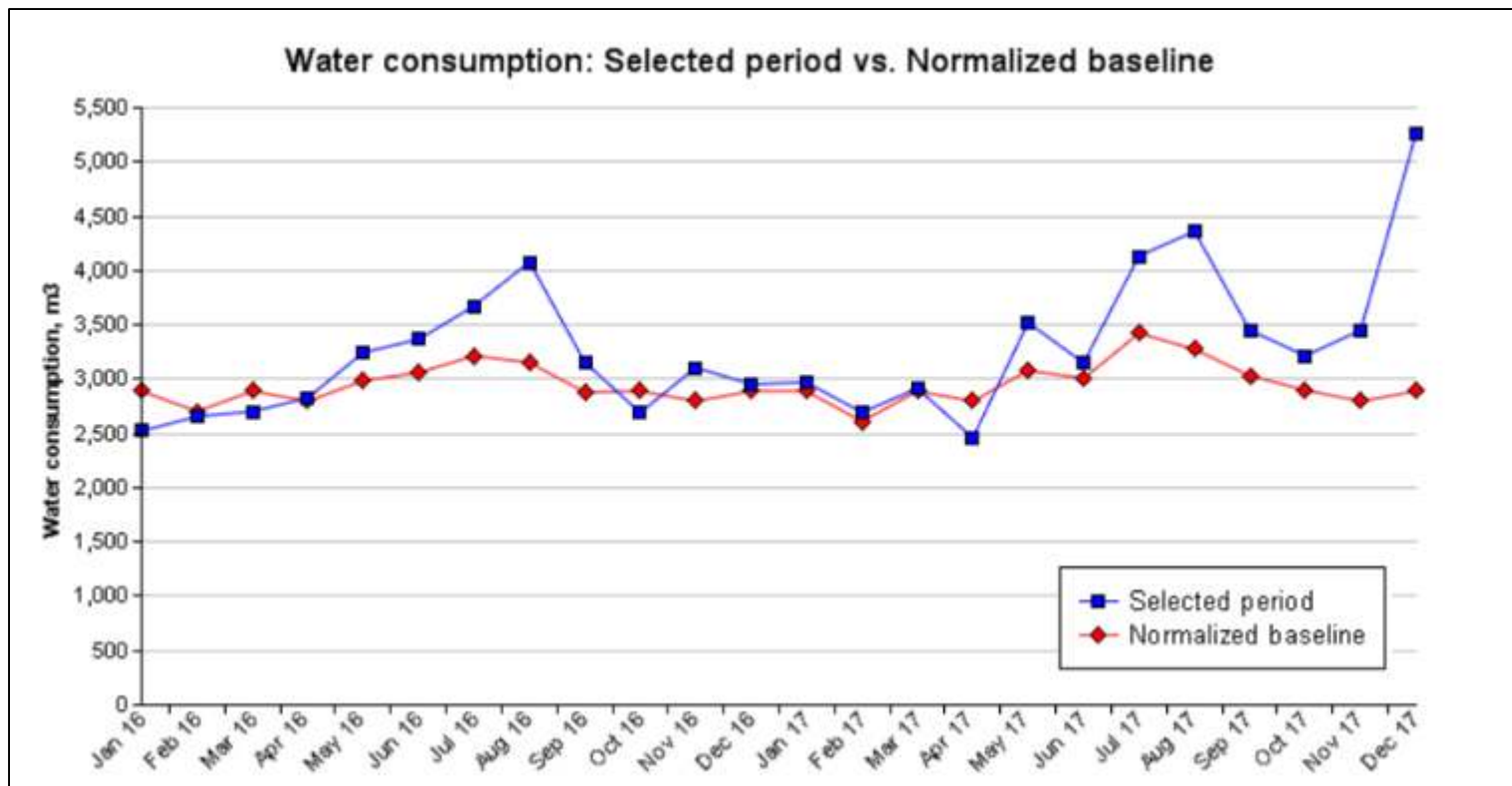
Electricity: 151,000 kWh; 3.6% between Oct/16 and Sep/17

Gas: 145,000 m³; 11.0% between Oct/16 and Dec/17





Case Study: Drumheller Health Care





Case Study: Drumheller Health Care

- New BMS - The old system was compromised for several years before replacement. The new system allows closer scheduling and monitoring of major systems
- Some mechanical systems refreshed - an overhaul of outdated and dysfunctional parts
- Blow down devices on the Chiller and Steam Boiler reduce makeup water
- Staff ensure powered devices are “turned off” in spaces that are unoccupied
- 2-foot fluorescent tubes have been replaced with LED
- Parking lot power to receptacles is limited due to the automated switching mechanism
- The FM&E team involvement with the Energy Committee has allowed them to be more aware of these items and investigate opportunities when presented
- Installation of a main water filter to reduce amount of debris entering facility equipment
- A dedicated water line was installed to the Hemodialysis department



Networking Break



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