MEETING AGENDA

MEETING **Water Conservation and Efficiency Strategy Update Public Advisory Committee Meeting**

DATE August 12, 2008

LOCATION Guelph Waterworks (29 Waterworks Place, Guelph ON) – Waterworks Boardroom
TIME 6:00 p.m.

CHAIR Michael Brooks, Resource Management Strategies Inc.

AGENDA ITEMS

ITEM #	DESCRIPTION
1	**6:00** Meet the Team – Introductions - M. Brooks
2	**6:15** Project Scope and Flow Chart of Planned Activities - M Brooks
3	**6:45** Results to Date: - Public Consultation; Focus Groups and Phone Survey -A. Barclay - Residential Water Use Demand Analysis -K. Blease - Industrial, Commercial and Institutional Water Use Demand Analysis -K. Blease - Evaluation of Distribution System Water Loss -K. Blease - Water Supply Demand Forecast -K. Blease
4	**7:30** BREAK
5	**7:45** Water Efficiency Program/Resource Alternatives and Delivery Mechanisms – M. Brooks
6	**8:15** Breakout – Roundtable Feedback Session – All
7	**8:50** Moving Forward and Next Steps – M. Brooks
8	**9:00** ADJOURN

WATER CONSERVATION AND EFFICIENCY STRATEGY UPDATE

PUBLIC ADVISORY COMMITTEE MEETING

Tuesday, August 12th 2008

RMSi Resource Management Strategies Inc.
Protecting resources for future generations

Michael Brooks

Welcome to Your Inaugural Meeting!

Meeting Agenda

- 6:00 pm Meet the Team and Introductions
- 6:15 pm Project Scope and Planned Activities
- 6:45 pm Progress to date
- 7:30 pm Break
- 7:45 pm Water Efficiency Measures and Delivery Mechanisms
- 8:15 pm Breakout – Roundtable Feedback Session
- 8:50 pm Moving Forward and Next Steps
- 9:00 pm Adjourn

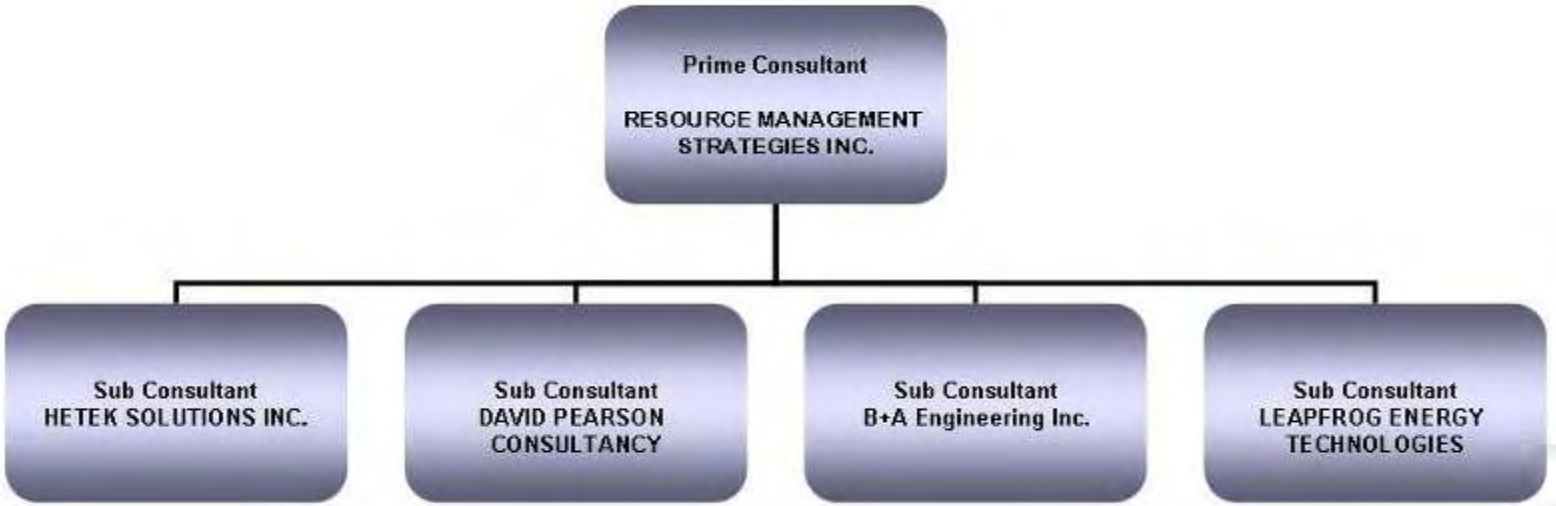
Roundtable Introductions

Name

Affiliation

Water Efficiency Experience

Project Team Introductions



Team Member

David Pearson, C. Eng.

David Pearson is a Chartered Engineer with a Civil Engineering degree from London University and a Water Engineering Diploma from Sheffield Hallam University. He is a member of the Institution of Civil Engineers, Institute of Water and Environmental Management, International Water Association and the Pipeline Industries Guild. David was with United Utilities (formally Northwest Water), one of the largest water utilities in the UK from 1982 to 2002. During that time he was responsible for the implementation of the company's water loss strategy and leakage reduction program which consisted of over 250 district metered areas and 2,000 pressure management valves. Consultant to a number of organisations associated with the water industry. More recently he was an advisor to Water Consulting company on development of leading edge software solution to network optimisation, targeting of leakage detection effort, assessment of capital maintenance requirements for distribution networks and identification of rehabilitation schemes. In addition, David is a leader on IWA Task Force team on Commercial Losses and member of IWA Task Force teams on Economics of Leakage Control, Pressure Management and Target Setting.

Team Member

Ivor da Cunha, P. Eng., MBA

Ivor da Cunha is an experienced project manager and independent consultant with over 25 years of utility efficiency with Canada's electricity, and natural gas and water utilities. From 2006-2008, Ivor personally assessed water savings opportunities for more than 50 large industrial, commercial and institutional customers under the City of Toronto's water efficiency program. Water assessments were done at major hospitals, sports centers, commercial buildings, retail malls, multi-residental buildings, and manufacturing enterprises. Ivor has held progressive roles at Kinectrics, Atomic Energy of Canada, Enbridge Gas Distribution, Ontario Hydro and Praxair Canada. Mr. da Cunha is an expert in best practices for current Demand Side Management programs, and is viewed as an industry expert in conservation potential, program design, load management and supporting strategic demand-side resource decisions. He has managed several of Ontario Hydro's DSM programs including the Accelerated Paybacks for Industry, Compressed Air Checkup, Performance Optimization, and New Building Construction. Mr. da Cunha also developed, launched and managed Ontario's very first Industrial DSM program for Enbridge Consumers Gas. He has a wealth of practical expertise in DSM, energy policy formulation, distributed generation resources, utility process optimization, strategic business planning and DSM program delivery. Mr. da Cunha holds a Bachelor of Chemical Engineering from the Royal Military College of Canada; an MBA (Marketing) from Queen's University, and is a member of the Professional Engineers of Ontario.

Team Member

Troy Bauman, P. Eng., MBA

Mr. Troy Bauman is a Canadian water resources engineer with more than 15 years project management and water system planning experience as a consultant to municipal clients in Ontario. Troy participated in the completion of Phase I and Phase II of Waterloo's Long Term Water Strategy by serving on the Project Management Team, developing the water demand forecast, and managing implementation of the public involvement process. Most recently, Troy was the Project Manager for the Long Term Water Project for the Regional Municipality of York, including responsibility for development of the water demand model and coordination of the primary technical components. Troy has also developed water demand models for the Region of Peel and the City of Toronto—including a real-time demand predictor for Toronto's Operations Optimizer.

Team Members

Adam Pollard

Mr. Pollard is a junior project manager for Hetek Solutions Inc. In this position Adam has completed AWWA / IWA water audits and water balances for municipalities in Ontario and British Columbia. He has conducted comprehensive water audits on ICI buildings in the greater Toronto Area, North Wales (UK) and CFB Kingston. As such, Adam has created detailed reports identifying the various water uses within each ICI building, determined the volume of water that each use consumes and provided recommendations for potential water use reductions and economical payback periods.

Colin Powell

Mr. Powell as a junior project manager for Hetek Solutions has extensive experience in the area of database and field data gathering projects having completed a number of projects pertaining to the analysis of customer data and development of project specific data bases. He has completed active leak detection projects, including District Meter Areas, Leak Noise Correlating and Leak Sounding thorough out Ontario and has been responsible for direct client relations, communication between staff, document creation, equipment and resource management, scheduling of projects, general administration, and secondary office management duties. Colin has participated in multiple leak detection programs, flow and pressure monitoring projects, open channel flow monitoring, c-factor studies, fire flow capacity studies, and water meter data collection.

Project Scope

and

Planned Activities

Guelph has a rich environmental tradition…

Royal Flush TOILET REBATE PROGRAM

University of Guelph
Guelph Turfgrass Institute & Environmental Research Centre

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Activities Undertaken since 1999 Plan

- Royal Flush Toilet Rebate Program
  - over 5,000 rebates issued since 2003
  - actively pursuing local partner retailers
- Smart Wash Clothes Washer Rebate Pilot Program
  - approximately 425 rebates issued since Feb. 2008
- Industrial Commercial and Institutional Water Capacity Buyback Program
  - University of Guelph
  - Cargill's Dunlop and Watson Road facilities
  - Polycon Industries
- Landscape Assessment Pilot Program
  - launched in May 2008, goal is to complete 500 landscape assessments this summer

Activities Undertaken since 1999 Plan

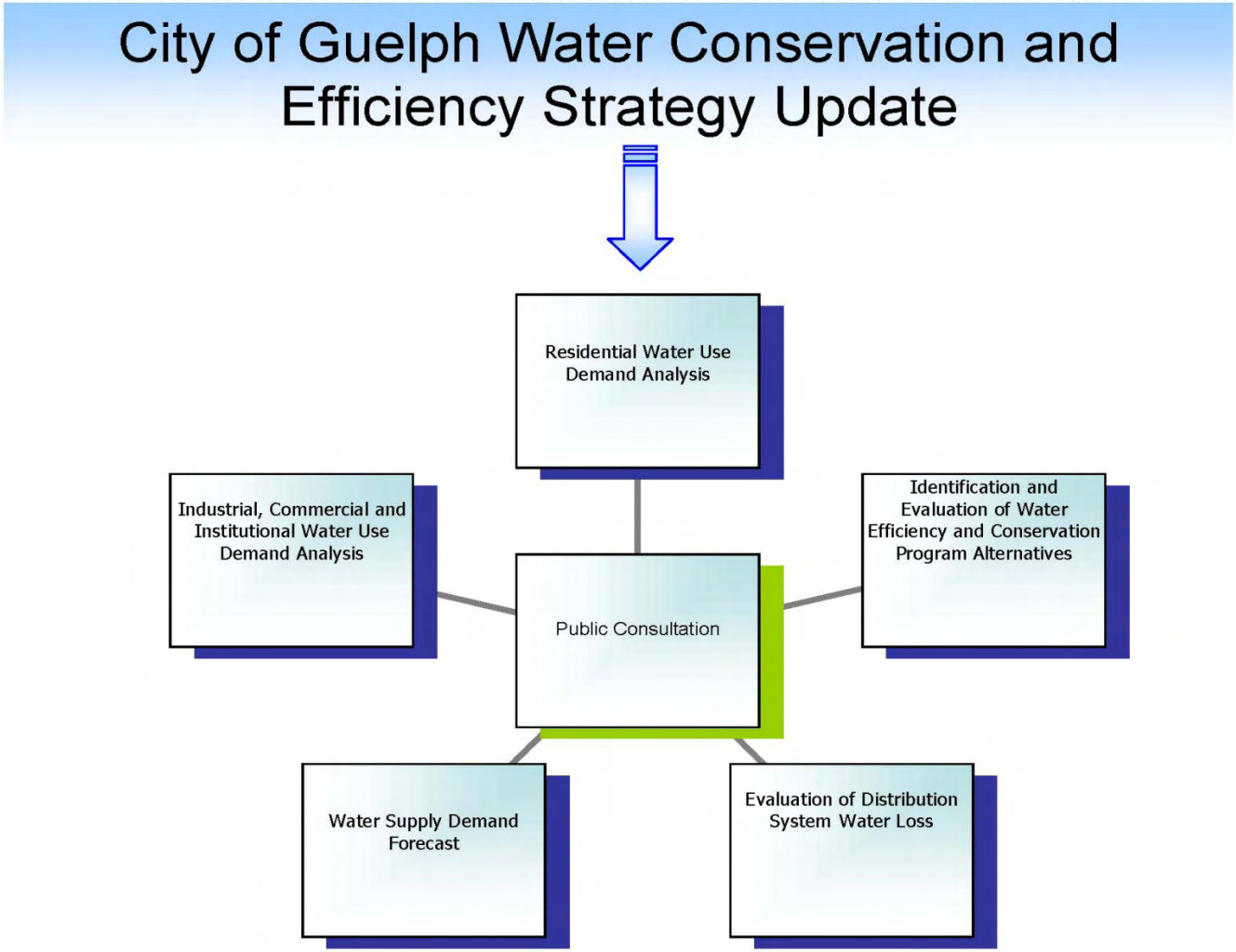
- City Facility Water Efficiency Retrofits
  - Victoria Road Recreation Centre
  - City's Centennial and Exhibition Arenas
- Public Education and Outreach
  - Guelph International Resource Centre (GIRC)
  - Green Impact Guelph (GIG) in partnership with Guelph Environmental Leadership
  - Guelph Water Conservation Breakfast
  - Waterworks Open House
  - Guelph Spring Home Show
  - Guelph Water Efficiency Awards
  - Displays at numerous other events

Understanding the Assignment

Develop a comprehensive community-based Water Conservation and Efficiency Strategy Update that will define preferred program alternatives, associated water savings, program implementation forecasts, and support staff and maintenance based on resources required to meet the water reduction goals identified in the Guelph Water Supply Master Plan within a 20 year planning horizon.

Critical Factors:

- Vulnerable groundwater source
- Projected future growth
- Assimilate capacity thresholds of watershed for wastewater discharges
- Leader in conservation and resource protection/enhancement
- Use less energy and water per capita than any comparable Canadian City
- 10% reduction by 2010, 15% by 2015 and 20% by 2025


City of Guelph Water Conservation and Efficiency Strategy Update
Residential Water Use Demand Analysis
Industrial, Commercial and Institutional Water Use Demand Analysis
Identification and Evaluation of Water Efficiency and Conservation Program Alternatives
Public Consultation
Water Supply Demand Forecast
Evaluation of Distribution System Water Loss

Approach

Public and Stakeholder Consultation

Public input and feedback is key to success of the study and formation of a Guelph specific strategy. Public and Stakeholder consultation includes:

- Public Information Centre (2)
- Residential Market Research Call Survey
- Water Conservation and Efficiency Public Advisory Committee

Approach

Residential Water Use Demand Analysis

- Disaggregation of water billing data from Guelph Hydro Utility
- Comparison of existing housing stock and water consumption to Ontario Building Code water efficiency building requirements
- Merging and comparison of water billing database and Tax Assessment housing data base
- Evaluation of water efficiency market saturation
- Evaluation profile of residential water use demand based on vintage of housing

Approach

Industrial, Commercial, Institutional Water Use Demand Analysis

- Disaggregation of water billing data from Guelph Hydro Utility
- Evaluation of top 100 water users
- High level assessment completed through analysis of water billing data and publicly available statistical and business registration information (NAICS)
- Apply end use data available from Guelph water billing information and RMSi database of over 165 ICI program participants in City of Toronto
- Estimate industrial sector potential for water efficiency potential opportunities and associated costs

Approach

Evaluation of Distribution System Water Loss

- Gathering data regarding distribution system and water delivery
- In-depth review of existing water audit and water balance
- Develop models to summarize gathered data
- Run data through IWA software spreadsheets
- Determine confidence level of available data and outcomes
- Develop water loss management strategy based on City's objectives and economic feasibility

Approach

Water Supply Demand Forecasts

- Review the "success" of existing water demand forecast in the Water Supply Master Plan to actual demand and determine recommended changes in methodology
- Investigate the utilization of a disaggregate multi-variant model
- Review planning documents including Official Plan, Local Growth Management Strategy and Places to Grow Act
- Water demand data will be reviewed for recent years to calculate unit consumption rates and peaking factors for each component of the forecast

Water Supply Demand Forecasts

- Unit consumption rates and peaking factors calibrated by preparing a "back-cast" and a weighted average technique
- Investigate the utilization of a disaggregate multi-variant model
- Demand forecast developed using updated population and land use projections as well as calibrated factors
- Forecast will include effects of conservation based on outcomes of the water efficiency plan
- Water demand model will be a flexible spread-sheet based model as opposed to a "black box" commercial model

Approach

Identification and Evaluation of Water Efficiency/Conservation Program Alternatives

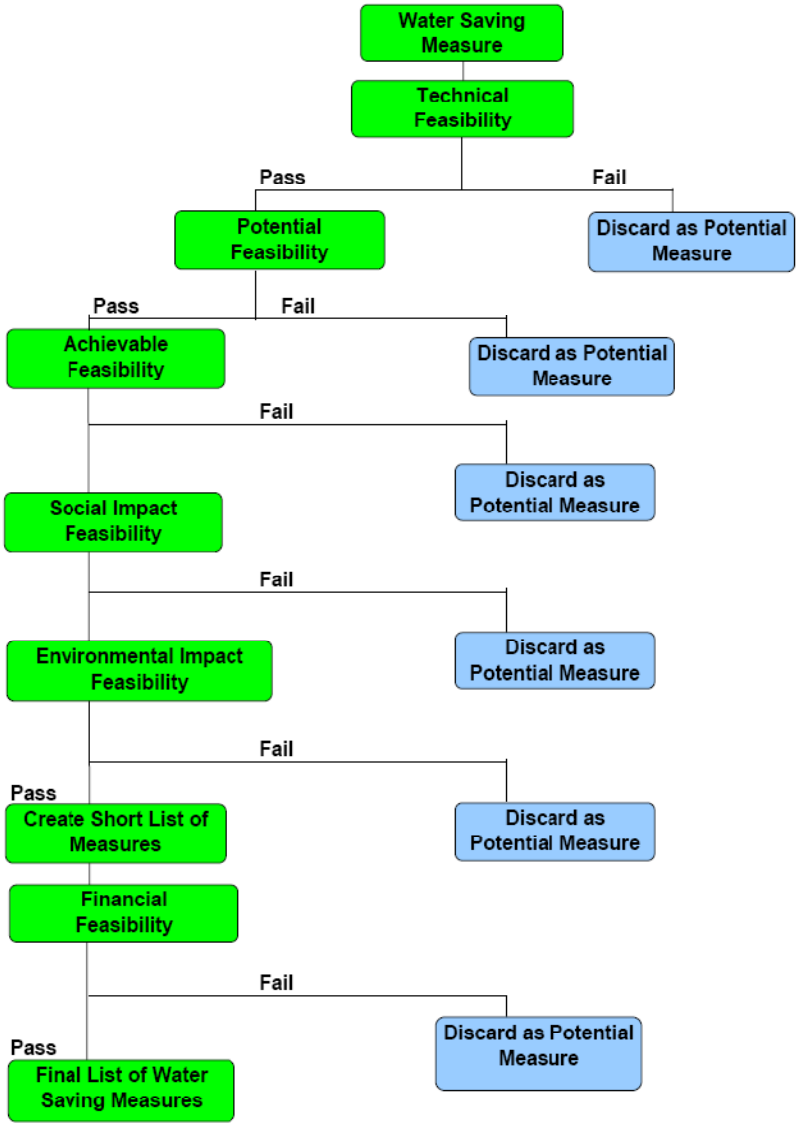
- Literature and internet search of existing potential measures
- All alternatives will be extensively reviewed, no measure will be discarded simply because it's not popular with other Ontario/North American municipalities
- The specific critical factors pertaining to Guelph's water supply, community and stakeholder attitudes and objectives and the objectives of the City and Council with a focus to innovation will be considered during the review of all measures

Identification and Evaluation of Water Efficiency/Conservation Program Alternatives

Screening of Each Measure

- Expanded "triple baseline analysis"

Water Efficiency Screening Process



Identification and Evaluation of Water Efficiency/Conservation Program Alternatives

Individual business cases for the preferred alternatives to be developed. Business cases to include:

- measure description
- measure cost
- measure life expectancy
- estimated water savings
- details, level and type of incentives
- estimated participation rate
- overall target water savings
- monitoring/evaluation costs
- maintenance costs
- additional City staff positions

Identification and Evaluation of Water Efficiency/Conservation Program Alternatives

- Extensive public consultation throughout the process including input from WCEPAC

Approach

Strategy Implementation Plan

- Sequencing and timing of preferred water efficiency and conservations programs
- Supporting staff resources
- Potential partnerships
- Financial planning reference tool
- Align with City's annual budget reporting format
- Timelines and reporting

Added Value Services

Water Loss Mitigation Strategy

- Review of current operational and maintenance practices
- Develop business cases for non-revenue water reduction including:
    - Source meters calibration
    - Metering technology alternatives and associated co-benefits
    - Customer meter replacements
    - Active leak detection
- Develop a 10 year implementation plan

Added Value Services

Residential Focus Groups

- Facilitated by MetroLine Research
- Three (3) focus groups, approx. 90 minutes each
- To support the quantitative research

In Conclusion

- Complete understanding of the project and Guelph's unique situation and objectives
- Understand the need for comprehensive and thorough public consultation
- Our team members have been carefully chosen because of their expertise in areas important to Guelph
- Our team will implement the project with the highest standard and integrity, on time and on budget

Focus Groups – Qualitative research

- Held on April 22nd, 2008 at a professional focus group facility in Guelph. Randomly recruited to meet the following specifications:
  - Men and Women
  - 25 years and older
  - Home owners
  - Responsible for monitoring and paying the bills
  - Three groups – Mix of different home ages, homes less than 10 years old and homes 11+ years old

Key Insights from Focus Groups

1. Guelph residents are placing considerable emphasis on water efficiency and water conservation in their households
2. Water conservation has become more important over the past several years
3. Significant improvements in water efficiency involve modifying societal values and behaviours as much or more as the individual residents
4. Guelph residents are well along a path relating to becoming more water efficient, and seem ready to continue the trend

Telephone Surveys – Quantitative Research

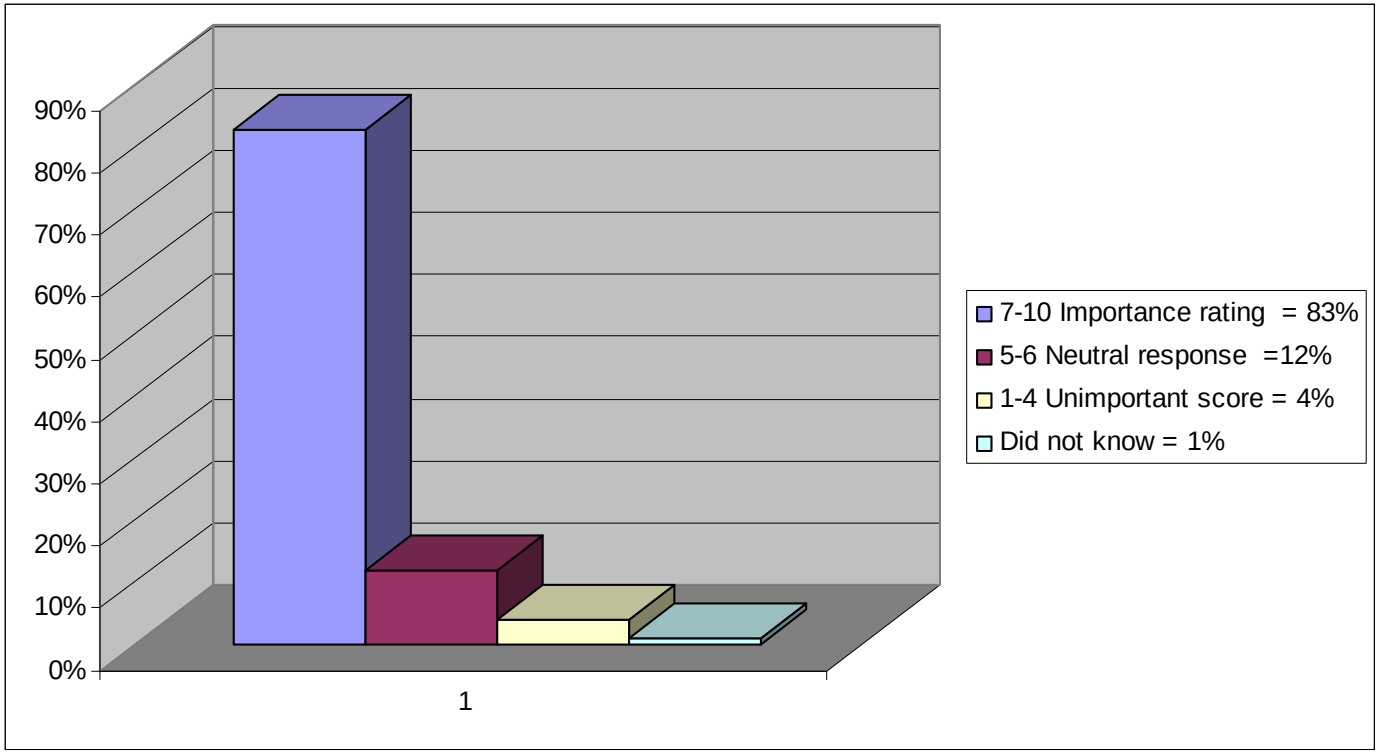
- 400 randomly selected Guelph residents, with municipal water supply, were interviewed by telephone between June 23rd and June 30th, 2008
- Residents were asked a series of questions pertaining to water and conservation in their community
- Questions were a series of scaled, open ended and closed questions

A snapshot…

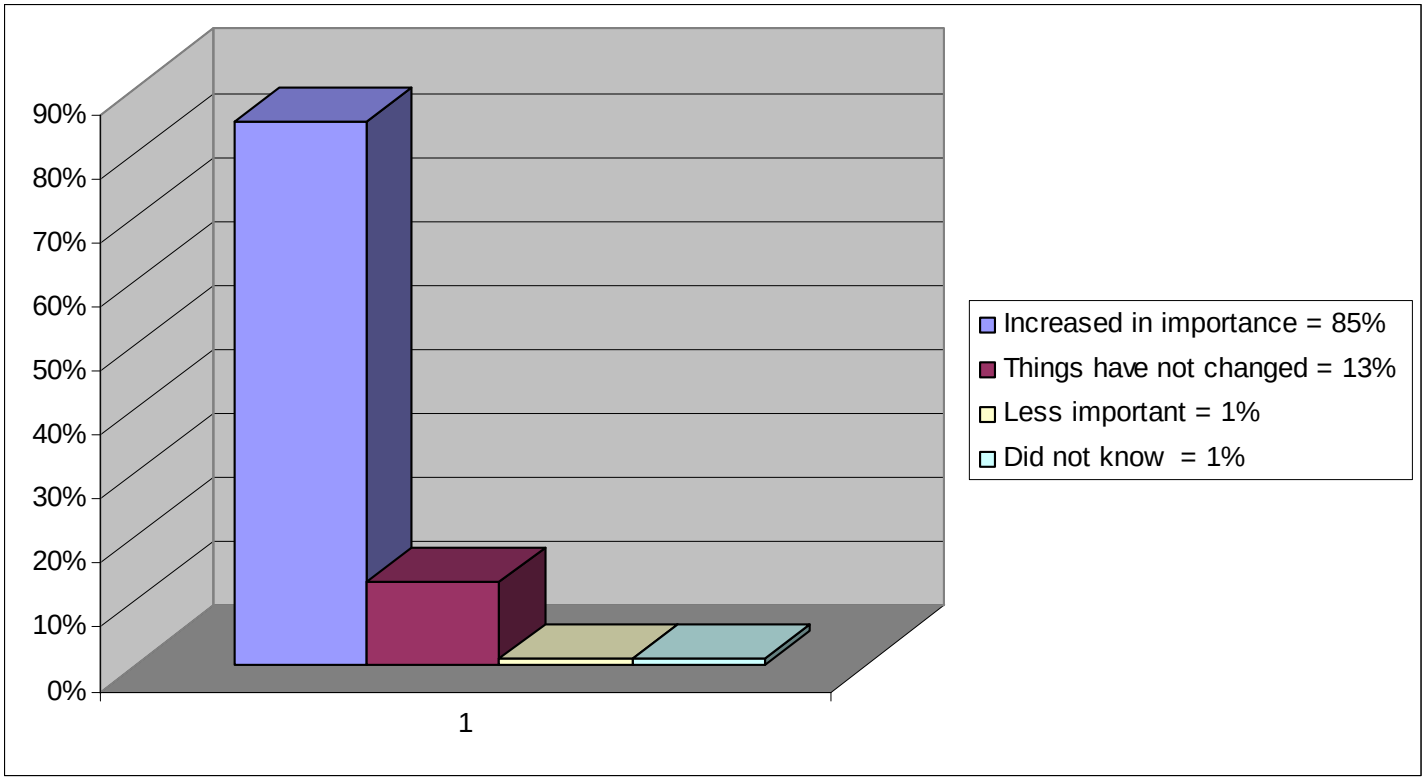
What comes to mind when you think about conservation or the environment in the City of Guelph?

- Water, water conservation or water restrictions were the most popular responses with 282 mentions
- Followed by waste management – 103 mentions, and energy efficiency/conservation with 51 mentions

Using a scale of 1-10, where 1 means "Not Important" and 10 means "Very Important", how important is water conservation to your household?



Compared to 5 years ago, do you think water conservation has become…..



The reasons most named for increased importance…

- Shortages, droughts, low water levels or a finite supply - 126 mentions
- Greater media awareness, attention or hype – 99 mentions
- Growth, development or sprawl – 62 mentions

Other information gathered includes:

- General demographic information
- Knowledge, participation and satisfaction in water efficiency programs offered by the City of Guelph
- Water use behaviour indoors and outdoors.
- Willingness and desired/required incentives for implementing water saving mechanisms

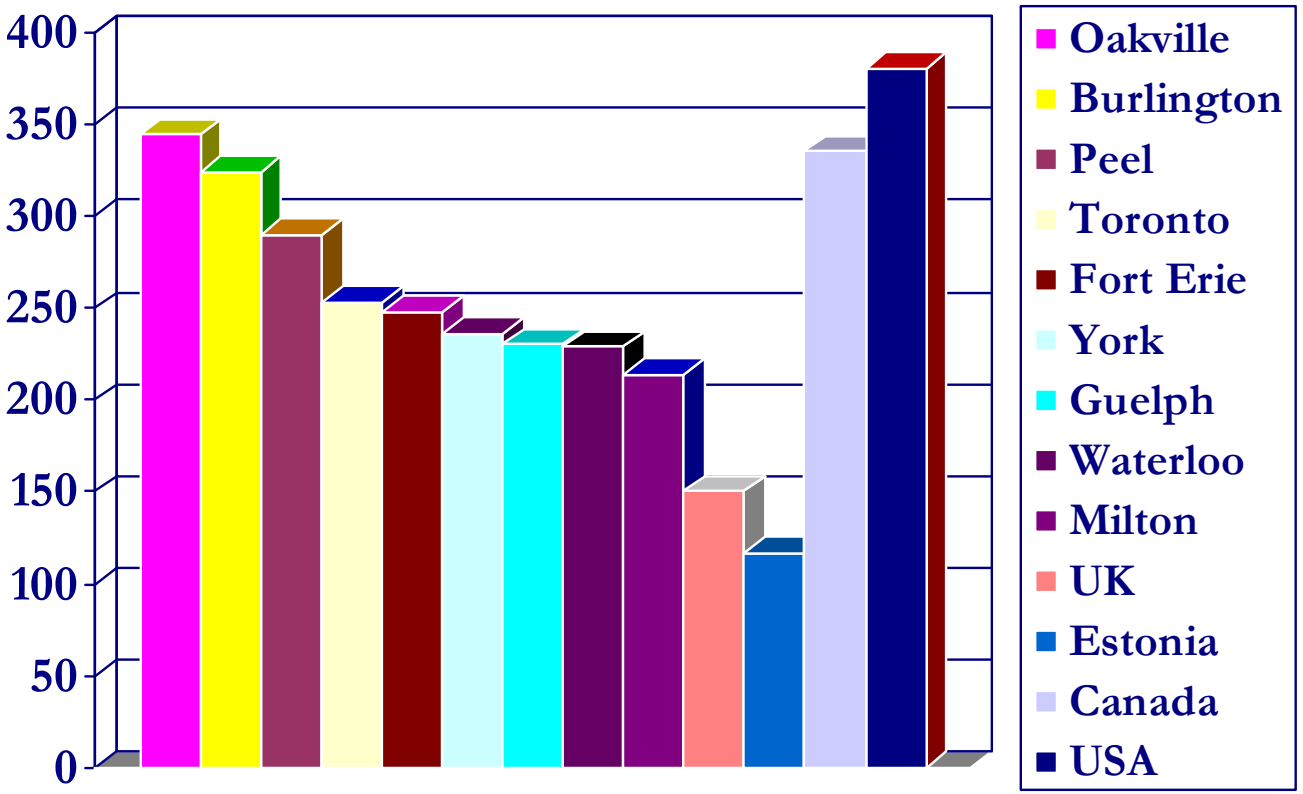
Water Use Demand Analysis

- Guelph Hydro Customer Billing Data (2001 to 2007)
- City of Guelph Housing Type Data
- Analysed 2007 in detail, 2001 to 2006 summary
- Segregated water use into:
  - Single Family Residential
  - Multi Family Residential
  - Industrial, Commercial, Institutional (ICI)

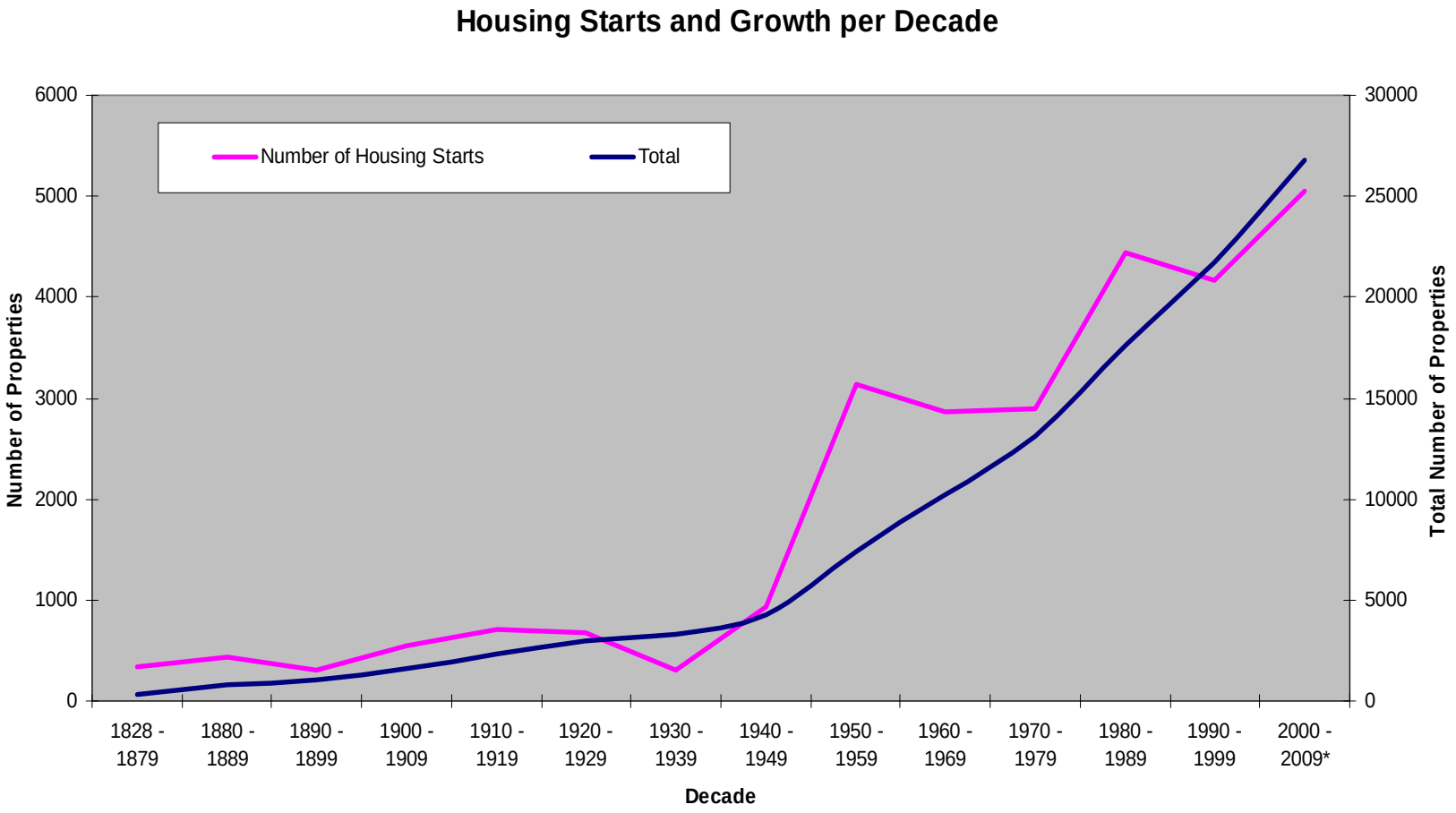
Water Use Demand Analysis Summary

Category	2007 Billed(m^3)	Population	Lcd
Single Family	7,967,457	94,745	230
Multi Family	1,135,560	20,295	153
Total Residential	9,103,017		
Industrial, Commercial, Institutional (ICI)	6,660,534		
Total 2007 Billed Consumption	15,763,551		

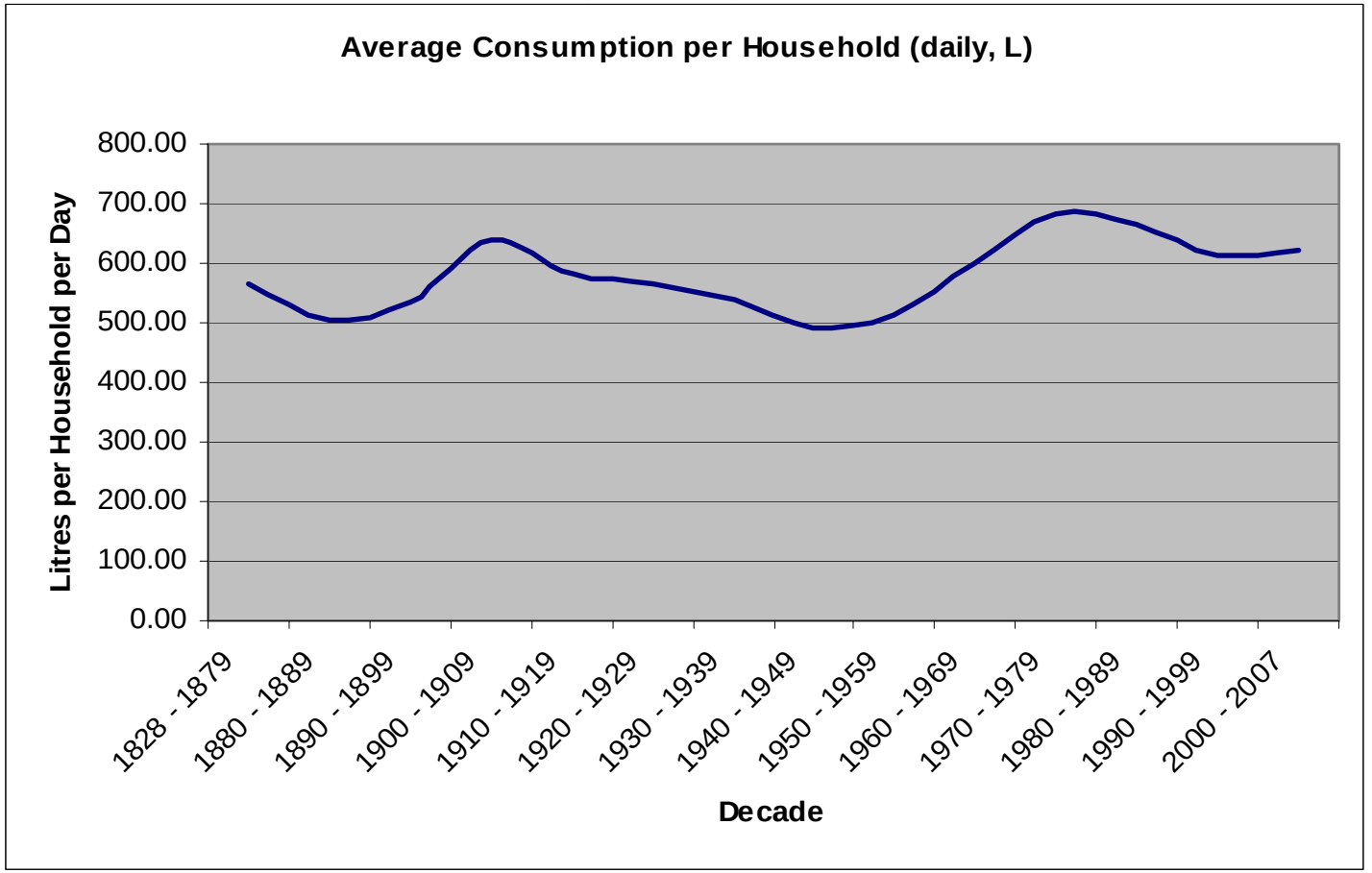
Residential Water Use Demand Analysis



Single Family Residential Analysis



Single Family Residential Analysis (2007)



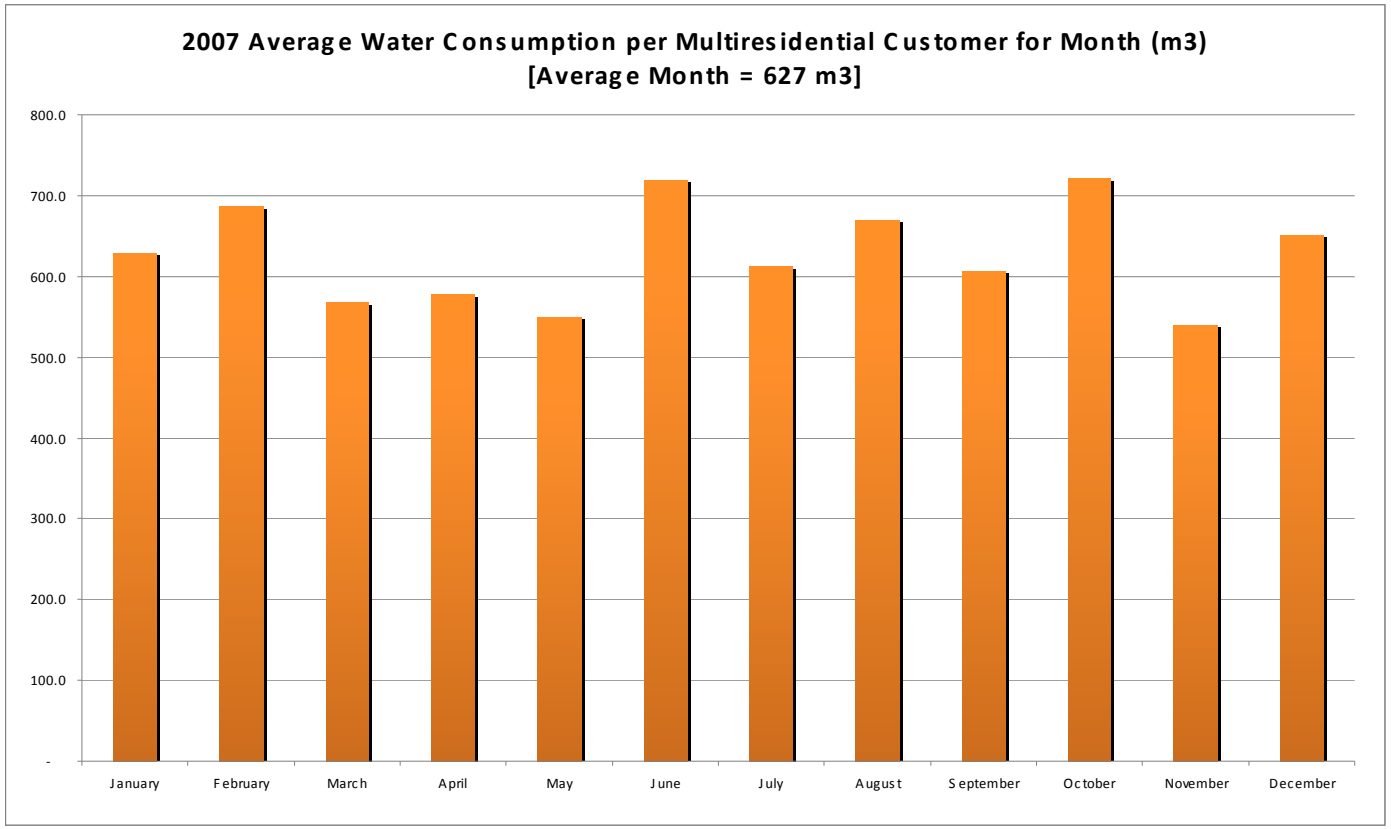
Single Family Residential Analysis

Period	Toilet Flush Volume	Number of Single Detached Properties	2007 Billed Volume (m^3)	Use Per Property Per Day (Litres)
Prior to Aug 1, 1993	No limits, so assume 20 litre	18,592	4,148,463	611
Aug 1, 1993 to Dec 31, 1995	13.25 litre	803	204,551	698
Jan 1, 1996 to Date	6.0 litre	5,899	1,270,640	590

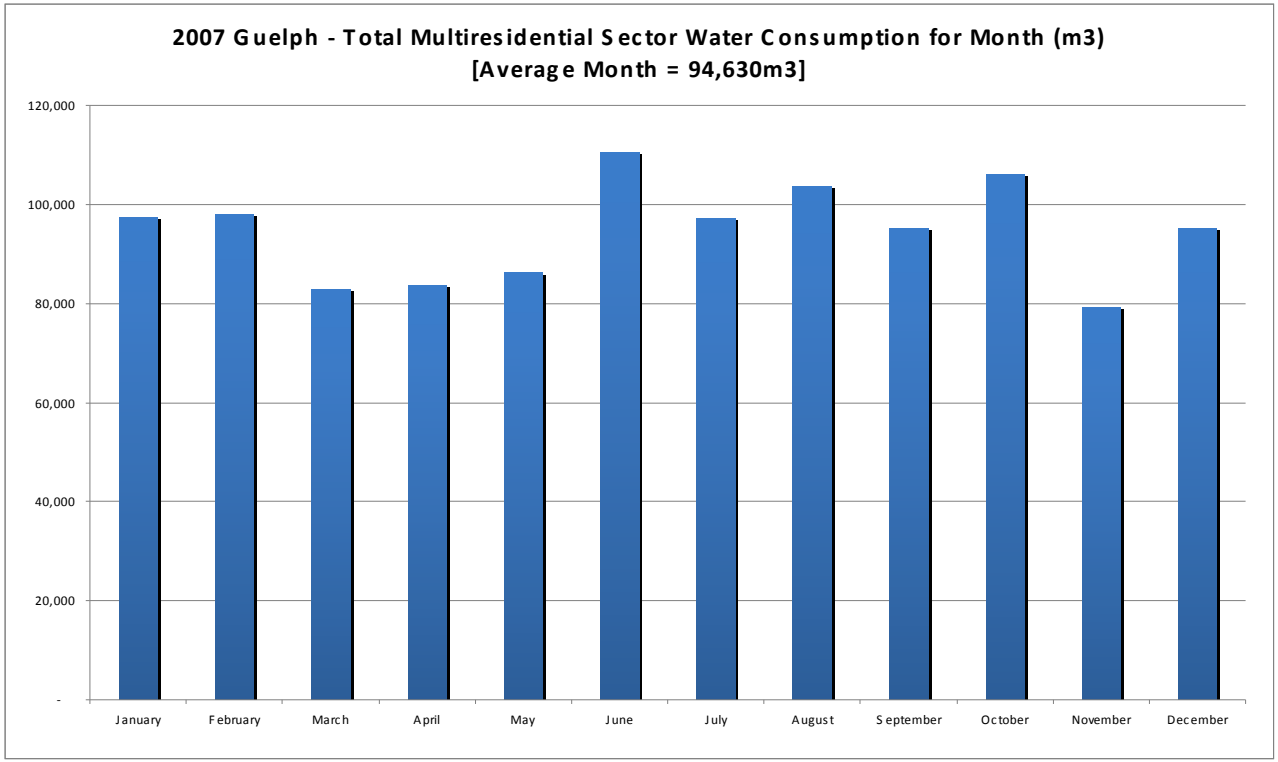
Multi Family Residential Analysis

	Number	Billed (m^3)
Average Customer Meter Reads	151	
Average Monthly Use Per Multi Res		627
Total 151 Multi Res Average Monthly Use		94,632
Yearly Total for 151 Multi Res		1,135,560

Multi Family Residential Analysis



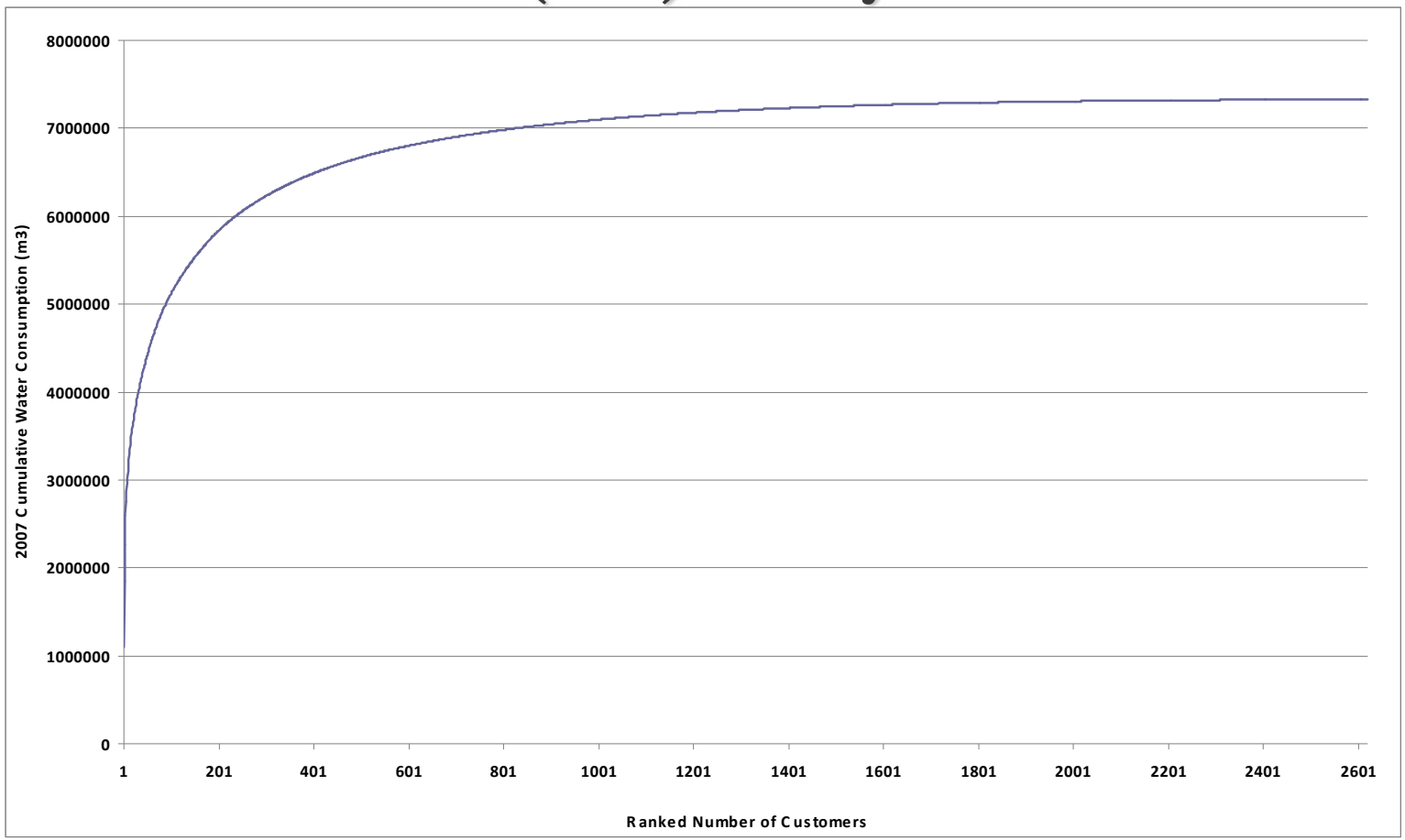
Multi Family Residential Analysis



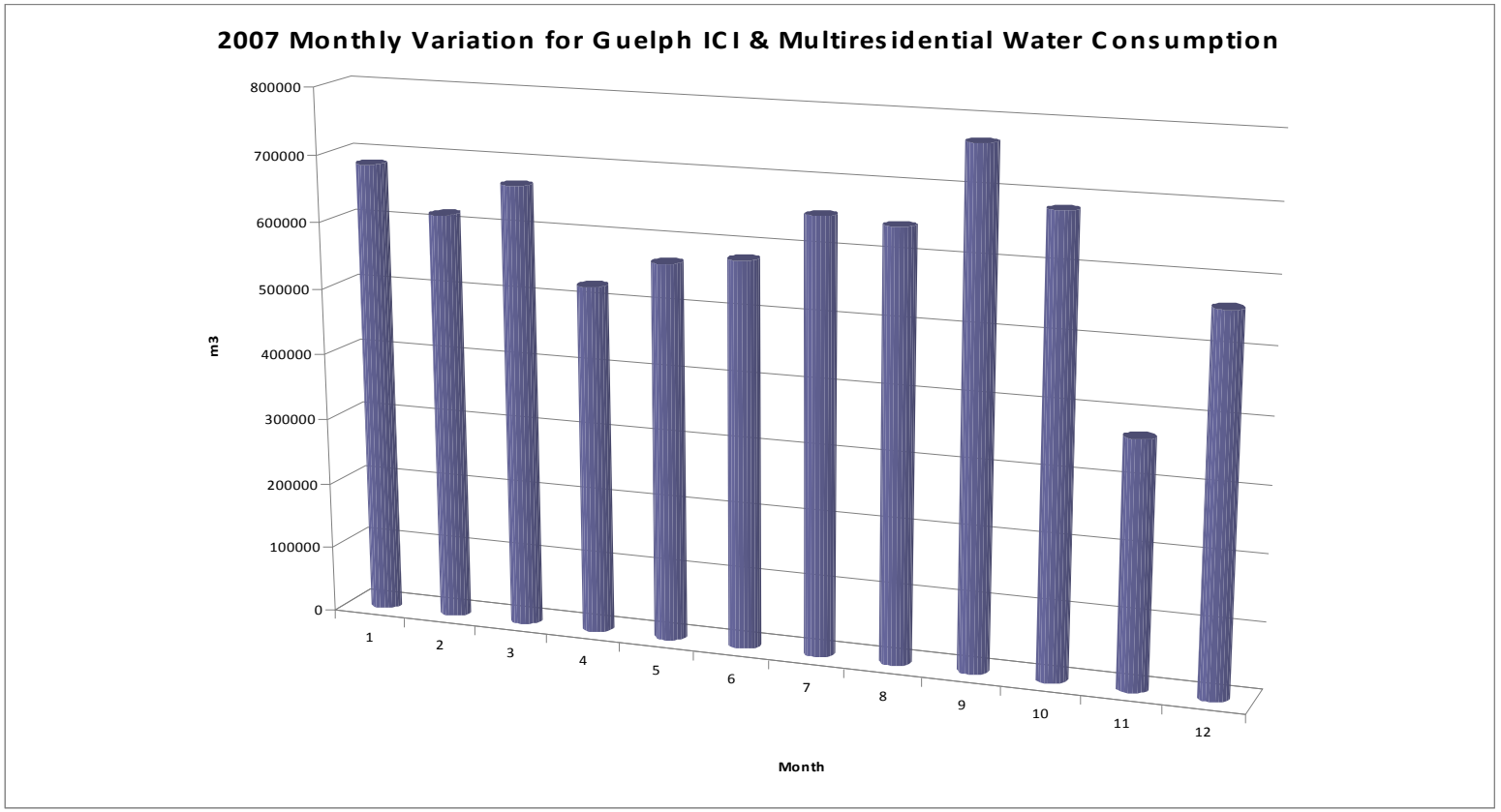
Industrial, Commercial, Institutional (ICI) Analysis

- Based on previous experience 80:20 rule
- 80% water used by 20% ICI customers
- 204 customers (133 ICI, 71 Multi Res)
- Used North American Industry Classification System (NAICS)
- NAICS type of industry code and number of employees
- Developed spreadsheet to estimate domestic, process and product use

Industrial, Commercial, Institutional (ICI) Analysis



Industrial, Commercial, Institutional (ICI) Analysis



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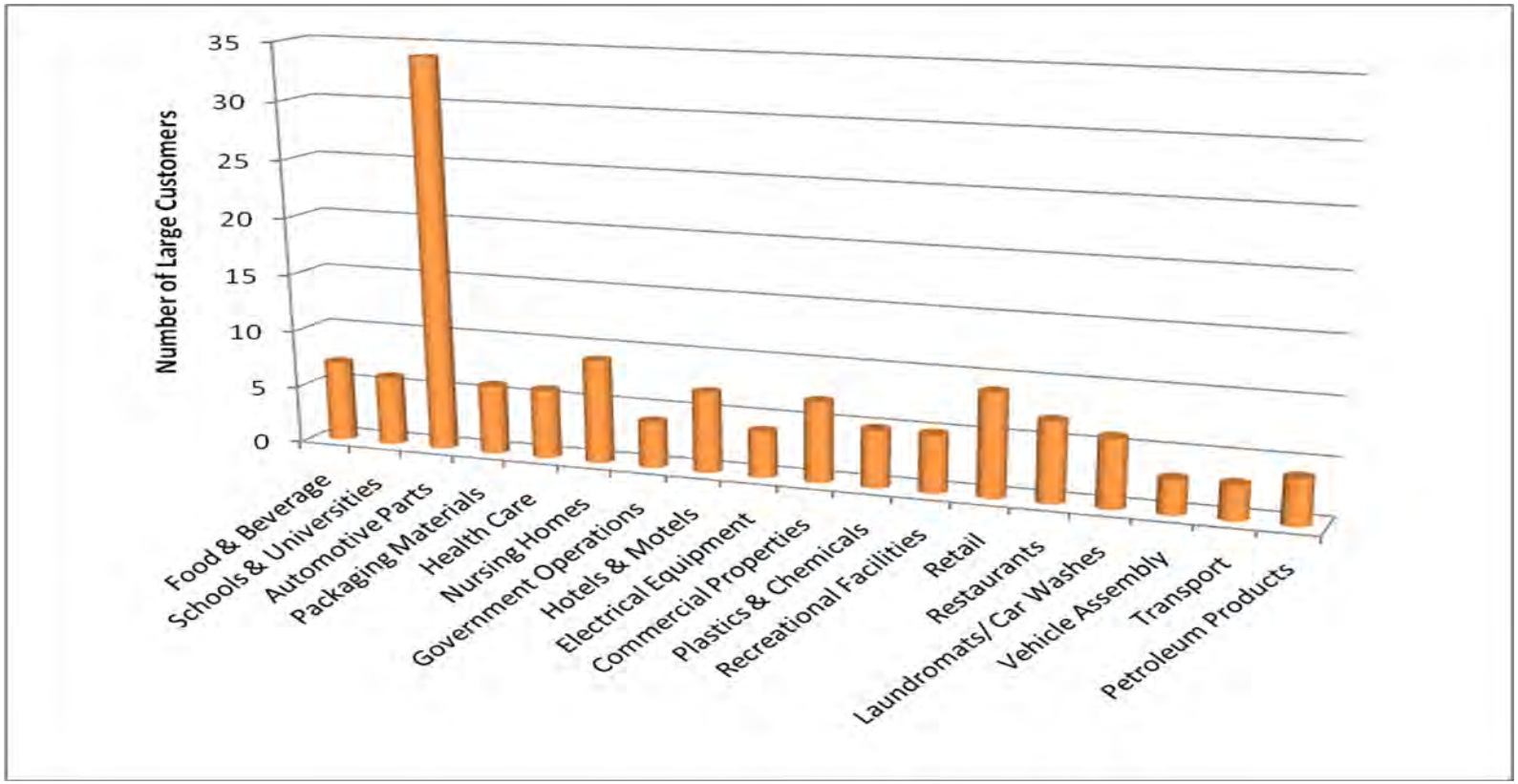
Industrial, Commercial, Institutional (ICI) Analysis



Industrial, Commercial, Institutional (ICI) Analysis

- Largest 133 ICI customers used 4,766,000 m^3 in 2007
- 29,000 people employed in these organizations
- Process water use estimate 4,198,000 m^3
- Domestic water use estimate 360,000 m^3
- Product water use estimate 208,000 m^3

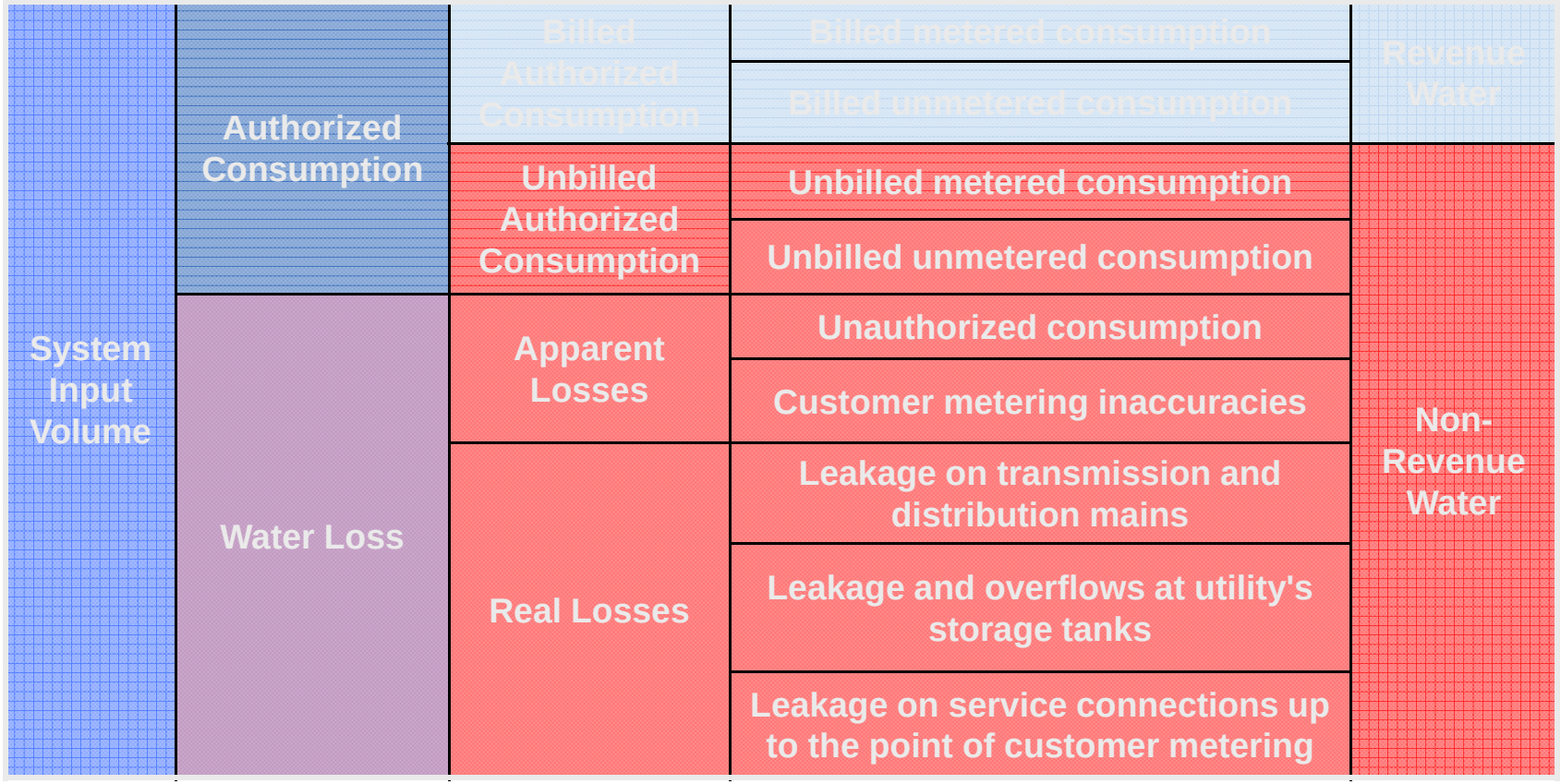
Distribution System Water Loss

- Two sets of analysis:
  - International Water Association / American Water Works Association (IWA/AWWA) Water Audit and Water Balance
  - Water Loss Mitigation Strategy

AWWA / IWA Water Audit and Water Balance

- Focus on accounting for all revenue water, to identify non-revenue water
- Water loss to date referred to as "Unaccounted For Water (UFW)
- AWWA / IWA Audit – Best Management Practice (BMP)
- Part of new AWWA M36 Leak Detection Manual

AWWA / IWA Water Audit and Water Balance



AWWA / IWA Water Audit and Water Balance

2007 Data	
Annual Pumpage (System Input)	18,790,082 m^3
Billed Consumption	15,763,551 m^3
Authorized but Unbilled	165,880 m^3
Non-Revenue Water	3,005,731 m^3
Current Annual Real Losses (CARL)	2,073,352 m^3
Unavoidable Annual Real Losses (UARL	704,823 m^3
Infrastructure Leakage Index (ILI)	2.9

AWWA / IWA Water Audit and Water Balance

- World Bank Classifications for ILI
  - Range 2 to 4
  - Category B
  - Potential for marked improvements; consider pressure management, better active leakage control practices and better network maintenance

Water Loss Mitigation Strategy

- An in depth review of:
  - Water Source Meter Accuracy
  - Customer Water Meter Accuracy
  - Active Leak Detection Program

Water Loss Mitigation Strategy

- Water System Overview
  - Ground water from "Spring Grounds Aqueduct System" and wells in the City
  - Two distribution system pressure zones
  - Three water towers
  - Four underground reservoirs
  - Three water booster stations

Water Loss Mitigation Strategy
Source Meters

- All meters except Woods (largest volume) are modern electromagnetic meters
- Annual accuracy testing is completed
- Site inspection of meter location + type
- Accuracy varies from +4% to -3.9%. Volume average 0.93% under-registration
- Recommended enhanced meter testing and replace Woods meter in future years

Water Loss Mitigation Strategy
Customer Meters

- Over 37,000 meters aged 1960 to date
- 22,000 modern touch pad read, 15,000 old reading system
- Potential under-registration estimated at 5% (1960 to 1994,9.5%; 1995 to date, 2.1%)
- Potential Revenue gain at \$1.60 per m^3 (2007 water & wastewater rate), \$1,166,796
- Meter changeout cost estimate (touch pad read), \$8,616,239

Water Loss Mitigation Strategy
Active Leak Detection

- Influences on volume of leakage:
  - Speed of detection of leak
  - Speed and quality of repair of leak
  - Water pressure
  - Condition of watermains and service pipes

Water Loss Mitigation Strategy
Active Leak Detection

- Three types of leaks:
  - Reported – come to the surface and are repaired
  - Unreported – do not surface, but are economic to find and repair
  - Background – do not surface, not economic to find and repair, but can be reduced by pressure management

Water Loss Mitigation Strategy
Active Leak Detection

- Reduce Backlog of Unreported leaks using District Meter Areas (DMAs)
- Measure flow into area, and compare night flow to "legitimate leakage"
- 23 Temporary DMAs for Guelph
- Reduce leakage (CARL) by 985,500 m^3 from 2,073,352 m^3 to 1,087,852 m^3

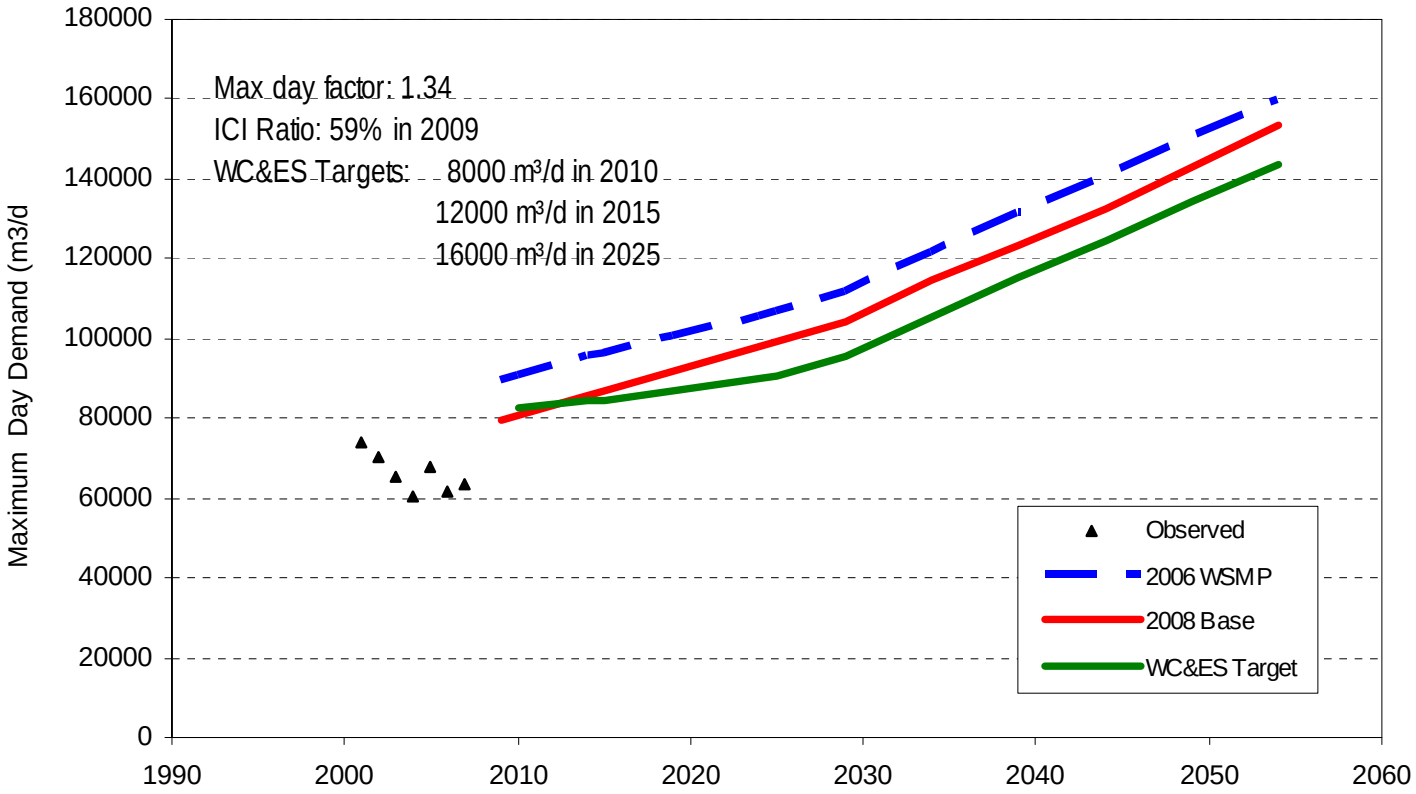
Water Loss Mitigation Strategy
Active Leak Detection

- Reduce Background Leakage by Pressure Management, in areas of high pressure
- 2 or 3 pressure management areas
- Reduce leakage (CARL) by 109,500 m^3 from 1,087,852 m^3 to 978,352 m^3
- Resulting ILI 1.4

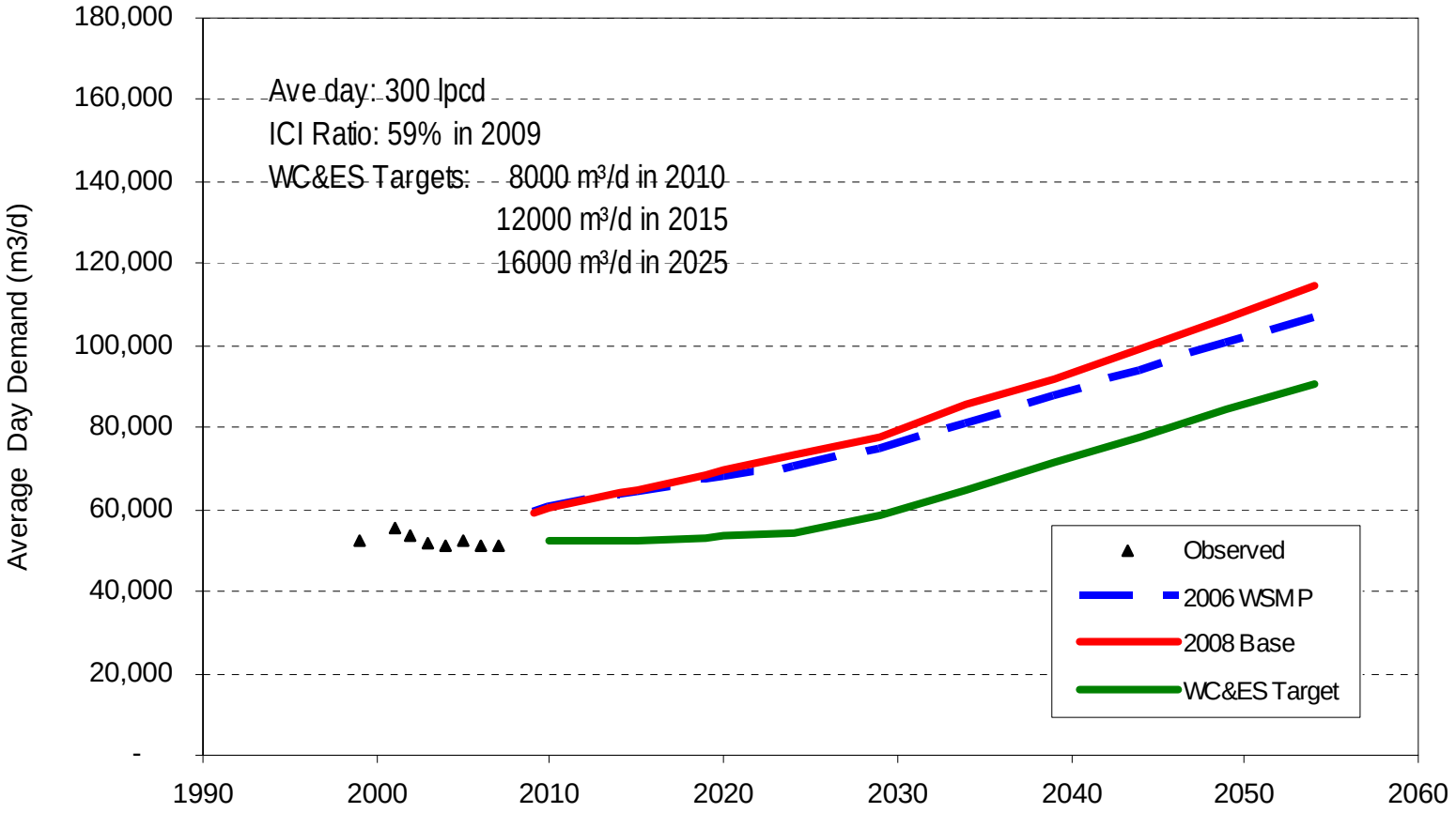
Water Supply Demand Forecast

- Demand forecasts from 1999 Water Conservation Study and 2006 Water Supply Master Plan
- Forecast Average Day, and Maximum Day demands
- Population growth projections, and used equivalent populations for ICI customers
- Average Day projections driven by population, Maximum Day by Peaking Factors

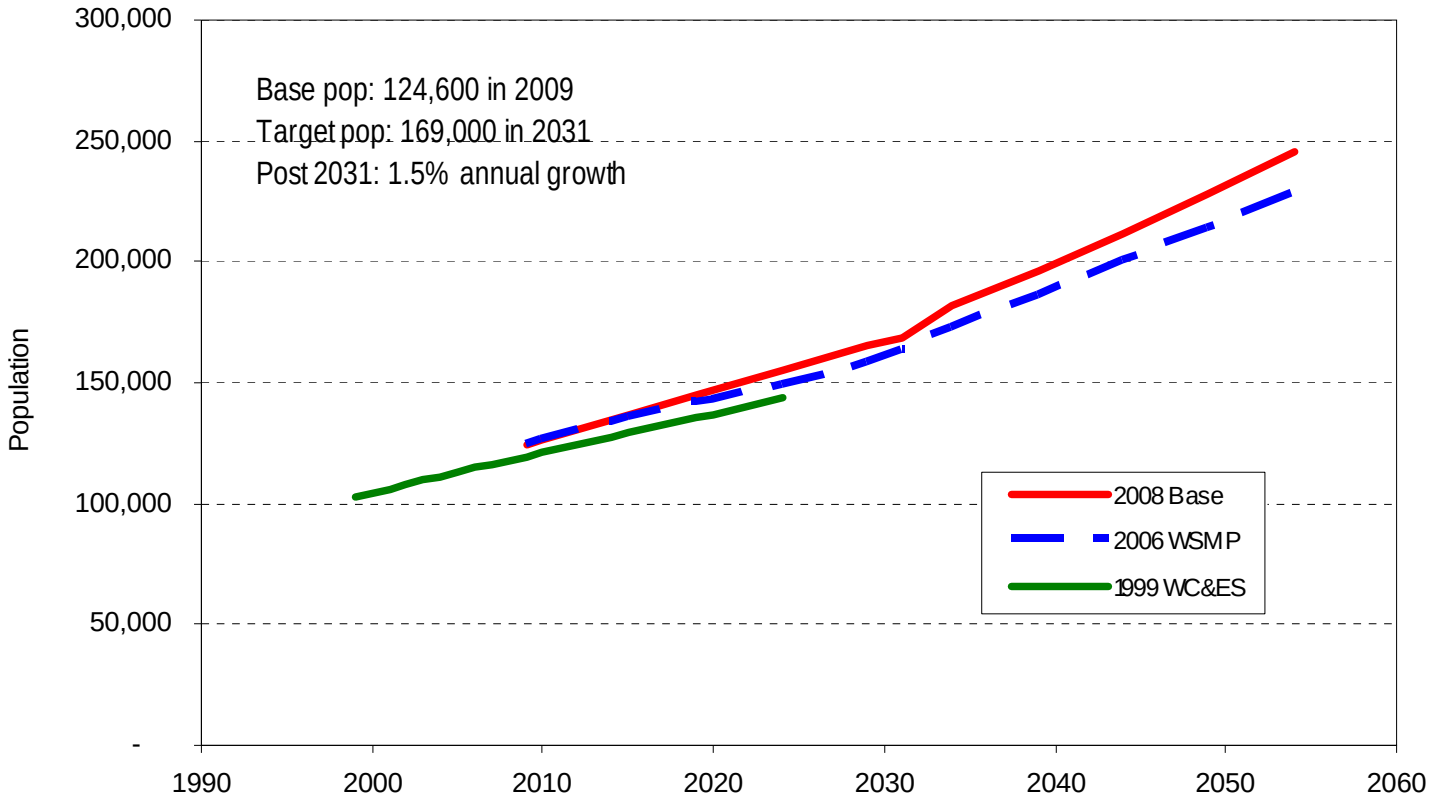
Water Supply Demand Forecast



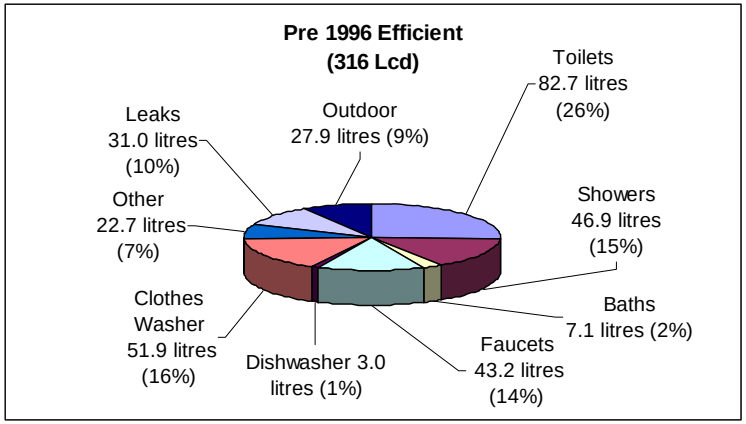
Water Supply Demand Forecast

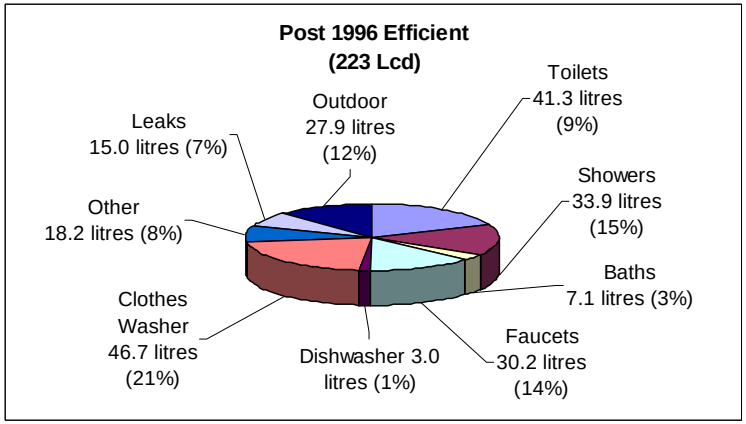


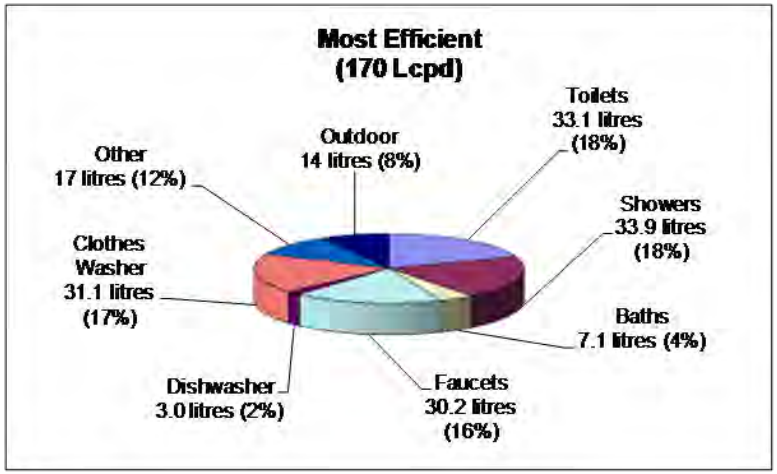
Water Supply Demand Forecast



Residential Water Use Demand Analysis







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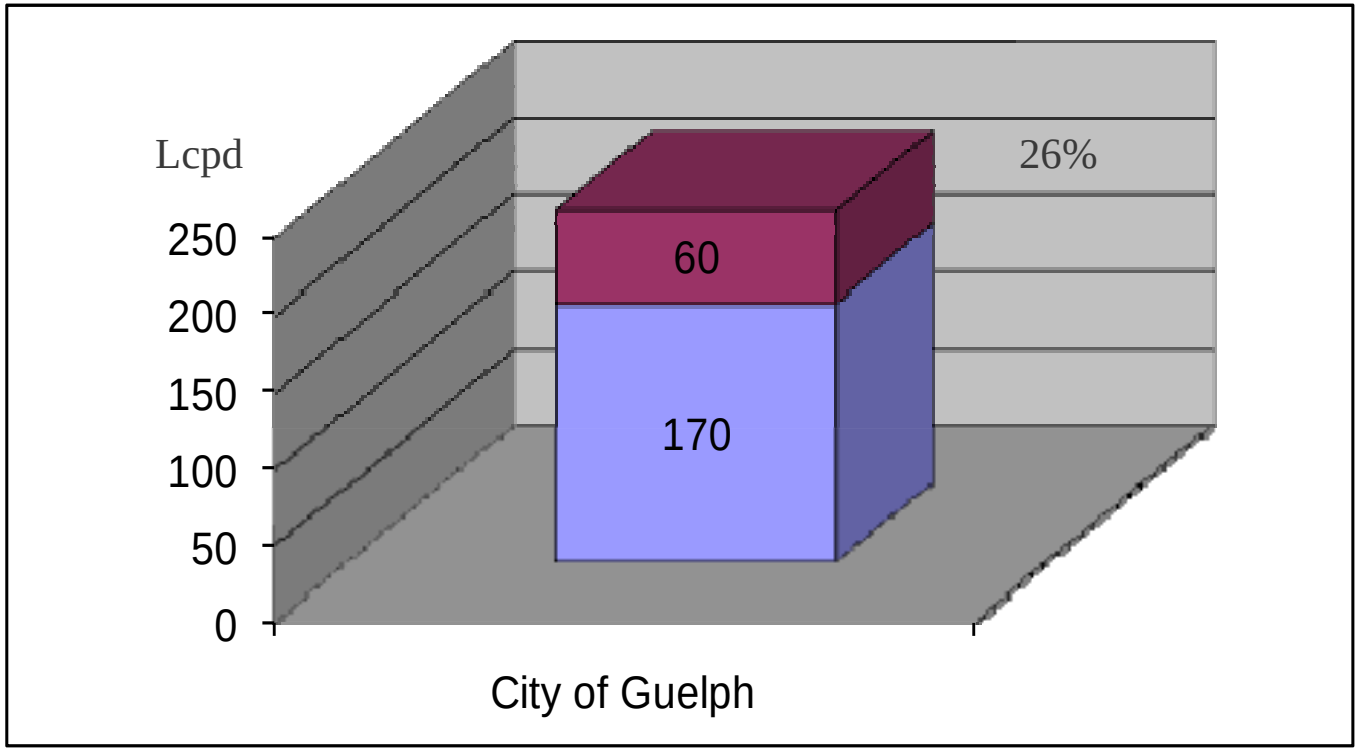
Residential Water Use Demand Analysis

Detached Single Family Residential Water Efficiency Potential



Overall Potential for Water Efficiency

Residential Single Family Detached				
Current Demand (2007) lcpd	230			
Potential Demand (end use studies) lcpd	170			
Potential Savings lcpd	60			
2007 population	94,745			
Potential Single Family Savings	2,074,916	m3/year	5,685	m3/day
Residential Multifamily				
Current Demand (2007) lcpd	153			
Estimated savings 22% per analysis	34			
2007 population	20,295			
Potential Multifamily Savings	249,342	m3/year	683.1	m3/day
Industrial, Commericial and Institutional				
Current Demand (2007) m3	6,660,534			
Estimated savings 15% per analysis	999,080			
Potential ICI Savings	999,080	m3/year	2,737	m3/day
Total Potential Water Efficiency Savings	3,323,338	m3/year	9,105	m3/day
Distribution Leakage Reduction				
Active Leakage reduction per analysis	985,500	m3/year	2,700	m3/day
Background Leakage reduction per analysis	109,500	m3/year	300	m3/day
Total Potential Leakage Savings	1,095,000	m3/year	3,000	m3/day
Total Potential Water Efficiency and Leakage Savings	4,418,338	m3/year	12,105	m3/day
Percentage saving of 2007 actual demand	28%		28%	

Meeting Minutes

City of Guelph

Water Conservation and Efficiency Strategy Update

Public Advisory Committee Meeting # 1

Tuesday, August 12th 6 pm – 9pm
Guelph Waterworks – Waterworks Boardroom
29 Waterworks Place, Guelph ON

In Attendance:

Kathleen Farrelly	City Councillor - Ward 1
Peter Lambe	Cargill Meat Solutions
Ludwig Batista	Sleeman's Brewing Company Ltd
Alicia Piccoli	Fusion Homes - Director of Human Resources
Anastasia Lintner	Council Wellington Water Watchers
Rob Case	Guelph International Resource Centre
Mike Darmon	Guelph Green Plan Steering Committee
Doug Kenny	Doug Kenny and Sons Mechanical
Chantelle Leidl	University of Guelph
James Etienne	Grand River Conservation Authority.
Jeremy Shute	Resident
Patricia Quackenbush	Resident
Lloyd Longfield	President Chamber of Commerce

Project Consulting Team:

Kingsley Blease	RMSi
Aileen Barclay	RMSi
Michael Brooks	RMSi

City of Guelph Staff:
Wayne Galliher, Peter Busatto, Janet Laird, Martin Lavictoire, David Auliffe

Regrets:

Khosrow Farahbakhsh	Assistant Professor - School of Engineering
Paul McLennan	Resident

1.0 Meet the Team – Introductions

- Michael Brooks of RMSi reviewed the Terms of Reference with the group and introduced the members of the consulting team working on the strategy update.

2.0 Project Scope

- The Water Conservation and Efficiency Strategy Update will be developed with the appreciation of the rich environmental tradition in Guelph, unique in Southern Ontario.

- Guelph is seen nationally as a leader in water conservation. The project will look at existing Guelph programs like Royal Flush, Smart Wash Clothes Washer Rebate Pilot Program, ICI capacity buybacks, Landscape Assessment program, Outside Water Use Program and other related programs.

3.0 Michael Brooks and Kingsley Blease presented to the Committee.

Topics covered during the presentation:

- Project Scope and Flow Chart of Planned Activities
- Results to Date:
  - Public Consultation; Focus Groups and Phone Survey
  - Residential Water Use Demand Analysis
  - Industrial, Commercial and Institutional Water Use Demand Analysis
  - Evaluation of Distribution System Water Loss
  - Water Supply Demand Forecast
- Water Efficiency Measures and Strategy Implementation Plan

Question arising during the presentation:

Question: What is the cut off for cost effectiveness in the pass fail review of water conservation opportunities and programs? Is there a long term opportunity to revisit?

Answer: Yes there is an opportunity to revisit the strategy and add, delete or modify programs. There may be some measures that are not cost-effective based solely on water savings and costs. One that comes to mind are rain barrels which can be an excellent education tool but offer limited year round savings. Wayne added that in addition to the evaluation there is also ability from public desire that can override the other review processes, i.e. rain barrels.

Question: Is there a water rate structure review process being completed as part of the strategy update?

Answer: The City of Guelph is currently undertaking a water and wastewater rate review. Although the rate review is not a component of the strategy update City staff will be providing information to PAC with regards to the rate review and seeking input from the PAC through later meetings with regards to possible conservation water rate structures which may be implemented within the City of Guelph.

Question: Does the strategy update review for Speed River water levels?

Answer: No. The GRCA currently monitors water quality and quantity throughout the watershed on an ongoing basis.

Question: Can we store the water during high water events for supply in lower water periods as done in Waterloo?

Answer: Surface water capture and aquifer storage recovery opportunities were both identified as mid to long term recommendations through development of the City's Water Supply Master Plan. These water supply alternatives will be reviewed in greater detail as part of future feasibility and environmental assessment studies in accordance with the 2006 Water Supply Master Plan.

Question: What was the overall geographic distribution of the residential telephone survey and how were the number participants per area selected?

Answer: The residential telephone survey included recruitment of participants from all the City's respective wards. The total number of participants per Ward was derived based on the total percentage population per Ward in comparison to the City's total population. As an example; should a Ward have 1/8 of the City's population a total of 50 homes (of the total 400 homes called in the survey) would have been randomly selected to participate in the telephone survey.

Question: Is the Residential Litre Per Capita per Day (LCP) comparison based on detached single family housing only?

Answer: Yes, this is the easiest way to compare with other municipalities and countries. Multi-unit residential buildings are typically included with the Industrial, Commercial and Institutional (ICI) sector due to billing practices of most utilities.

Question: What is the accuracy of under registration of the City's Woods Station Pumping?

Answer: Unknown at this time**,** Kingsley to get back to Janet about the actual number. *Action item for K. Blease

Question: Do the water use reduction targets presented for the detached single family housing; include behaviour changes or just savings based on home technologies (efficient fixtures/appliances)?

Answer: Due to the difficult task of quantifying water savings achieved solely from education, the savings displayed in the model do not include educational based savings but rather savings based on the incorporation of home based technologies..

4.0 Roundtable Feedback Session

Question 1 – From the options you have seen this evening, what are your thoughts?

- James Etienne – GRCA – Guelph is recognized as watershed leader, which others aspire to. Guelph has shown leadership in it's desire to maintain watershed approach and not elect to engage in the great lakes servicing pipeline option. Guelph through this process should set the bar for others to follow (ie. How can achieve greater models with North America with reference to UK using 50% less water per capita)
- Lloyd Longfield– Talked about how much technology and how much education
- Patty Quackenbush– Increase in water rates
- Kathleen Farrelly – Community education people needs to be part of strategy
- Build on Guelph's environmental culture
- Alisha Piccoli – Green is popular, but people are not prepared to pay (would sooner pay for floor upgrades, for example, not water efficiency). How much will people pay for water efficiency?
- On RMSI Presentation - Need to show what people pay for water, along with the consumption (local and international comparisons to accompany per capita water use comparison).
- Cost of water still not high enough for people to make decision to go with water efficiency
- Popular public opinion is: "What is the point of water efficiency if it just frees up water capacity for future development?" How do we help to effectively foster a culture of conservation with this opposition?
- Use grey water to flush toilets – fit task to quality of water required to complete task.
- Chantelle Leidl asked "What can a municipality do to encourage builders? - Alisha Piccoli replied "Provide money."
- Kathleen Farrelly – Provide incentives to developers building industrial buildings to install water efficiency

- Michael – mentioned the City of Toronto has a lower water rate for the ICI customers if they implement water efficiency

Question 2 – What level of subsidies do you think would be appropriate?

- Must be based on business case. Perhaps based on subsidized consumption

Question 3 – If $100 million is paid for a pipeline, what are you prepared to pay for water efficiency?

- Must consider erosion of savings – must maintain water saved
- Often, the cheaper the solution, the bigger the problem, therefore be really cautious to get good quality investment
- Water efficiency is not a quick fix – must be prepared to take time – hard battle
- Would need public discussion – have discussion within the community and raise these same questions in these forums
- If water rates are increased, then it becomes hard sell
- Michael mentioned that increasing development charges is an alternative to increasing rates.
- Martin Lavictoire –Developers must get something back for those charges
- There is a possibility of higher water rates if there is not water efficiency
- Kathleen Farrelly – must not hit people on low incomes
- Kathleen Farrelly – Infrastructure is in a bad state – this is a big factor with people

5.0 Moving Forward and Next Steps

- At Public Information Centre the PAC members have offered to assist, in particular to help with break out groups
- Next meeting – To be announced for mid September

ADJOURN 9pm

AGENDA

City of Guelph

Water Conservation and Efficiency Strategy Update

Public Advisory Committee Meeting

Tuesday, September 30th 5 pm – 8pm
Guelph Waterworks – Waterworks Boardroom
29 Waterworks Place, Guelph

5:00 Meet the Team – Introductions - M. Brooks

5:05 Review of previous meeting minutes - All

5:15 Public Information Centre – A. Barclay

5:45 Update on Water/Wastewater Rate Review – W. Galliher

5:50 Revision to Potential Water Savings Analysis – M. Brooks
Water Efficiency Alternatives – Results of Screening – M. Brooks
Examples of Financial Screening of Alternatives – M. Brooks

6:50 Water Conservation Innovation – Incorporation of Rain Water Harvesting and Grey Water Reuse in the Strategy - All

7:10 Roundtable Feedback Session – All

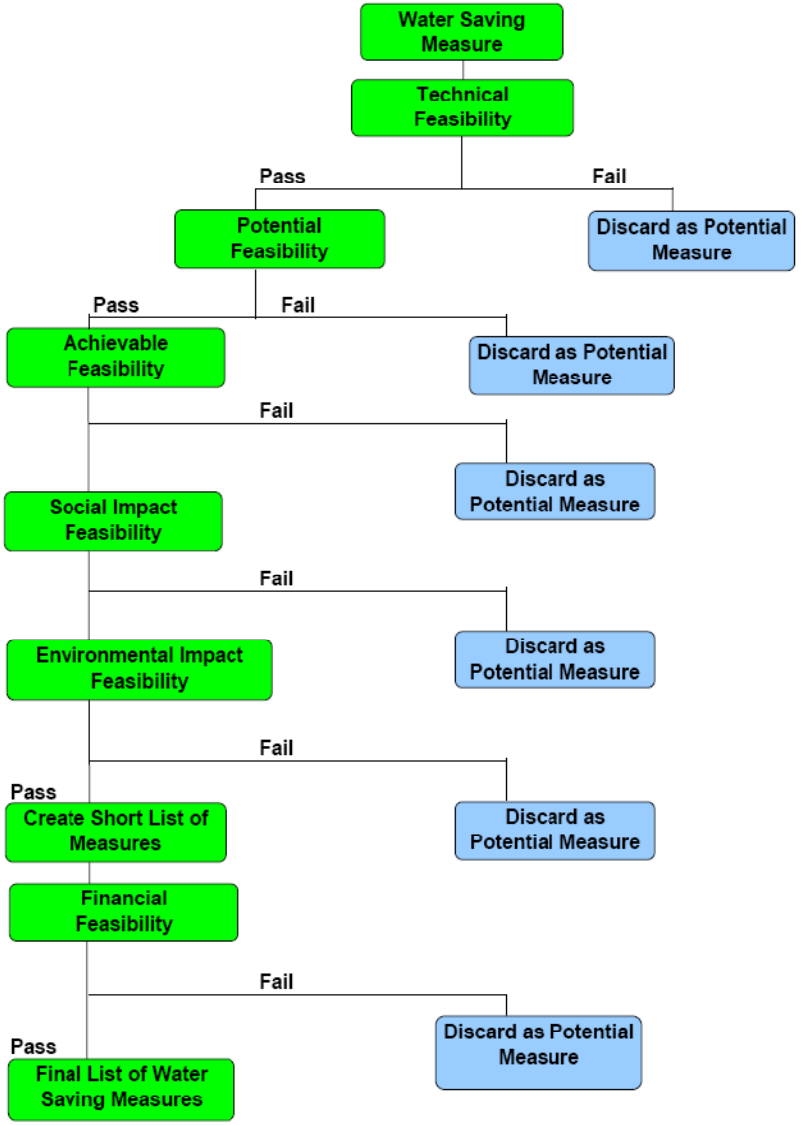
7:50 Moving Forward and Next Steps – M. Brooks

8:00 ADJOURN

Water Conservation and Efficiency Program and Policy Alternatives

Toilet flapper valve replacement	Faucet aerator installation	Grey water reuse	Rainwater harvesting
Toilet variable flush device	Faucet flow restrictor installation	Floor drain primer water	Water efficient landscaping
Toilet tank displacement devices	Automatic motion sensor faucet	Metering and sub-metering	Lawn water gauges and timers
6L toilet installation	Automatic push and touch faucet	Household indoor/outdoor audits	Automatic rain gauges for irrigation systems
High efficiency (HET) toilet installation	Faucet in-line regulator	Commercial food rinse nozzle	ET technology for irrigation systems
Dual flush toilet installation	Leakage repair	Process water reuse	Irrigation head replacement
Showerhead replacement	Garburator restrictions	Eliminate once through cooling	Irrigation distribution leakage reduction
Showerhead flow restrictors	Hot water recirculation	Cooling tower optimization	Green roof technology
Showerheads in-line regulator	Water efficient water softener	Car wash rinse water reuse	Swimming pool management
Water efficient clothes washer	Humidifier controller	ICI indoor/outdoor audits	Decorative ponds and water gardens
Water efficient dish washer	Air conditioning condensate recovery	Public and Youth Education	Rain barrels

Screening of Measures



Sectors Considered for Programming Development

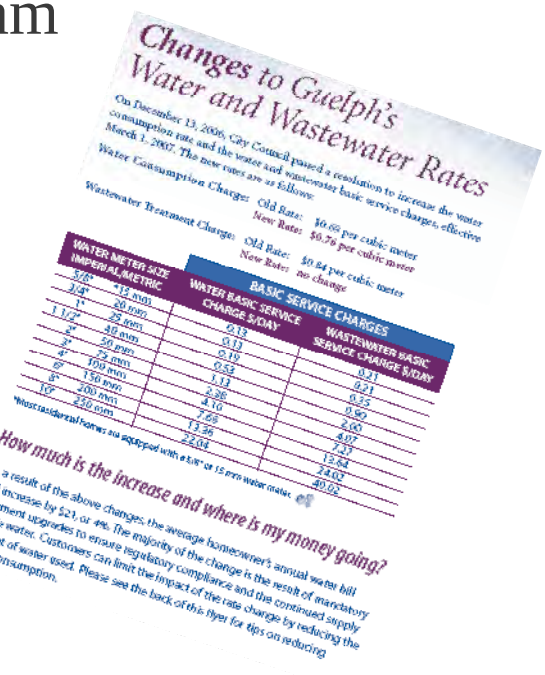
- Residential Single Family including Detached, Semi-detached, Townhouse
- Residential Multi-family including Apartments and Condominiums
- Residential new development
- Industrial, Commercial and Institutional
- Distribution Leakage Reduction

Screening of Measures

Residential Single Family	Technical	Potential	Achievable	Social	Environmental
Toilet flapper valve replacement	√	√	x	x	x
Toilet variable flush device	√	√	x	x	x
Toilet tank displacement devices	√	√	x	x	x
6L toilet installation	√	√	√	√	√
High efficiency (HET) toilet installation	√	√	√	√	√
Dual flush toilet installation	√	√	√	√	√
Showerhead replacement	√	√	√	√	√
Showerhead flow restrictors	√	√	x	x	x
Showerheads in-line regulator	√	√	x	x	x
Water efficient clothes washer	√	√	√	√	√
Water efficient dish washer	√	√	√	√	√
Faucet aerator installation	√	√	√	√	√
Faucet flow restrictor installation	√	√	x	x	x
Automatic motion sensor faucet	√	√	x	x	x
Automatic push and touch faucet	√	√	x	x	x
Faucet in-line regulator	√	√	x	x	x
Leakage repair	√	√	√	√	√
Garburator restrictions	√	√	x	x	x
Hot water recirculation	x	x	x	x	x
Water efficient water softener	√	√	√	√	√
Humidifier controller	√	√	√	√	√
Air conditioning condensate recovery	√	√	x	x	x
Grey water reuse	√	√	√	√	√
Floor drain primer water	√	√	√	√	√
Metering and submetering	√	x	x	x	x
Rainwater harvesting	√	√	√	√	√
Water efficient landscaping	√	√	√	√	√
Lawn water gauges and timers	√	√	√	√	√
Automatic rain gauges for irrigation systems	√	x	x	x	x
ET technology for irrigation systems	√	x	x	x	x
Irrigation head replacement	√	x	x	x	x
Irrigation distribution leakage reduction	√	x	x	x	x
Green roof technology	x	x	x	x	x
Swimming pool management	√	√	√	√	√
Rain barrels	√	√	√	√	√

Water Efficiency Measures Not Considered

- Customer water meters
- Conservation type water rates
- Water Use Restrictions and Outside Water Us Program



Changes to Guelph's Water and Wastewater Rates

On December 13, 2006, City Council passed a resolution to increase the water consumption rate and the water and wastewater basic service charges, effective March 1, 2007. The new rates are as follows:

Water Consumption Charges: Old Rate: $0.68 per cubic meter
New Rate: $0.76 per cubic meter

Wastewater Treatment Charges: Old Rate: $0.84 per cubic meter
New Rate: no change

WATER METER SIZE IMPERIAL/METRIC		BASIC SERVICE CHARGES	
		WATER BASIC SERVICE CHARGE $/DAY	WASTEWATER BASIC SERVICE CHARGE $/DAY
5/8"	15 mm	0.13	0.21
3/4"	20 mm	0.13	0.21
1"	25 mm	0.19	0.32
1 1/2"	40 mm	0.53	0.90
2"	50 mm	1.13	1.90
3"	75 mm	3.36	5.66
4"	100 mm	4.16	7.07
6"	150 mm	7.88	13.27
8"	200 mm	13.96	23.64
10"	250 mm	22.04	40.02

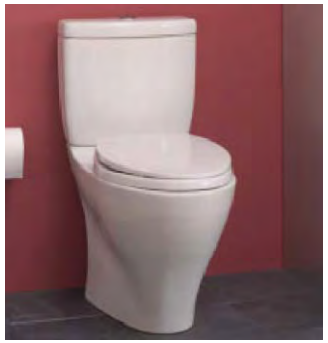
*Most residential homes are equipped with a 5/8" or 15 mm water meter.

How much is the increase and where is my money going?

As a result of the above changes, the average homeowner's annual water bill will increase by $23, or 4%. The majority of the change is the result of mandatory treatment upgrades to ensure regulatory compliance and the continued supply of safe water. Customers can limit the impact of the rate change by reducing the amount of water used. Please see the back of this flyer for tips on reducing water consumption.

Water Efficiency Measures Short-listed

Residential Indoor - Rebates



- Ultra low flush toilets – 6 litres
- High efficiency toilets – 4.8 litres
- Dual flush toilets – 3/6 litres

- Water efficient clotheswashers
- Water efficient dishwashers
- Water efficient water softeners
- Water efficient humidifiers
- Grey water reuse

Water Efficiency Measures Shortlisted

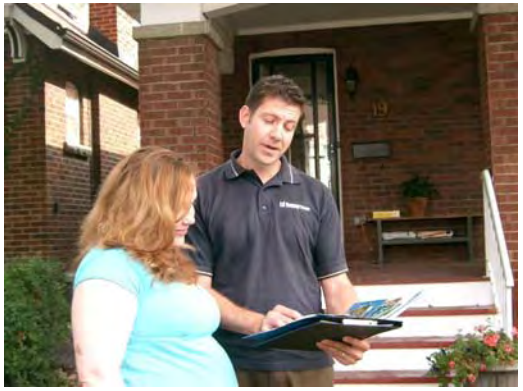
Residential Indoor – Install

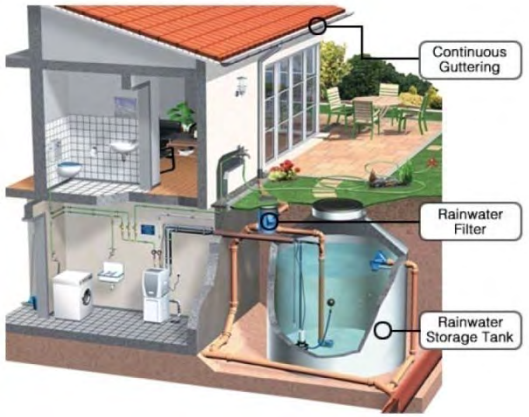
- Low flow showerheads
- Kitchen and bathroom faucet aerators
- Indoor leakage repair

Water Efficiency Measures Shortlisted

Residential Outdoor

- Water efficient landscaping
- Lawn water gauges and timers
- Rain barrels
- Swimming Pool Management
- Rain water harvesting





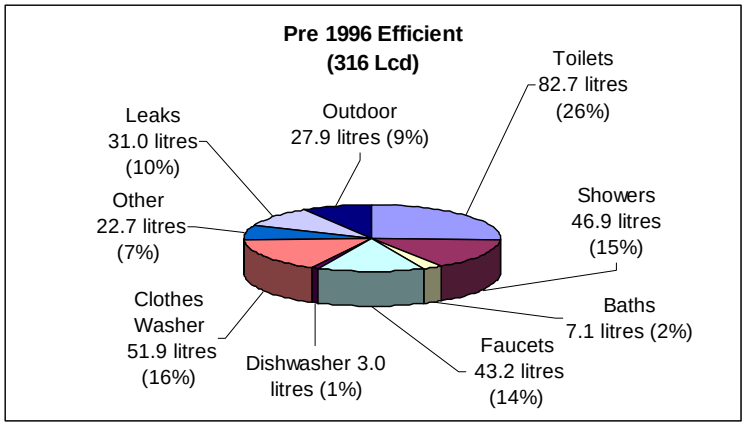
Water Efficiency Measures Shortlisted

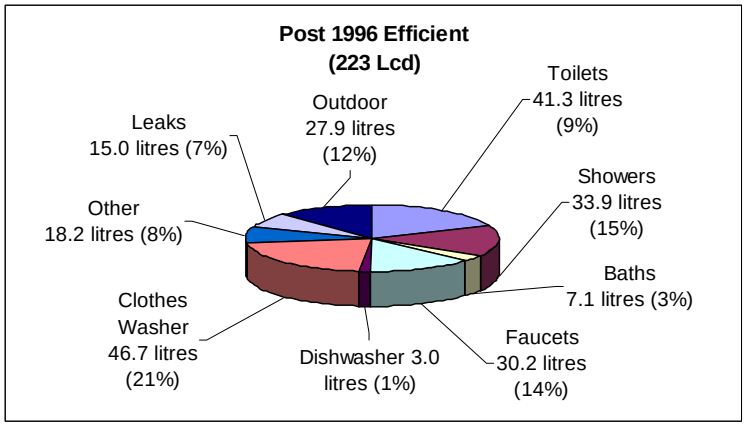
Broadscale Education

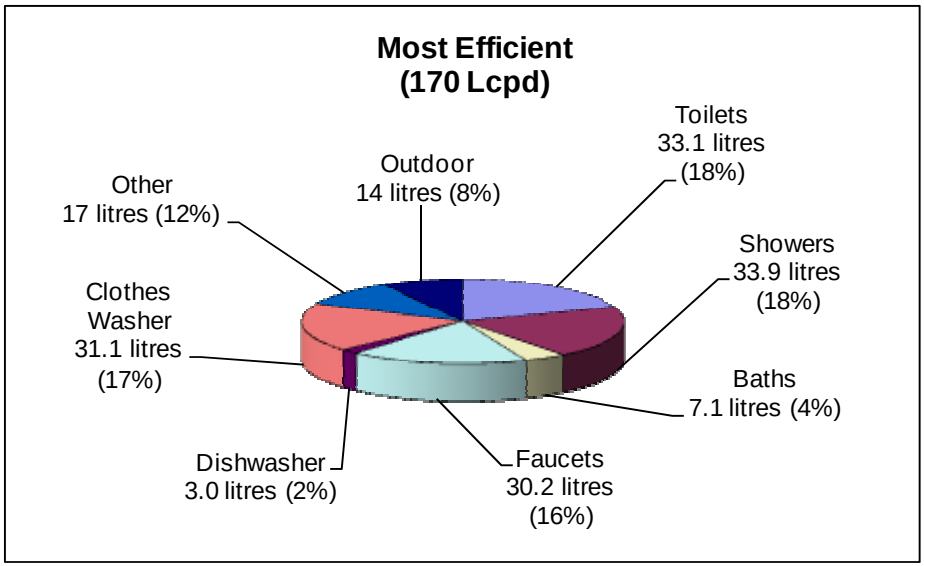
- Broadscale public education
- Youth education

Homeowner's Landscape Visit Package, 1,000 home visits completed per season

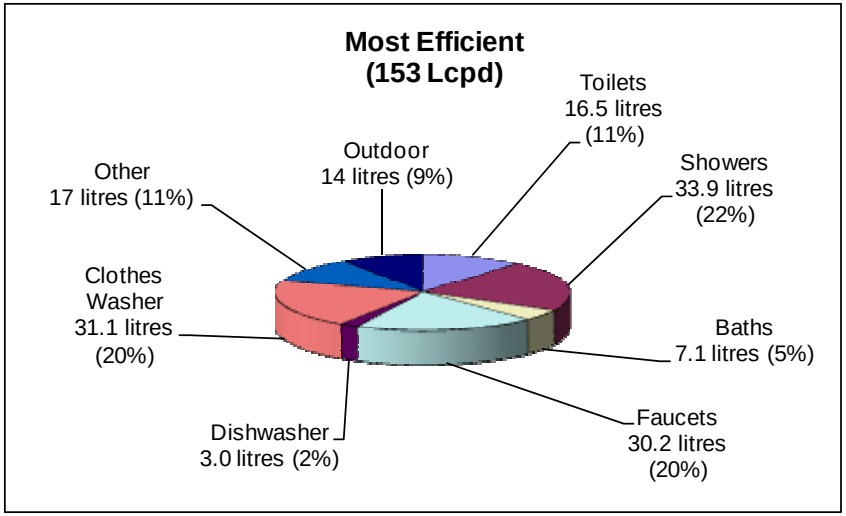
Residential Water Use Demand Analysis



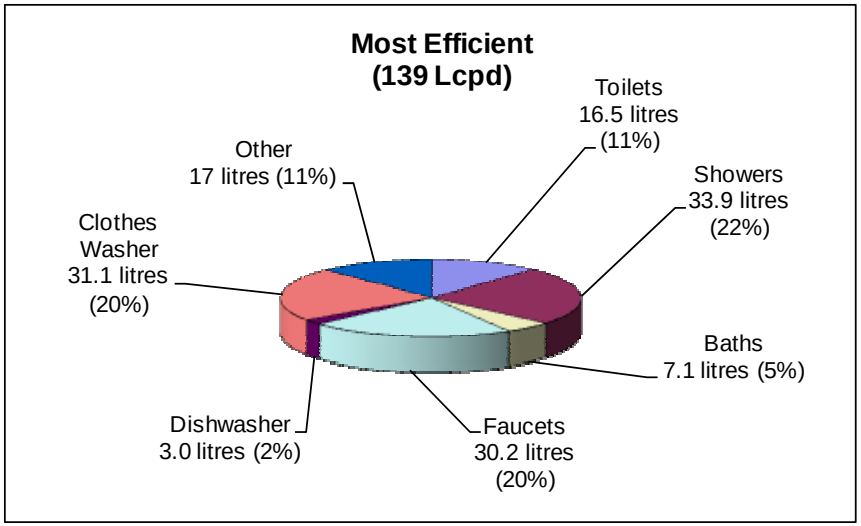




Residential Water Use Demand Analysis



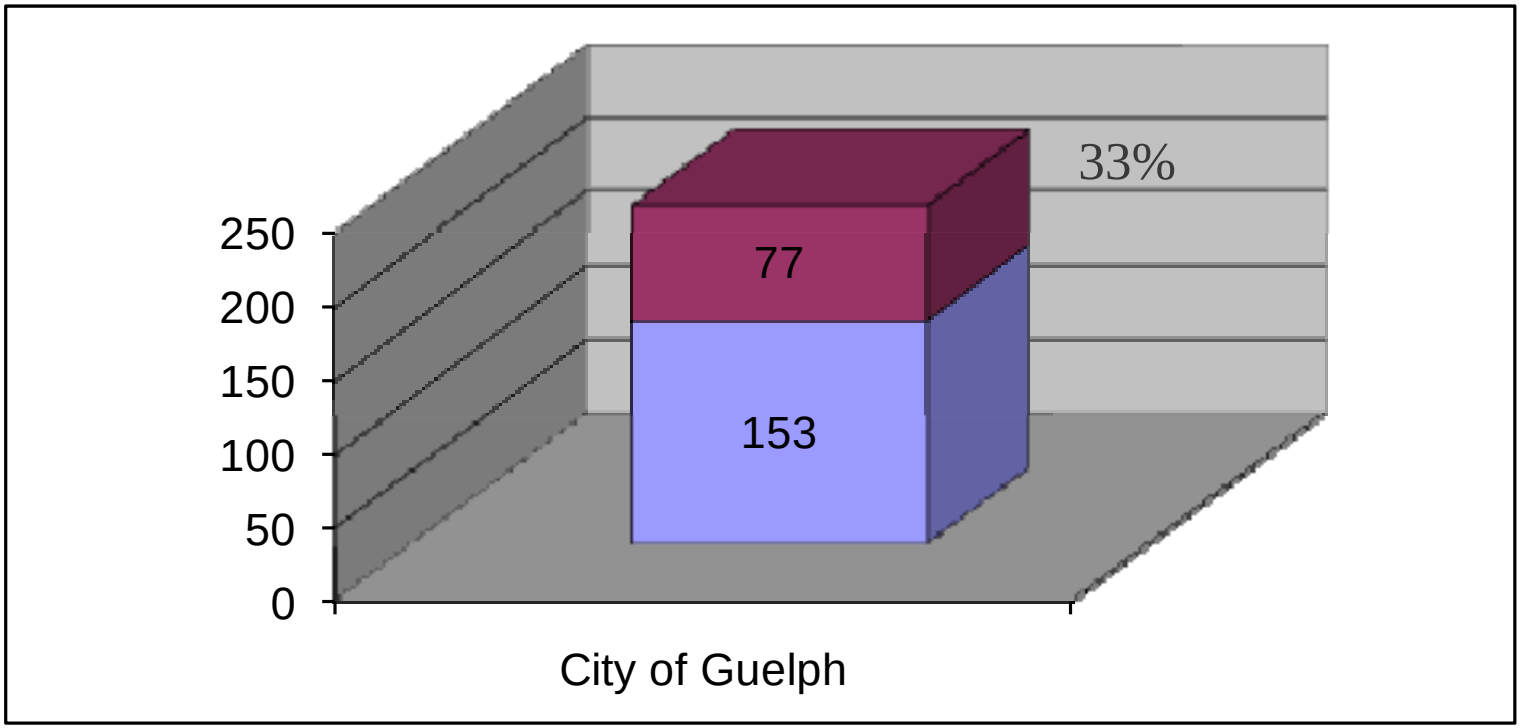
Water used for toilet flushing has been decreased with grey water reuse.



Water used for toilet flushing has been decreased with grey water reuse.

Water used for outdoor water use has been eliminated with the use of rain harvesting.

Residential Water Use Demand Analysis



Overall Potential for Water Efficiency

Residential Single Family Detached	
Current Demand (2007) lcpd	230
Potential Demand (end use studies) lcpd	153
Potential Savings lcpd	77
2007 Population	94,745
Potential Single Family Savings	2,662,808 m3/year 7,295 m3/day

Industrial ,Commercial, and Institutional	
Current Demand (2007) m3	6,660,534
Estimated Savings 15% per Analysis	990,080
Potential ICI Savings	990,080 m3/year 2,737 m3/day

Distribution Leakage Reduction	
Active Leakage Reduction per Analysis	985,500 m3/year 2,700 m3/day
Background Leakage Reduction Per Analysis	109,500 m3/year 300 m3/day
Total Potential Leakage Savings	1,095,000 m3/year 3,000 m3/day

Residential Multi-family	
Current Demand (2007) lcpd	153
Estimated Savings 22% per Analysis	34
2007 Population	20,295
Potential Multi-family Savings	249,342 m3/year 683.1 m3/day

Total Potential Water Efficiency Savings	
Potential Single Family Savings	2,662,808 m3/year 7,295 m3/day
Potential Multi-family Savings	249,342 m3/year 683.1 m3/day
Potential ICI Savings	990,080 m3/year 2,737 m3/day
Total Potential Water Efficiency Savings	3,911,231 m3/year 10,716 m3/day
Total Potential Water Efficiency and Leakage Savings	**5,006,231 m3/year 13,716 m3/day**
Percentage Saving of 2007 Actual Demand	32% m3/year 32% m3/day

Financial Screening of Shortlisted Measures

Toilet Replacement (6 litre ULF)				
Single Family	Per Participant	Water Savings (lpd)	Cost per litre/day	
Potential Number of Particpants	20,074			
Number of Participants	360	120		
Number of Toilets/Participant	2.3			
Rebate ($60 per toilet)	$ 138.00			$ 49,680.00
Marketing	$ 37.50			$ 13,500.00
Program Management	$ 28.73			$ 10,342.80
Project Management	$ 58.01			$ 20,883.60
Total per Participant	$ 262.24			
Total for Program	$ 94,406.40	43,200	$ 2.19	$ 94,406.40

Assumptions

- 24,300 single family homes are pre 1996
- 40% of those home have installed at least one ULF toilet
- 24,300 less 4,226 leaves a potential of 20,074 homes or participants
- there are 2.3 toilets per household
- there are 20,074 x 2.3 = 46,170 potential toilets
- at current rate of 2,000 replacements per year, it will take 23 years to replace all potential
- since 2,000 replacements per year / 2.3 toilets per house = 900 participants per year
- base on recent toilet events, we know that 40% of the purchases are ULF
- therefore, 40% of 900 total participants leaves 360 ULF participants
- (14 litres/flush existing – 6 litre/flush new) x 5.0 flushes/person x 3 pph = 120 lpd

Financial Screening of Shortlisted Measures

Water Efficient Dish Washing				
Single Family	Per Participant	Water Savings (lpd)	Cost per litre/day	
Potential Number of Participants	17,970			
Number of Participants	1,600	2		
Rebate ($60 per washer)	$ 60.00			$ 96,000.00
Marketing	$ 7.40			$ 11,840.00
Program Management	$ 10.00			$ 16,000.00
Project Management	$ 10.00			$ 16,000.00
Total per Participant	$ 87.40			
Total for Program	$ 139,840.00	2,976	$ 46.99	$ 139,840.00

Assumptions

- 24,300 single family homes are pre 1996
- 13% of those home do not have dishwashers and 15% of homes have Energy Star
- 24,300 less 13% and then 15% leaves potential of 17,970 homes or participants
- current average life per 09/2006 Appliance Magazine is 11 years
- at current rate of 1,600 replacements per year, it will take 11 years to replace all potential
- (23.7 litres/cycle existing – 17.5 litre/cycle new) x 0.1 cycles/person/day
  x 3 person/household = 2 lpd savings

Moving Forward and Next Steps

Strategy Development

- Screening of water saving measures
- Short list of water saving measures
- Determine achievable water savings
- Determine costs of water saving measures
- Develop delivery strategy
- Develop monitoring and evaluation strategy
- Develop maintenance plan
- Develop short term and long term plan

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Moving Forward and Next Steps

Public Consultation Program

• Incorporate feedback received from PAC and PIC breakout sessions in measures evaluations and study methodology

• 2nd Public Information Centre (PIC) in late October

• 3rd Public Advisory Committee

Anticipated Project Timelines

• Development of draft final report following completion of study and public consultation program – Nov. 2008

• Final Water Conservation and Efficiency Strategy Update Report brought before Guelph City Council for endorsement – Dec. 2008

RMSi Resource Management Strategies Inc.
Protecting resources for future generations

Minutes

City of Guelph

Water Conservation and Efficiency Strategy Update

Public Advisory Committee Meeting #2

Tuesday, September 30th 5 pm – 8pm
Guelph Waterworks – Waterworks Boardroom
29 Waterworks Place, Guelph

In Attendance:

Kathleen Farrelly	City Councillor – Ward 1
Rob Case	Guelph International Resource Centre
Patricia Quakenbush	Resident
Chantelle Leidl	University of Guelph
Mike Darmon	Guelph Green Plan Steering Committee
Lloyd Longfield	President Chamber of Commerce
Ludwig Batista	Sleeman's Brewing Company Ltd
Paul McLennan	Resident
James Etienne	Grand River Conservation Authority
Peter Lambe	Cargill Meat Solutions
Jeremy Shute	Resident

Project Consulting Team:

Michael Brooks	RMSi
Aileen Barclay	RMSi

City of Guelph Staff
Wayne Galliher, David Auliffe, Laurie Watson

Regrets:

Khosrow Farahbakhsh	Assistant Professor – School of Engineering – U of G
Alicia Piccoli	Fusion Homes – Director of Human Resources
Doug Kenny	Doug Kenny and Sons Mechanical
Anastasia Lintner	Council Wellington Water Watchers

1.0 Meet the Team – Introductions

2.0 Review of previous meeting minutes

- The previous minutes were accepted. No comments or questions.

3.0 Public Information Centre – A. Barclay

- Public Information Centre (held August 27/08) - Lower than expected numbers (6 non-PAC residents) due to the competing electoral debate. Those that did attend provided excellent comments and feedback. Summary of comments/discussions:

    - Youth education is important
    - Retrofits of older buildings and condominiums/apartments
    - Consider individual meters for condominiums and apartments
    - Rewards for those already conserving water
    - Improvements to infrastructure; leaks, pressure, upgrades

Questions: Can we look at the data to see any trends of long term residents as compared to recent residents Answer: No, that data is not available.

4.0 Update on Water/Wastewater Rate Review – W. Galliher

- ICI water consumers billed monthly and residential water consumers are billed bi-monthly. To revise the billing period for residential users to monthly reading/billing Guelph home owners would be provided a constant conservation message and an opportunity to see their water use under a smaller time frame. This would greatly assist in instances where homeowners may have an undisclosed leak within their home and do not discover the leak until they receive a large water bill.
- Current alternatives of the rate review include volumetric vs. fixed cost allocation, seasonal water rates, premium based rates for peak demand periods, and inclining use based rates structures.
- Cost vs. benefit analysis of rate alternatives will be brought to the committee at the next meeting.
- In Belfast, Ireland, they don't bill for water, it is built into property taxes. Municipality is attempting to introduce separate water charges. This is not being well received by residents.

5.0 Revision to Potential Water Savings Analysis – M. Brooks

- A list of all potential water saving alternatives was presented. It was suggested that composting toilets be added. All potential alternatives have gone through screening that includes; technical feasibility, potential

feasibility, achievable feasibility, social impact and environmental impact. A short list of measures has been developed that are currently going through a financial screening to determine the cost effectiveness of the measures.

- Wayne noted that the public input can play a factor into this screening, even if something fails, eg. rain barrels, it can still be included if there is public demand.
- Sectors included in the study: single family residential, multifamily residential, residential new developments, and industrial, commercial, institutional.

6.0 Water Efficiency Alternatives – Results of Screening – M. Brooks

- The items that passed to short list were: Ultra low flush toilets, high efficiency toilets, dual flush toilets, low flow showerheads and faucet aerators, water efficient dishwashers, clothes washers, softeners, humidifiers, leakage repair, grey water reuse, floor drain primer water, rain water harvesting, water efficient landscaping, lawn water gauges and timers, swimming pool management and rain barrels. These currently going through the financial screening/feasibility.

- It was noted that the building code has required floor drain primers since 1985, although there are acceptable alternatives to using potable. Although the common method was to use water for the primer from a tap it was though that most houses are using other sources of water such as air conditioning condensate and dehumidifier water. This would be different in industrial settings where drains still use potable water to prime.

Question – Have we used a set of standards to screen these measures? Answer: Yes, for some, but others are more subjective.

Question: – Why did the rain water harvesting need to but “squeezed” through the screening. Answer: Although the building codes allows for rain water harvesting, the water stored can only be used for landscape irrigation and flushing toilets. Rain harvesting is still in its pilot research stage and is not mainstream in the market. This may change with technology and the rising cost of water.

Question: Do technologies that keep hot water “hot” count as a water efficiency measure? This would apply to instant hot water devices and piping insulations. Answer: The technology is there, but they are very expensive. Field studies have been done in Waterloo and York to measure the time it takes to get the hot water is around less than 15 seconds, so not much of a water use. Tank-less water heaters – can take longer than when we have a tank. In addition, there is a concern that when there is low flow required for instance, washing hands, the tankless heater will not ignite to heat the water.

Question: Can the PAC have access to the rationale used to get to this short list? Answer: Yes, Michael to distribute.

Question: This is a 20 year program – those technologies that are leading edge today may be out dated in 20 years. How do we make a plan that can adapt to new changes and technologies down the road? Answer: This plan will give us the ability to review and adapt every 5 years minimum. Innovation is a big part of the report. Provide the framework for future analysis and application of changes in water efficiency. The government is considering banning 13L toilets from sale. This makes incentives for 6L toilets redundant, so there would be a shift to dual and high efficiency toilets.

- At last PAC meeting it was suggested that we should consider going even lower with our potential residential per person per day consumption. Incorporating the suggestions from the last PAC meeting the "ideal" target per capita has been revised from 170 lcd. Currently Guelph is at 232 lcd. If we bring in grey water reuse we can have a lower potential of 153 lcd. This is assuming that all the political will and a substantial budget is in place and approximately 50% of all homes retrofit to grey water reuse. By incorporating both grey water reuse and rain water harvesting, the residential consumption could theoretically be brought down to 139 lcpd.

Question: How do we still get European countries at 150 lcd? Answer: The UK doesn't have the "other" water use which accounts for 11%, as they don't have water softeners. The UK has not done the same analyses as we have done in North America. It may be because they are saving water due to the cost of water and energy. They do not have water efficiency attitudes, but they do have some focus on energy efficiency and greenhouse gas emissions reductions.

Question: There are a lot of sump pumps in basements, how often do they run? Is there an opportunity to use this sump pump for reuse? Answer: There is a restaurant in Guelph being built that has a sump pump running constantly. They are considering reuse, but it is quite costly.

Question: What about the water in the "other" section, like water from water softeners? Can it be used for grey water? Answer: It is something to perhaps look at but the high sodium content would be a consideration.

Question: Is the grey water just for onsite with private homes? Answer: The "purple pipe" is an option for the systems to redirect water from the watershed. We are just looking at central home based systems at this point.

Question: If we look at long term reductions how does that effect the population growth and targets? How can this group's study impact the future requirements for growth? Answer: This study is intended to assist in answering this. Looking at water demand forecasts, current use and reductions. The current breakdown is 52% residential and 48% ICI for water use. U of G is counted as institutional because they have a bulk meter. Interesting note that peak demand day this year was frosh week.

Question: Infrastructure – Guelph is in bad shape, like other cities. When do we hope to have that rectified? Is it possible? Fixing leaks and rehabilitating the system would provide huge water savings. Answer: Municipalities are doing public sector based modeling to account for assets, fiscal life and replacements. This will identify what needs to be replaced, when and how. This will be reported on in 2009. It will tie into the City's financial forecasting.

Question: What is the "other" listed in the water balance? It stays the same through the various scenarios? Answer: The "other includes water softeners and other uses that can't be identified. Water efficient water softeners helped to bring down the "other" category from 22.7 lcpd to 17 lcpd. New salt free water softener with nano-technology reorganizes Calcium molecules so they don't bind. No water is used. There is little information available on this product. This reinforces the need to have a plan that can adapt to new technology. Canadian Tire sells these devices. Similar to the magnetic technology they have been around for a long time with limited market penetration. This technology is quite common in the industrial sector being used on cooling towers.

Comment: Removing outdoor water use is not really applicable as there are some outdoor water uses that cannot be met by rain water harvesting.

Question: What are the costs for doing grey water reuse?
Answer: Financial feasibility has yet to be done.

Question: Can we look at new homes – like making 100% of new homes fitted with grey water and rain water harvesting? Answer: The financial screening will determine what is feasible for new homes/development and old home retrofits.

7.0 Examples of Financial Screening of Alternatives – M. Brooks

- A financial review and screening for feasibility of water efficiency measures was presented.

Question: How do we compare this to the cost for increased capacity through new infrastructure? Answer: We will be identifying the cost for increased capacity and compare to the cost for water efficiency.

Question: How do we capture the cost/savings for public education programs? Answer: Some organizations have attempted to quantify the savings attributed to education but it is quite the challenge. We are just starting to look at this in Ontario. There is definitely savings, but hard to quantify. Smart meters will provide a great tool for municipalities to start measuring the impact of public education.

- Guelph is a very unique city. Very competitive, even within the wards. It may work to have a competition with in wards for water efficiency to get people to be more water efficient.

8.0 Water Conservation Innovation – Incorporation of Rain Water Harvesting and Grey Water Reuse in the Strategy – Roundtable Feedback Session

- When the financial screening is completed for rain water harvesting and grey water will probably not pass. How do we include these technologies into the strategy?

- Every new home should be as efficient as possible. We need to make sure that all new homes in the system have a cistern for rain water harvesting and grey water. New homes need a lot of water to get the landscape established. New homes have "options" for green fixtures. We need to mandate the most efficient technologies into our new developments. If Guelph is going to make the commitment, this is where to start.

- Perhaps the City could use the PAC members as a pilot study by installing smart meters and water efficient technologies in their homes. Set targets for the group and provide alternatives and measure results.

Question: Who would install these meters? Answer: There are other meters, data loggers, which can do the same function and are just added onto the existing meter.

- No utilities are offering rebates for dishwasher replacement, but there are some who are offering incentives for people without them to buy automatic dishwashers as they use less water than hand washing. Also saves energy.

- Only one type of grey water units available and only two rain water units. The City needs to determine if we are charging for reduced sewage. Maybe too early to launch mandatory rain water harvesting and grey water fits to new homes, but we can ramp up for the future when it's more available in the market, like building grey water ready homes. Encourage innovation without locking in any one technology or system.

- Develop a soil conservation by-law to create a water efficient landscape that won't need a lot of water to establish.

- Guelph's water use has stayed the same over 5 years, despite population growth. As we grow, how can we continue to keep water use from increasing? Guelph has one of the lowest water uses per capita when compared to other Ontario cities.

Question: With these technologies in mind with new development, what tools do we have to create a water budget per house? If that budget is met, then they are approved for development. What tools or framework, development approvals to heighten those standards on a local level? California has a community with a water budget monitored by the ratepayers. When the budget is exceeded, the ratepayers approach the "offenders" and find ways to bring their water use back down.

- One suggestion to promote water efficiency in new homes is that any developer exceeding environmental standards gets bumped to first priority for approvals. Right now developers are almost penalized for new technologies as they take forever to get passed. Or, if they get their use per house reduced they get approval for more houses.

- Escalating water rate based on water use.

- Having dual plumbing would allow for future adaptations, either individual or water systems, to grey water reuse. Using the purple pipe as a standard. There may be opportunities for additions to infrastructure and repairs to add purple pipes for future grey water reuse for water supply systems.

- If it becomes more commonplace, it may make it easier for high level legislations changes.

- There are more opportunities for ICI grey water reuse as well. I.e. Delta Hotel in Guelph. Most may not even know how advanced its system is.

- Could be opportunities for community systems for grey water reuse for irrigation.

Question: At what point do you decide if your meter is oversized if you reduce your water use? Answer: There are standards for residential. ICI is dependent on water use. Generally speaking it's more on the small size than oversized. The fixed charge is based on meter sized.

Question: Is there incentive to get less fixed charges if they drop water use enough to move to a smaller meter? Answer: If reduced significantly, the utility would want to change meter so they can effectively capture the water being used.

- We will need to revisit this topic in the next meeting to give everyone a chance to think about it. The study can also recommend more studies to further investigate this issue.

- What about a tour of the Delta Hotel and its system, or other leading edge systems? Are there ICI customers that have good demonstrations of what has been achieved in water conservation? E.g. Sleeman's Brewery. There is also a LEED home open for tours too. Guelph co-op housing has almost completed a demonstration retrofit. Wayne to examine the potential for a tour of these facilities.

9.0 Moving Forward and Next Steps – M. Brooks

The following task will be completed in the following months:

- Create short list
- Determine achievable savings
- Determine costs of savings
- Develop delivery strategy
- Establish monitoring and evaluation
- Maintenance programs
- Create long and short term plan

Public Consultation:
2nd PIC in late November
3rd PAC meeting afterwards

Anticipated project timelines: November 2008 draft report. With all the information, we may decide to host a Council workshop first to provide preliminary information to them prior to the actual presentation at Council. May push deadline to January/February 09.

ADJOURNED at 8pm

MEETING AGENDA

MEETING **Water Conservation and Efficiency Strategy Update Public Advisory Committee Meeting**

DATE November 26, 2008

LOCATION Guelph Waterworks (29 Waterworks Place, Guelph ON) – Waterworks Boardroom

TIME 5:00 p.m.

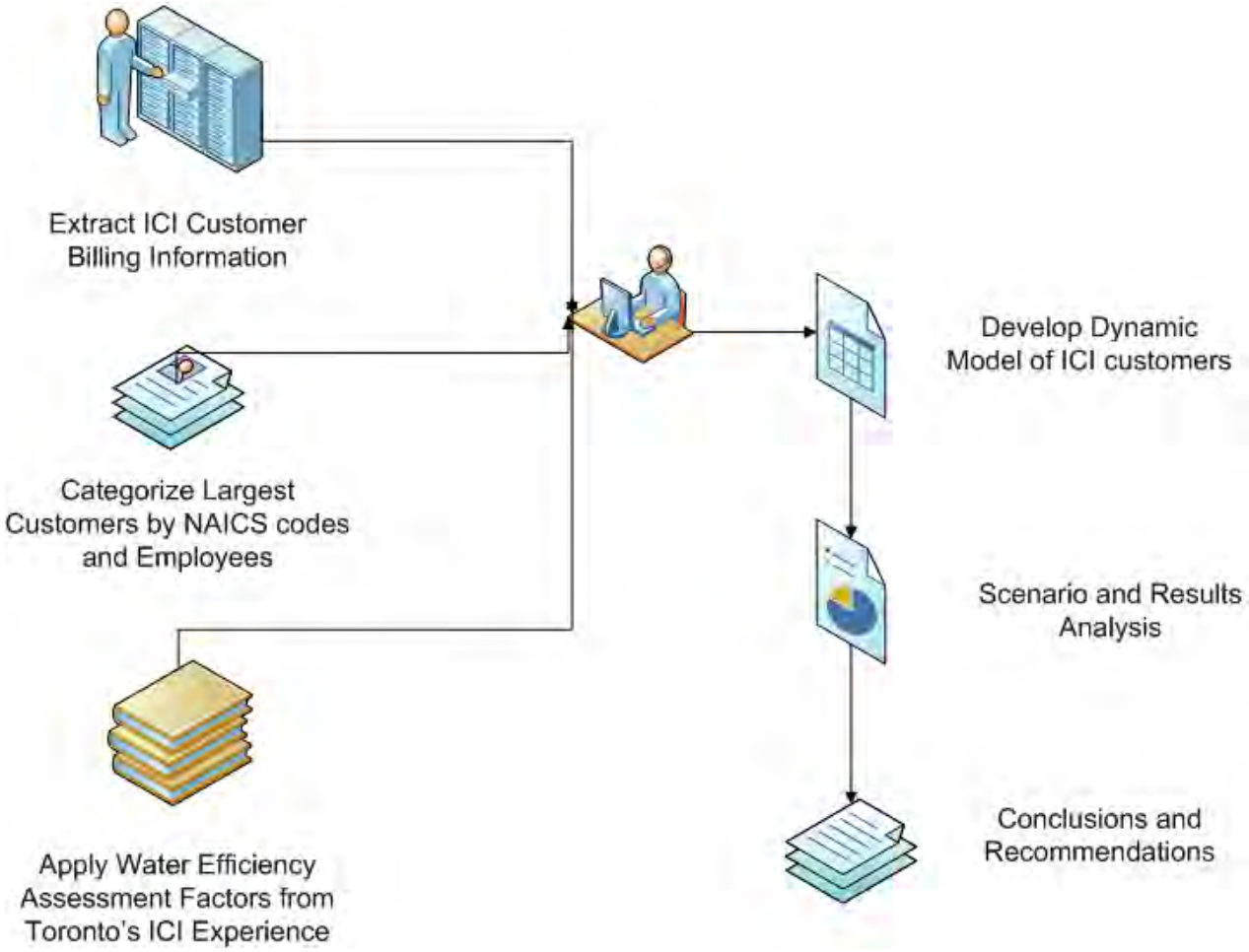
CHAIR Michael Brooks, Resource Management Strategies Inc.

AGENDA ITEMS

ITEM #	DESCRIPTION
1	**5:00** Welcome - M. Brooks
2	Public Information Centre # 2 Overview and Public Feedback - M Brooks
3	Evaluation of WC Measures – Peak Day vs. Avg. Day Savings – M Brooks
4	BREAK
5	Introduction to Water Conservation Rate Structures – W Galliher
6	Roundtable Feedback Session – All
7	Moving Forward and Next Steps – M. Brooks
8	Guelph Water Conservation and Efficiency Awards – W Galliher
9	**8:00** ADJOURN

Guelph Industrial, Commercial and Institutional Water Efficiency Analysis and Recommendations

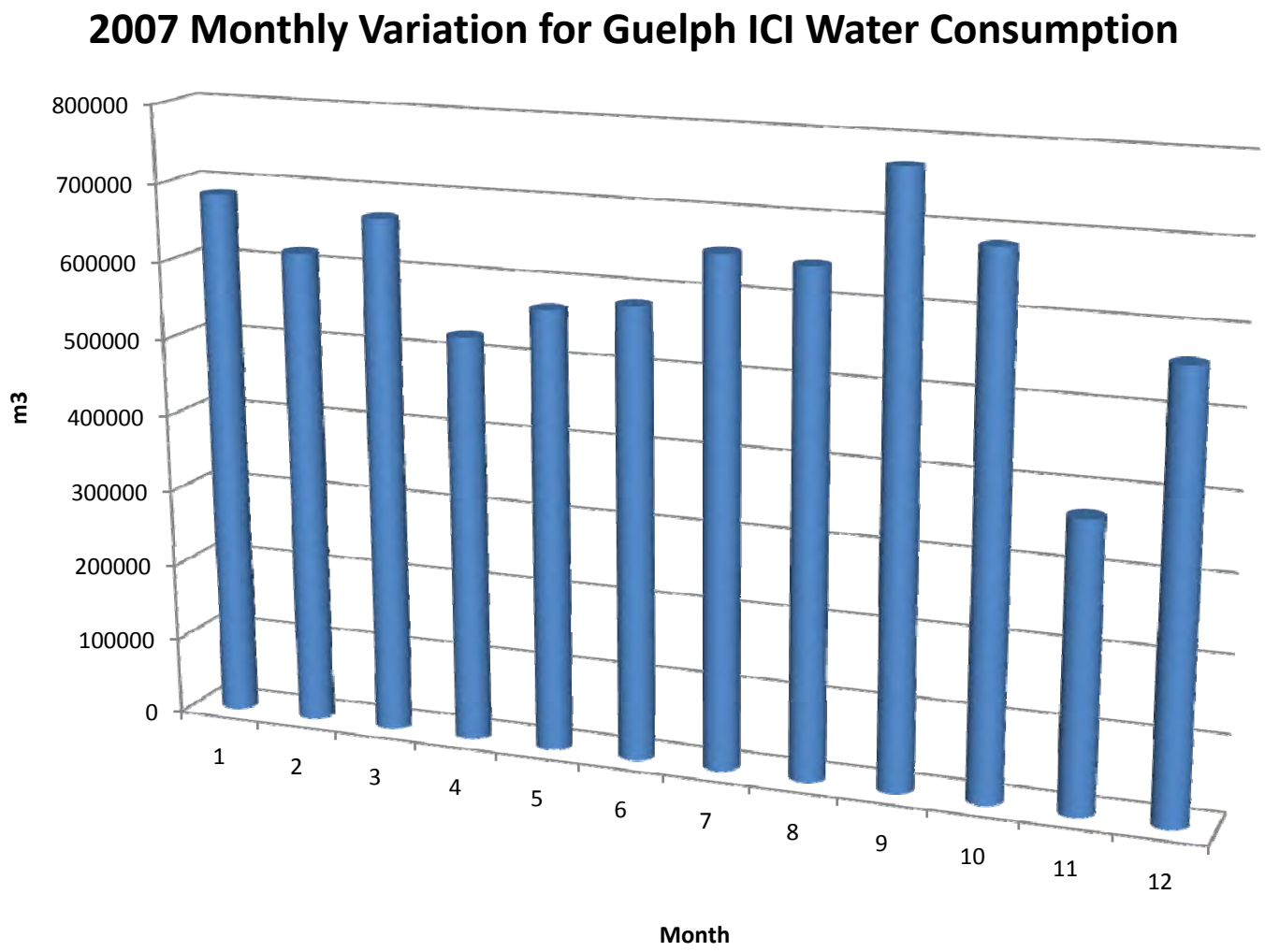
Approach


Extract ICI Customer Billing Information
Categorize Largest Customers by NAICS codes and Employees
Apply Water Efficiency Assessment Factors from Toronto's ICI Experience
Develop Dynamic Model of ICI customers
Scenario and Results Analysis
Conclusions and Recommendations

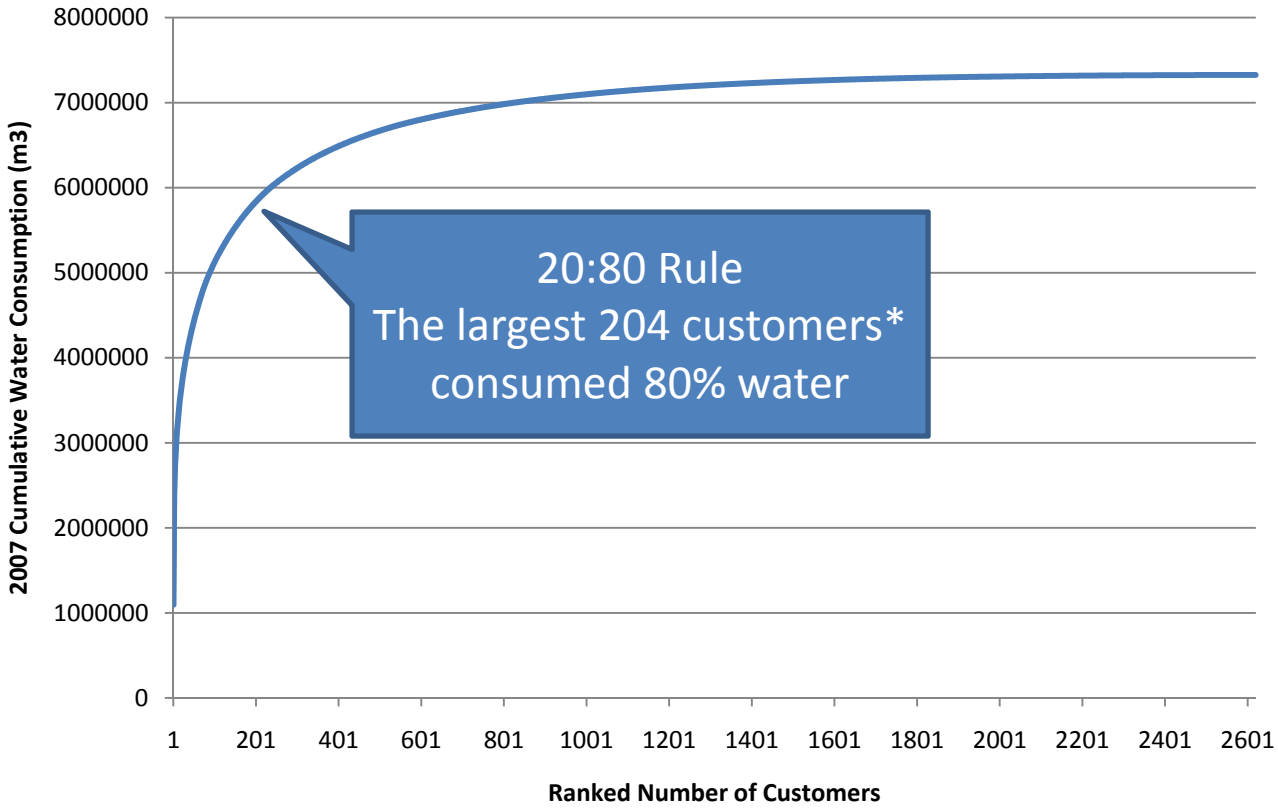
Data Observations

- **Customer Profile** (for largest 133 ICI establishments)
  - Customers used 4,766,000 m^3 of water in 2007.
  - ~ 29,300 people employed (Source: Guelph Chamber of Commerce)
  - Estimated ~20-50 employees per establishment where data missing
- **Water Use**
  - Process related use was 4,198,000 m^3 (cooling, washing, cleaning)
  - Estimated 208,000 m^3 used as raw material, mostly food and beverage
  - Approximately 360,000 m^3 domestic water use by employees (~2,880 toilets, 570 urinals, 1460 hand washing faucets, and 570 showerheads)

Absence of Seasonal Consumption Pattern

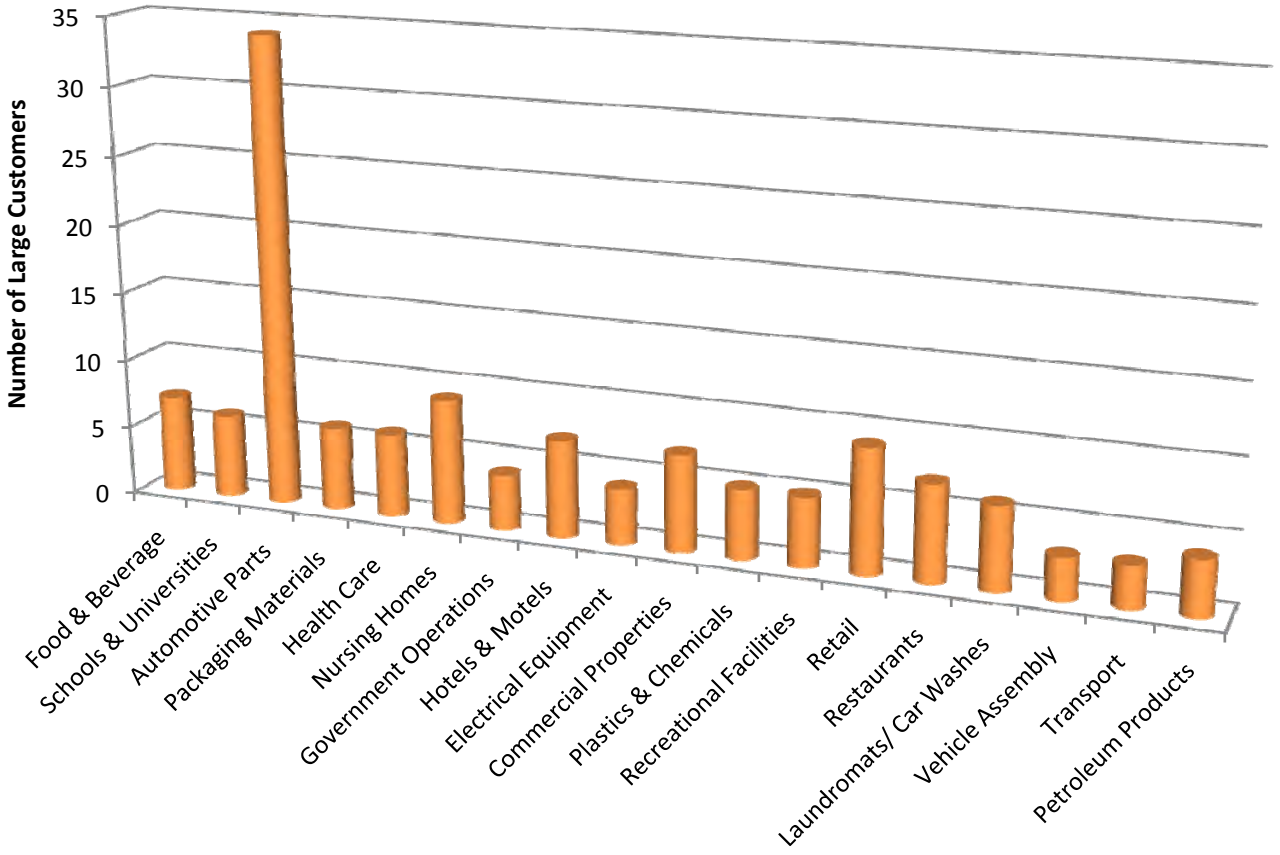


2,620 ICI Customers Consumed 7.33 million m^3 of Water in 2007



* Includes 133 ICI and 71 multiresidential customers

Customer Segmentation



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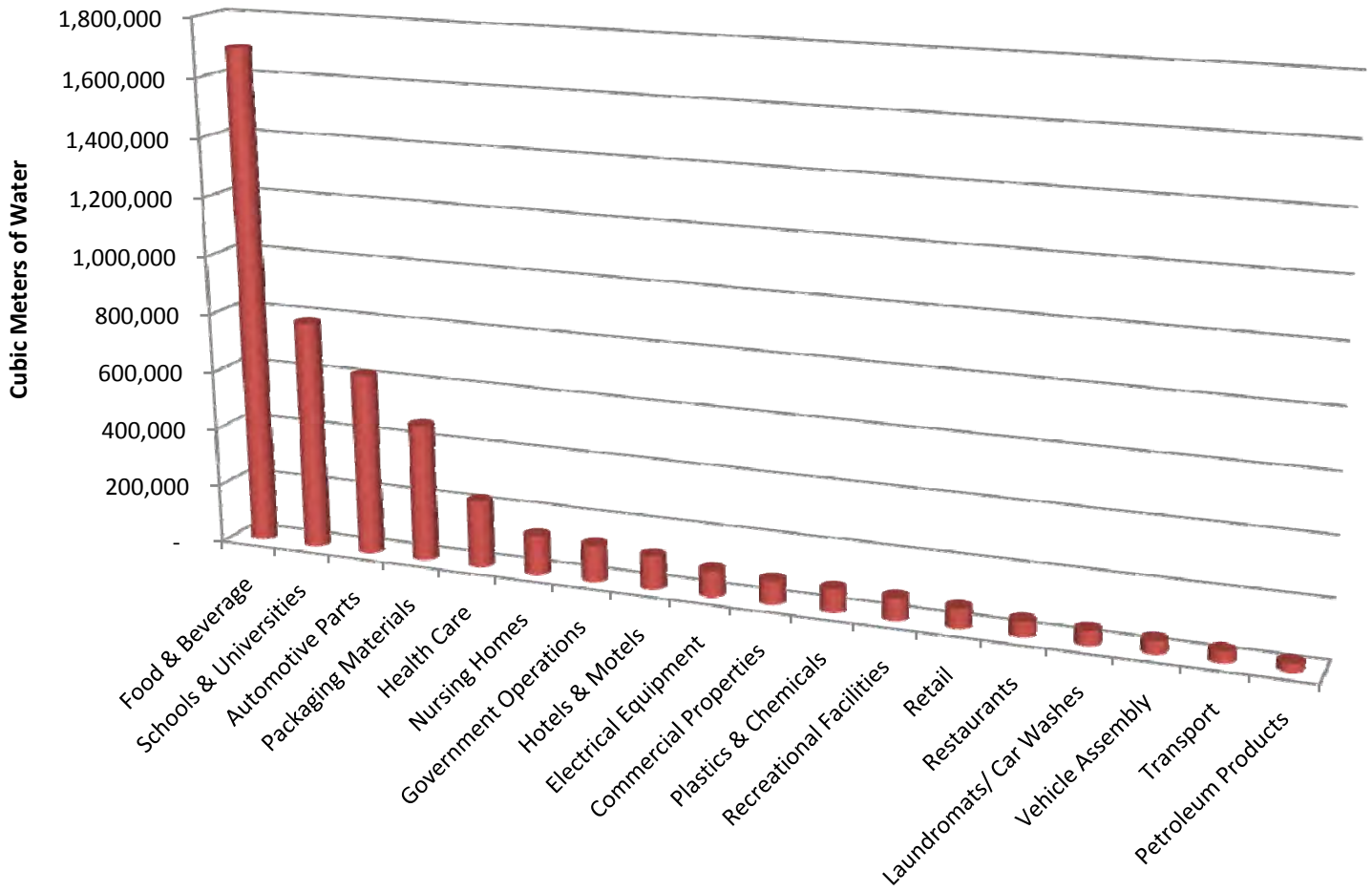
Water Consumption by Sector



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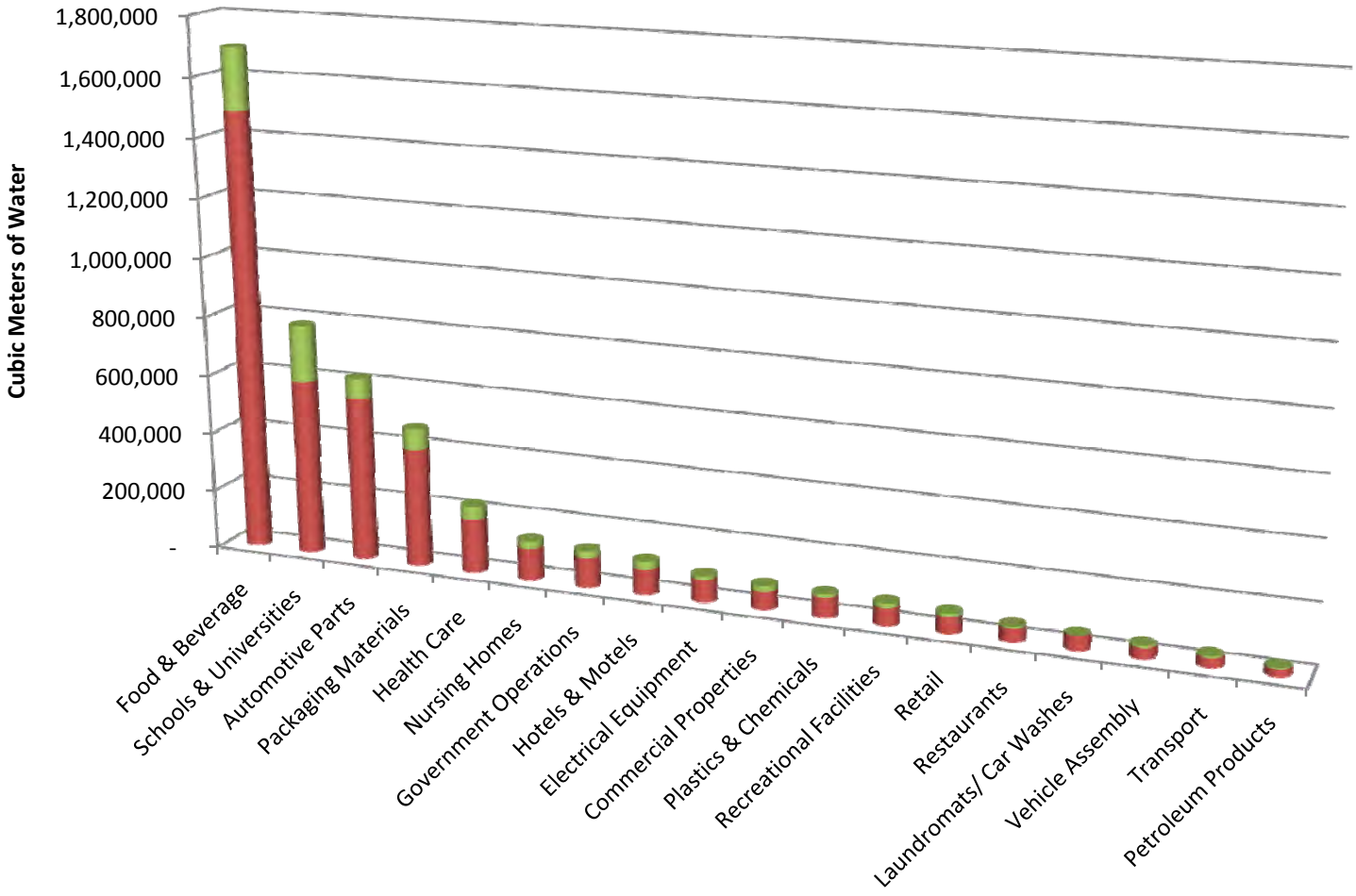
Water Efficiency Potential by Sector



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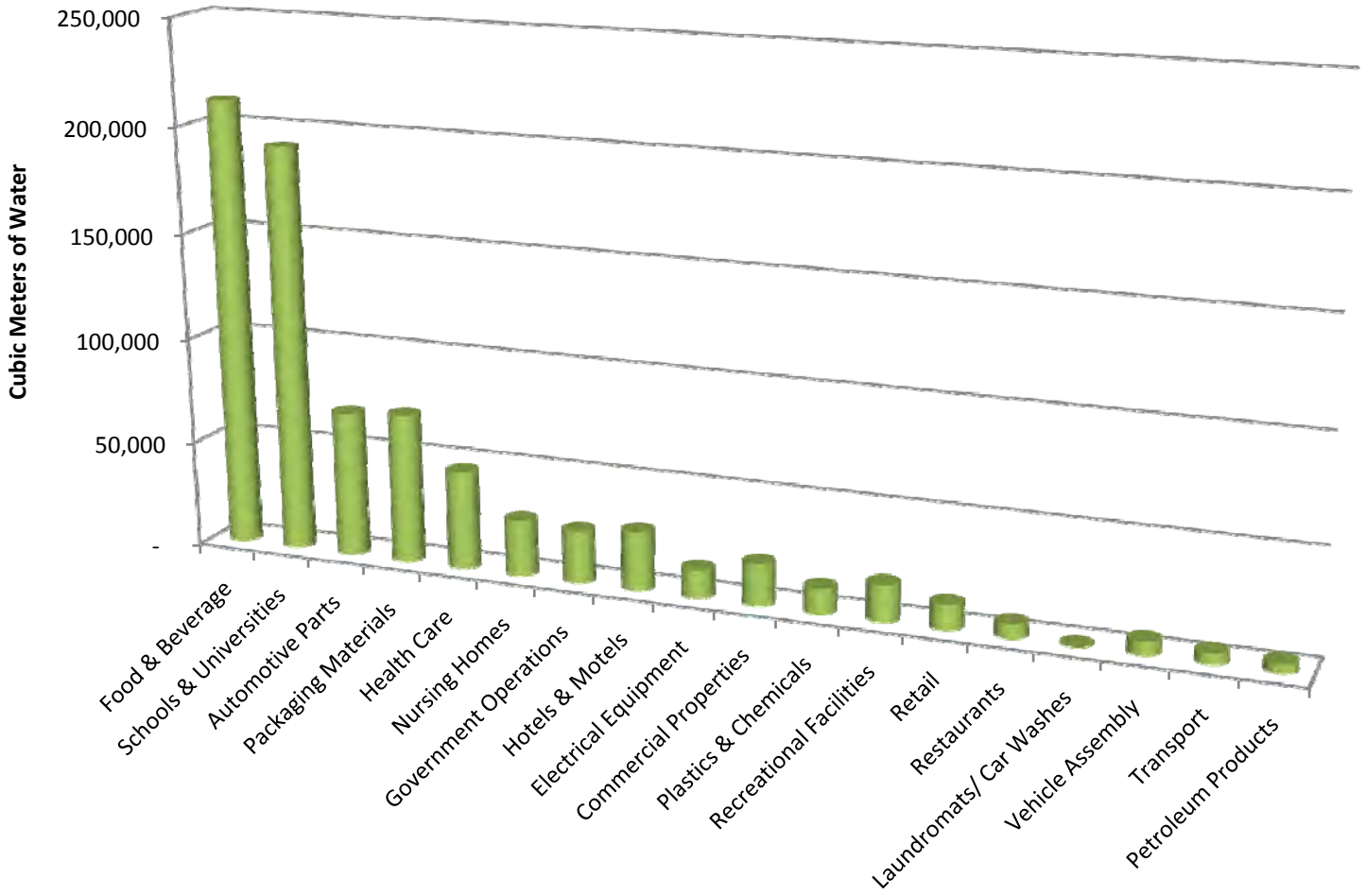
Sector Water Reduction Forecast



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Program Options

- Water Efficiency Potential
  - Estimated that 16% of domestic water as well as 17 % of process water can be conserved economically
  - Annual reduction of 764,000 m^3 assuming 100% implementation (to 4,002,000 m^3)
  - Implementation expected to require $7.8 million for process and domestic fixture capital upgrades
  - Financial incentives of $2.0 million required to buy down project average payback to 2.5 years

Program Delivery Strategy/Tactics

- Customized Program for largest 133 customers
- Information Program for smaller customers
- Prescriptive incentives for domestic fixtures
- Leverage program delivery and incentives with/through:
  - City of Guelph Green Initiative
  - Guelph Chamber of Commerce
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Guelph Industrial, Commercial and Institutional Water Efficiency Analysis and Recommendations

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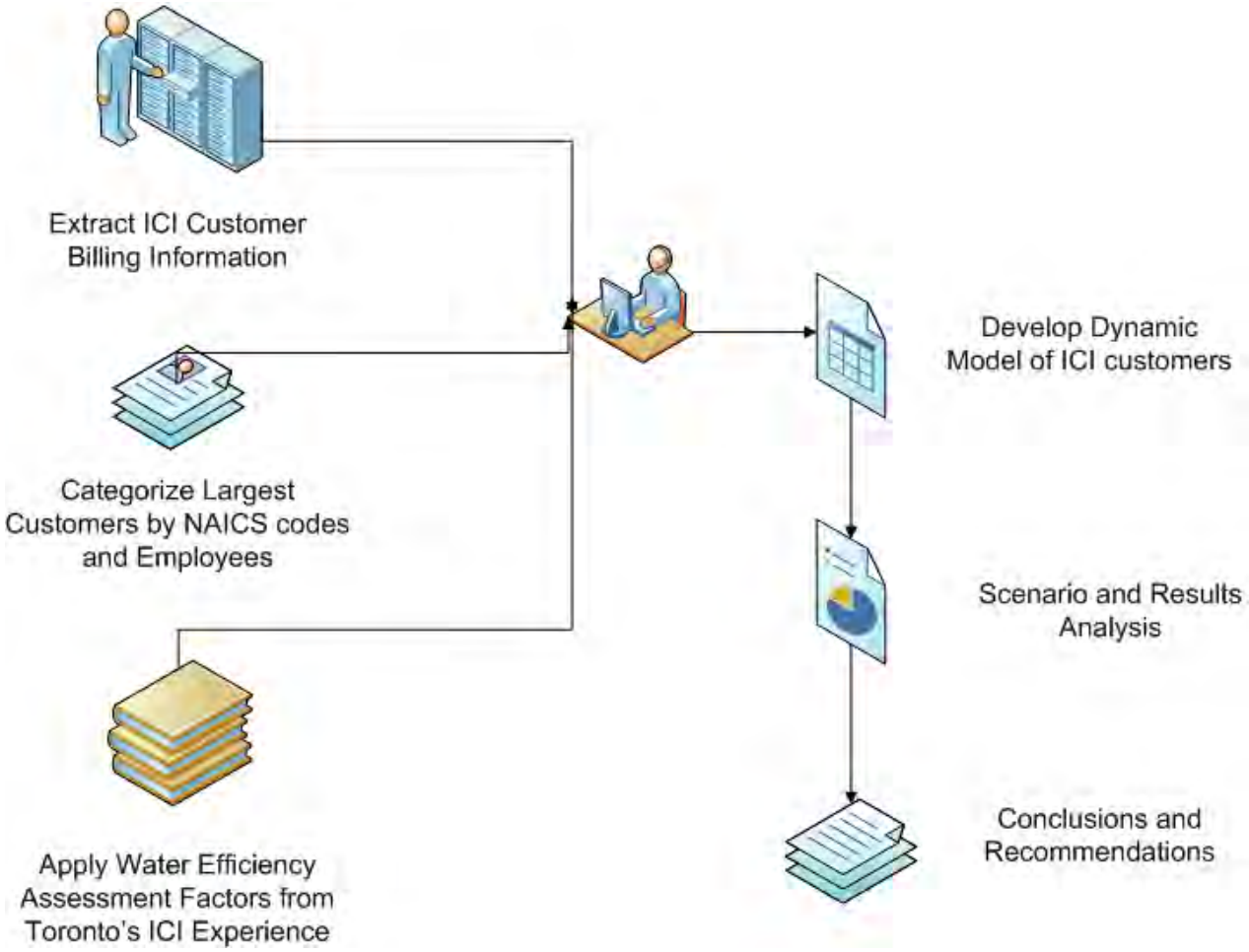
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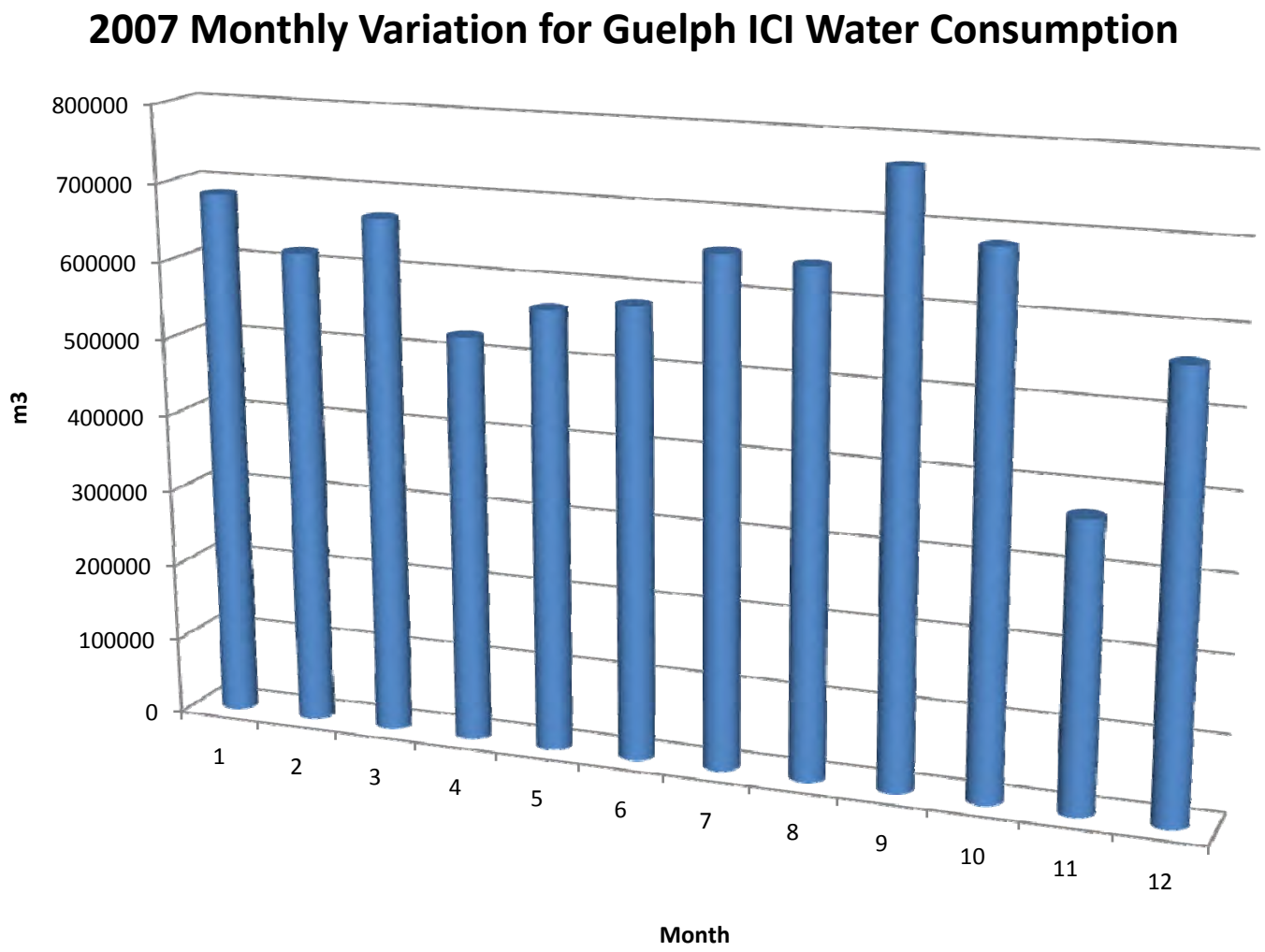

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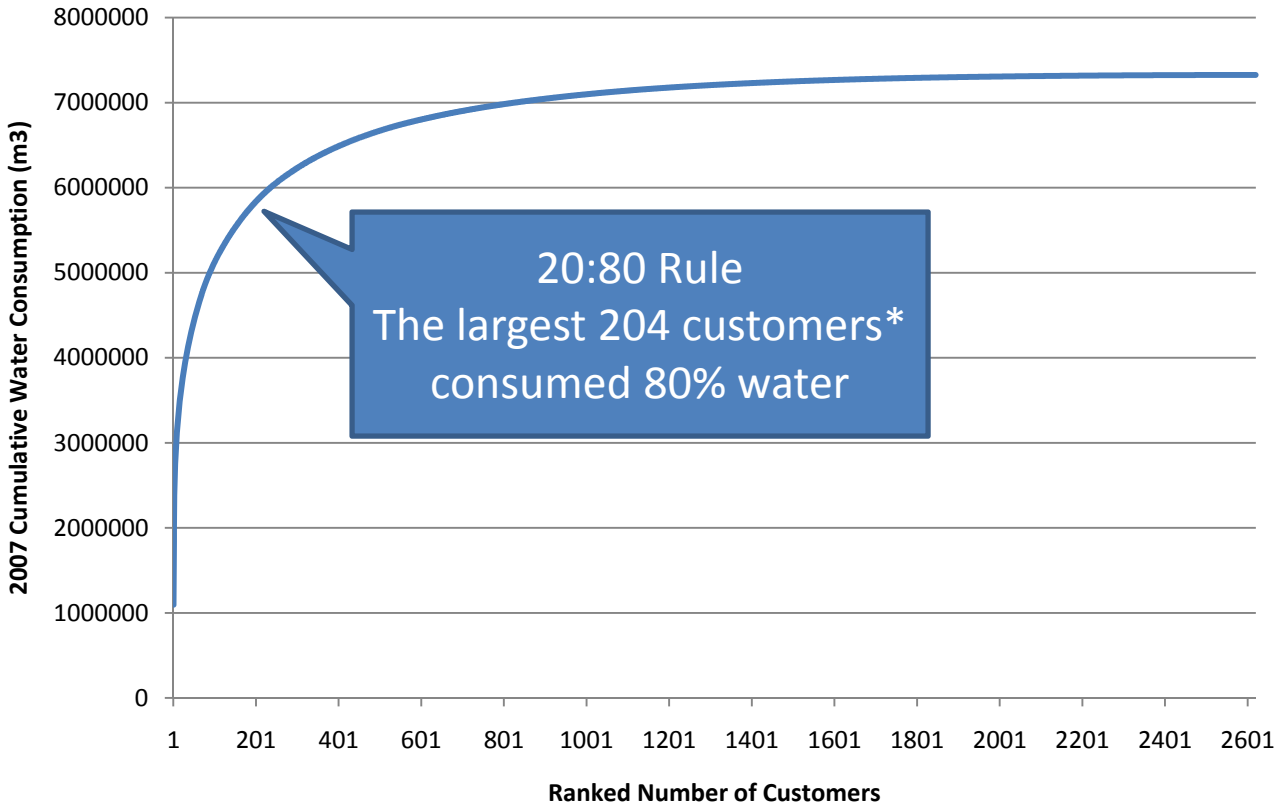

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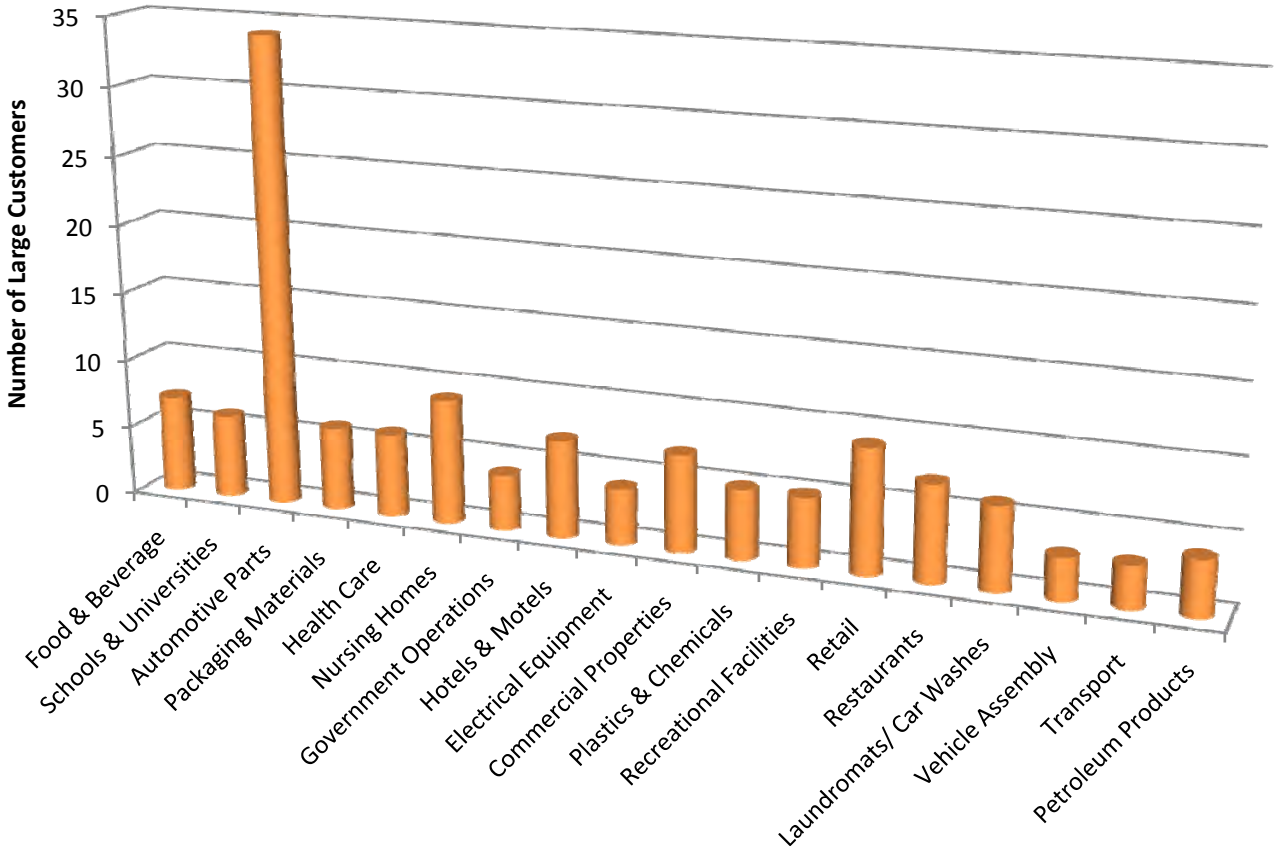

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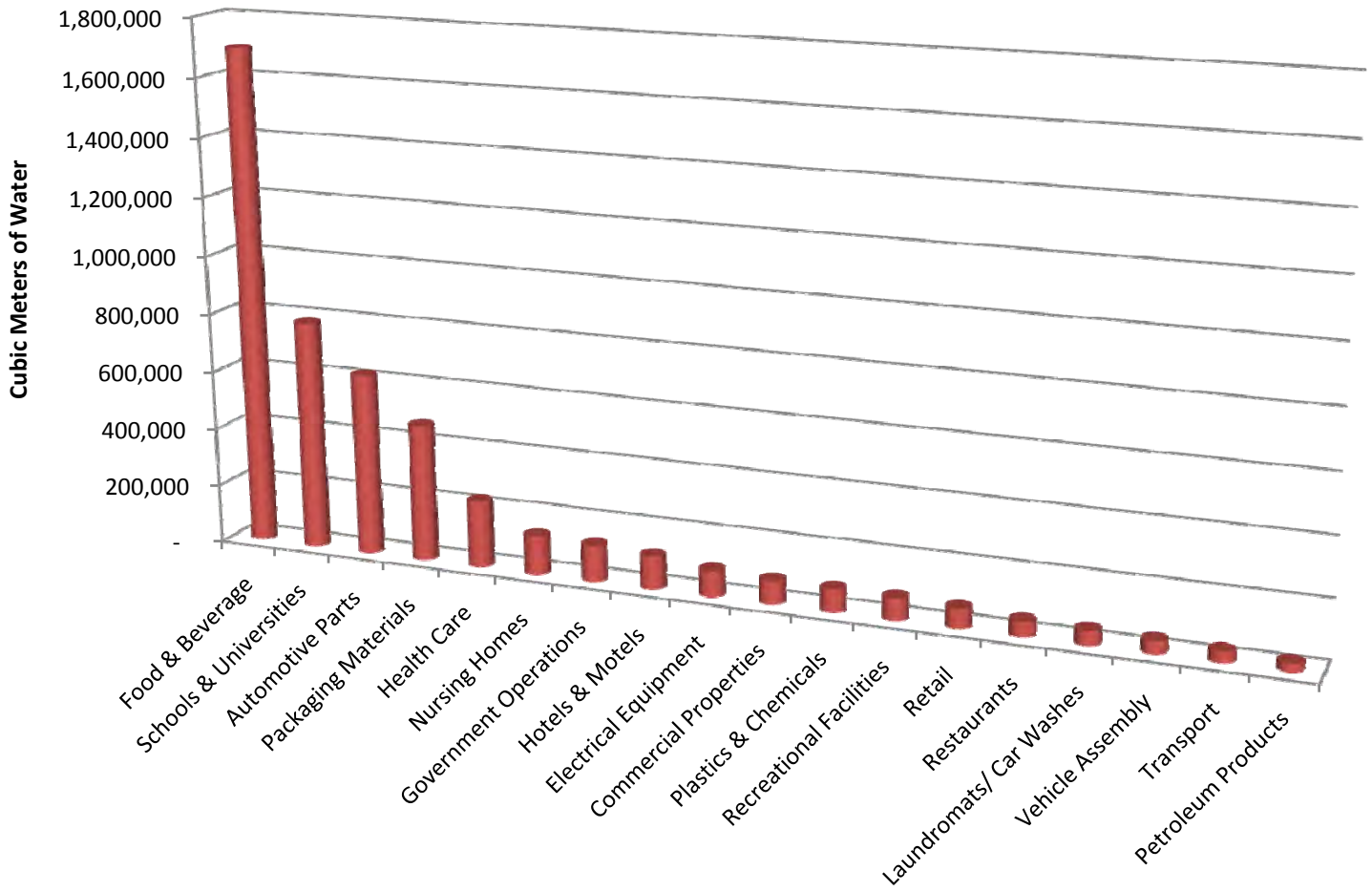

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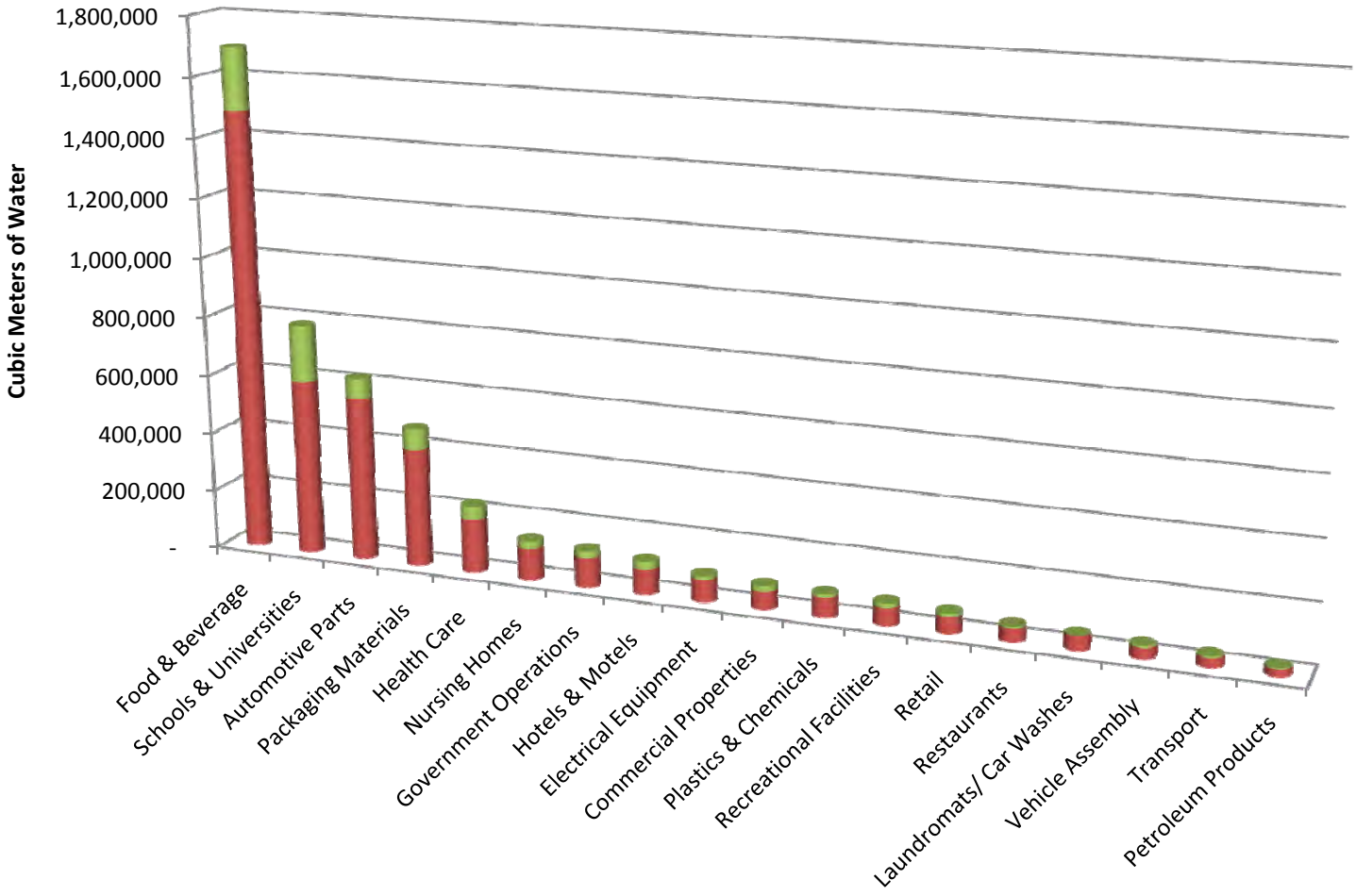
Water Efficiency Potential by Sector



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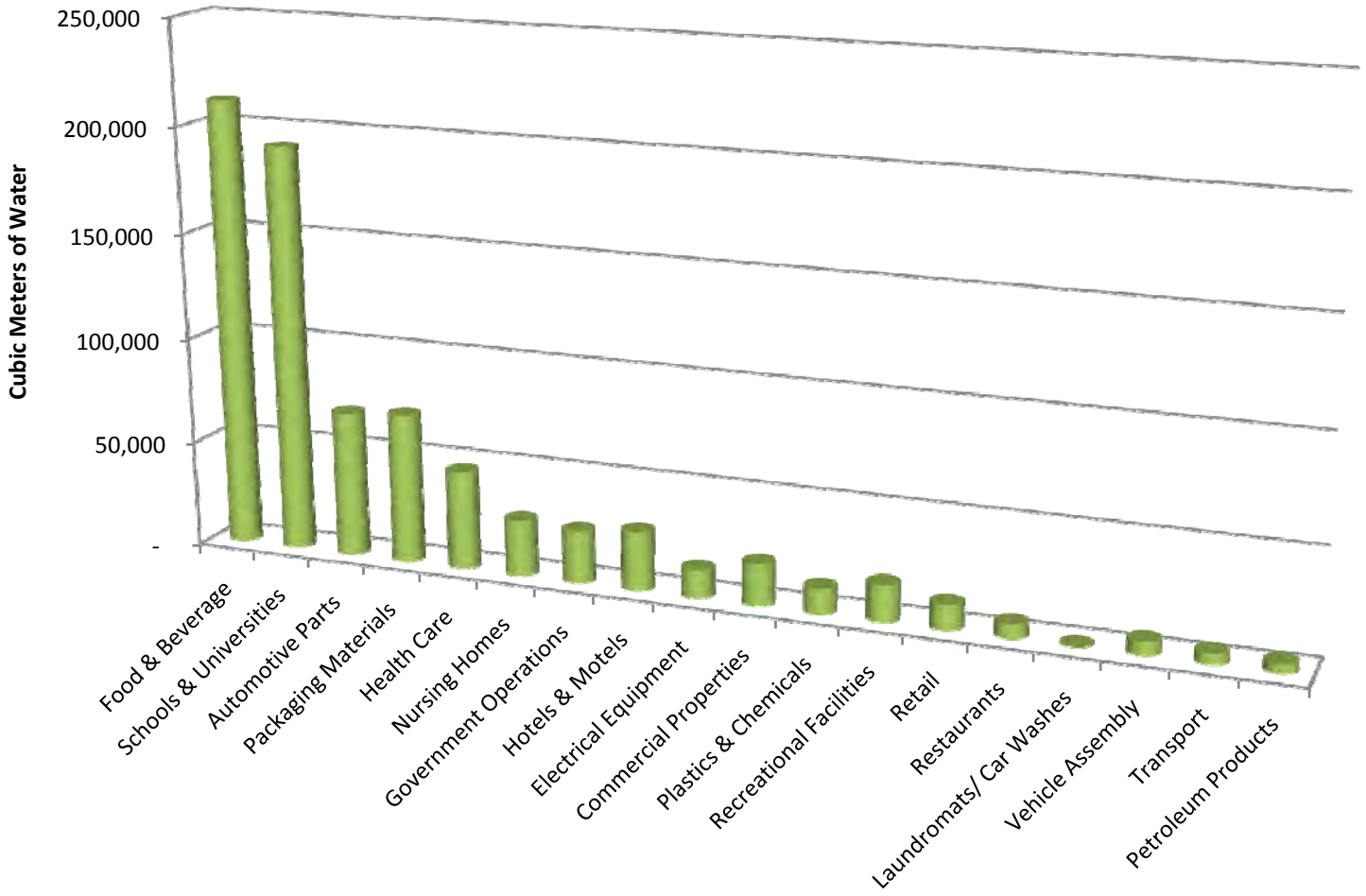

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Minutes

City of Guelph

Water Conservation and Efficiency Strategy Update

Public Advisory Committee Meeting #3

Wednesday, November 26th 5 pm – 8pm
Guelph Waterworks – Waterworks Boardroom
29 Waterworks Place, Guelph

In Attendance:

*Kathleen Farrelly	City Councillor – Ward 1
*Patricia Quakenbush	Resident
*Chantelle Leidl	University of Guelph
*Mike Darmon	Guelph Green Plan Steering Committee
*Lloyd Longfield	President Chamber of Commerce
*Ludwig Batista	Sleeman's Brewing Company Ltd
Paul McLennan	Resident
*James Etienne	Grand River Conservation Authority
*Peter Lambe	Cargill Meat Solutions
Jeremy Shute	Resident
Anastasia Lintner	Council Wellington Water Watchers
Doug Kenny	Doug Kenny and Sons Mechanical

Project Consulting Team

Michael Brooks	RMSi
Kingsley Blease	RMSi
Aileen Barclay	RMSi

City of Guelph Staff

Wayne Galliher
David Auliffe

Regrets

Khosrow Farahbakhsh	Assistant Professor – School of Engineering – U of G
Alicia Piccoli	Fusion Homes – Director of Human Resources
Rob Case	Guelph International Resource Centre

1.0 Welcome

2.0 Review Public Information Centre #2 – M. Brooks

- Public Information Centre (held November 20th/08) - Lower than expected numbers (~15 non-PAC residents). The attendees were asked about how to increases participation rates for the PIC's. Attendee stated that people are busy and have many different interests and its hard to attend all of the meetings. Those that did attend provided excellent comments and feedback.

3.0 Approach to ICI screening for Water Efficiency Measures

- A presentation on the Industrial, Commercial and Institution water efficiency potential was made.
- Data Observations: There are 2,620 ICI customers in Guelph, but only 133 customers consume 80% of water. This validates the 20:80 rule for ICI water consumption.
- The data was examined for any seasonal variances, none were found.
- Customer segmentation: Food and beverage, schools and universities and automotive parts were top three sectors for water use.
- Applied factors of water efficiency to each industry (based on the ICI data from the City of Toronto ICI program). Provided water use reductions forecast.
- Estimated 16% reduction of domestic water and 17% reduction of process water reductions could be achieved.
- Delivery strategy includes a customized program for top users, information program for small customers, prescriptive incentives for domestic fixtures and leverage programs in partnership with other organizations (e.g. Chamber of Commerce, Guelph Hydro, Union Energy, etc.).
- Comment: Another group is meeting about waste water planning; it would be a good tie in with the estimated water savings.

4.0 Evaluation of Water Conservation Measures – Peak Day vs. Avg. Day Savings – M. Brooks

- Review of average day demand, water use demand analysis, water balances, overall potential water savings, and screening of measures.
- In Durham, a study was completed on a "water efficient" new home development. Results indicated an average water consumption of 149 per person per average day. Note: There were no water softeners in this study.
- The overall potential water savings for Guelph was determined to be 27% assuming a 100% participation and a very large budget.
- Five sectors were considered for programming;
    - 1. Residential single family including detached, semi-detached, townhouse
    - 2. Residential multi-family including apartments and condominiums
    - 3. Residential new development

    - 4. Industrial, commercial, institutional
    - 5. Distribution, leakage reduction and pressure management
- The infrastructure cost for water supply in Guelph varies depending on the source of the supply. For financial screening purposes, both water supply and wastewater services infrastructure costs were used. In southern Ontario this combined costs ranges from $3.00 to $8.00 per average day litre of capacity. The wastewater master plan is pending and once completed will more up to date information. For this screening process, the combined cost used for water supply and wastewater was $4.00 per litre.
- Costs and savings are determined in terms of an annualized average day. Another approach is to look at summer day demand. By using this approach for those measures that are seasonal only, and therefore only affect summer day demand, the measures have a lower cost per litre saved as compared to an annualized average day approach. However it needs to be noted that the summer average day cost per litre can only be compared to the water supply costs since most of the summer water used does not utilize the wastewater water system. The average summer day approach did not provide any additional measures that passed the financial screening than the annualized average day analysis.
- Total estimated water savings over the 10 year capital plan period is 8.68 million litres of water saved per average day. The current estimate of electricity supply savings associated with the water savings is 3,166,967 KW-hrs per year which represents 2,394 tonnes of CO^2 savings.
- Presentation is available at:www.guelph.ca
- Question for the PAC: The savings include both demand and supply savings, how do we add this together to meet the target savings?
    - Get rid of the % savings and look at the added capacity, so savings are listed as how many new homes can be built through savings.
    - This is all demand management so it should all be included. Because the savings are to be attributed to average day, which is billable, we cannot merge both savings.
    - Present the demand side as a savings of lcpd, or how many more houses can be supplied with water. Change for water supply saved instead of water demand saved.
    - It is cautioned to present this as the growth potential as some people do not want to see more development. Need another way to present that does not equal increased development.
    - In York Region, it is presented as: “Enough water saved to supply a community of 80,000 homes”.
- Monitoring, evaluation and maintenance programs have been included to the strategy to sustain water savings.
- In the budget, there are allocations for public and youth education, but no savings can be attributed, so none are noted.

Question: Were the ICI processes included?
Answer: Yes, but there are numerous potential process changes, and these vary from company to company. As such an ICI audit and incentive mechanism is recommended.

Question: Does the formula for the water savings factor in quality (or just quantity)?
Answer: Just quantity, quality is extremely important and needs constant monitoring especially on the wastewater side for ICI customers.

Question: How are the rebates determined?
Answer: Based on existing successful municipal programs in southern Ontario. Rebate levels for newer technologies such as grey water and rain water harvesting have been estimated based on what would be necessary to incentive a household to participate.

Question: In the new housing markets, areas such as turf establishment are difficult due to poor conditions. Having a rain water system would prevent turf damage and potentially offset future replacement costs. Has this been factored in to the financial analysis?
Answer: No, this is not considered with this analysis, but instead there are incentives for things such as water efficient landscaping. It would be hard for Guelph to launch programs through this process that may overshadow successful existing programs, i.e. launching a large capacity cistern rain barrel program may overshadow GERC's existing program of recycled material rain barrels. This is just high level screening and the actual programming parameters still needs to be developed.

Question: Under the initiative District Metered Areas (DMA), is the cost for developing and monitoring only, or does it include the actual leak repair?
Answer: The costs include everything up to the leakage repair and monitoring afterward, not the actual leak. This is typically not included as there are many variables to estimating the cost of leak repair. There are already processes in place by Guelph to have crews ready to repair leaks. Including this into the budget would be a double cost for the municipality.

Questions: What are the sizes of the units for rain water harvesting that are costing $6,000?
Answer: This is not the cost of the rain harvesting system. This is the cost to the City to manage, implement and provide a rebate for rain water harvesting.

Question: The sensitivity analysis is complex as there are many factors that affect the financial screening. How do you decide to keep some and drop others, are there other screening methods that would change the analysis?
Answers: Currently we have use the $4.00 per litre cost as our limit for pass or fail, although as noted some measures have been included in the strategy even though they did not pass the financial screening. These were included due to other benefits that they provide that cannot be quantified financially. As existing products improve and if costs come down there is an opportunity to re-screen these products with the intent of including them in future programs.

Question: The incentives for the new development programs seem small. Is there a way to provide a more generous rebate to encourage more uptake, but still be financially feasible?
Answer: Development charges (D/C) are used to fund the rebates. Rebate level can be increased, but it would provide higher D/C's so the developers pay either way. The $10 rebate for low flow toilets in new developments doesn't seem like much, but the incremental cost between low flush and dual flush is not that much, so it still acts as an incentive.

Question: Do the estimated savings in the 10 year strategy include the erosion of savings due to products failing, etc.?
Answer: No they do not.

Question: Do we know how many toilets in Guelph still need replacing?
Answer: We have a good estimate based on the market research, participants to date with the existing program, and looking at vintages of homes. Any built after 1996 will have low flow toilets as per building code requirements.

5.0 Introduction to Water Conservation Rate Structures – W. Galliher

- Wayne provided some background information on water conservation rate structures. Presentation available at www.guelph.ca/
  Question: How will this information be combined with the estimated achievable targets? Such an exact methodology for water efficiency, but the conservation savings with rates changes are less predictable. How can you merge the two to estimate savings?
  Answer: The education component will be very important. The strategy will give us a lot of concrete numbers that can help us measure savings, but there will be grey areas that will be hard to quantify.

  Question: Do you know anything about infrastructure plans such as leakage repair?

Answer: Master servicing study builds long term repairs and third party asset review will also help identify future infrastructure repairs etc. The DMA work will also help to identify areas for repair. It is an integrated approach.

6.0 Roundtable Feedback Session

Question: What is expected from the PAC at this point? Will this be presented to Council providing recommendations?
Answer: This will be presented with several options, and is presented as a guide with the option to be as aggressive as required. The input from the PAC has helped shape the proposed strategy to where it is today. Without that input the strategy may have lacked many of the local initiatives.

Comment: There is a great benefit to reallocating water to more efficient uses. There is a lot of value to grey and rain water reuse to the homeowner, including greener landscape (without use of potable water), better quality of life, etc. We need to push this, especially with the home builders. There is a lot of potential, even if not directly associated with the amount of water saved.

There 20 demonstration sites per year recommended for grey water and 20 for rain water harvesting. This can be used to set up annual projects, but the momentum will hopefully take off on its own. We need the flexibility to consider future technologies. The strategy update does state the municipality should continue to build on the technology and support new initiatives. How this is conducted depends on the municipality.

Question: Is there a way to work back from those initiatives that didn't make the cut to see what works when the numbers are lowered, to make them fit?
Answer: There are some that could be done, but this would affect the achievable outcomes. Most still would not work. However, if research shows that savings can be higher than estimated, things may then work, e.g. Water softener study being conducted with Guelph and Waterloo.

Question: What if we could use rain water for the City for water re-use? The cost analysis would be different for ICI.
Answer: These are all great ideas, but they are implementation ideas. Very much like a Water Supply Master Plan, the Water Conservation and Efficiency Strategy does specifically provide a program design or delivery plan. It provides the recommended preferred measures that should be considered for implementation.

Question: Would communal rain water systems be allowed under the plumbing code?
Answer: Yes, this is feasible.

7.0 Moving forward and next steps – M. Brooks

- Develop short and long term plan.
- Public consultation of study recommendations.
- PAC scheduled for January
- PIC scheduled for late January
- Draft Strategy – Dec 2008
- Update to Council Feb 25th, 2008
- Final report to Council March 2008

8.0 Guelph Water Conservation and Efficiency Awards – W. Galliher

- First year for the awards. Three in total: Residential, ICI and community education awards.
- Need help for judging the awards –contact Wayne if interested.

ADJOURNED at 8pm

MEETING AGENDA

MEETING **Water Conservation and Efficiency Strategy Update Public Advisory Committee Meeting**

DATE January 14, 2009

LOCATION Guelph Waterworks (29 Waterworks Place, Guelph ON) – Waterworks Boardroom

TIME 5:00 p.m.

CHAIR Michael Brooks, Resource Management Strategies Inc.

AGENDA ITEMS

ITEM #	DESCRIPTION
1	**5:00** Welcome - M. Brooks
2	Public Information Centre # 2 Overview and Public Feedback - M Brooks
3	Water Conservation and Efficiency Strategy Update Draft Report – Report Recommendations Presentation – M Brooks
4	BREAK
5	Water Conservation Rate Structures Presentation – Jim Bruzzese – BMA Management
6	Roundtable Feedback Session – All
7	Moving Forward and Next Steps – M. Brooks
8	**8:00** ADJOURN

WATER CONSERVATION AND EFFICIENCY STRATEGY UPDATE

Public Advisory Committee #4

Wednesday, January 14th 2009

RMSi Resource Management Strategies Inc.
Protecting resources for future generations

Key Findings

- Gross water demand has declined 17% from 444 lcpd in 1999 to 370 lcpd in 2007
- City's population increased by 14.6% from 101,857 in 1999 to 116,766 in 2007
- Residential single family water demand was 230 lcpd in 2007, significantly lower than the national average of 335 lcpd
- Residential multi family water demand was 153 lcpd

Key Findings, cont.

- Only 5% of 133 industrial, commercial and institutional customers consume 80% of the overall ICI water demand
- The Infrastructure Leakage Index (ILI) was 2.94, placing the City in a Performance Category B with the potential for some improvement
- The City has one of the lowest peaking factors in Ontario at approximately 1.30
- The City is currently saving 1,123,000 litres per average day due to its conservation initatives which commenced in 2003

Recommended Water Conservation and Efficiency Strategy Components

Single Family Indoor	Measure	Annual Number of Rebates or Participants
Rebates	ULF 6 Litre Flush ($60)	828
Rebates	HET Toilets ($75)	311
Rebates	Dual Flush Toilets ($75)	932
Rebates	Clothes Washer ($80)	1,090
Rebates	Humidifier ($75)	928
Rebates	Floor Drain ($60)	1,000
Rebates	Grey Water ($1,000)	10
Rebates	Rain Water ($2,000)	10
Installation	Low Flow Showerheads	693
Installation	Kitchen Faucets	58
Installation	Leakage Repair	11

Single Family Outdoor	Measure	Annual Number of Rebates or Participants
Rebates	Watering Timers ($20)	500
Other	W.E. Landscape Visits	1,000
Other	Rain Barrels	650

Recommended Water Conservation and Efficiency Strategy Components

Multi- Family Highrise	Measure	Annual Number of Rebates or Participants
Rebates	ULF 6 Litre Flush ($60)	202
Rebates	HET Toilets ($75)	113
Rebates	Dual Flush Toilets ($75)	338
Rebates	Clothes Washer ($200)	60
Installation	Low Flow Showerheads	224
Installation	Kitchen Faucets	28
Installation	Leakage Repair	5

Recommended Water Conservation and Efficiency Strategy Components

Residential New Development - Indoor		Annual Number of Rebates or Participants
Rebates	HET Toilets ($10)	228
Rebates	Dual Flush Toilets ($10)	675
Rebates	Clothes Washer ($80)	225
Rebates	Humidifier ($75)	270
Rebates	Floor Drain ($60)	270
Rebates	Grey Water ($1,000)	10
Rebates	Rain Water ($2,000)	10
Rebates	Low Flow Showerheads ($10)	452
Rebates	Kitchen Faucets ($5)	450

Residential New Development - Outdoor		Annual Number of Rebates or Participants
Rebates	W.E. Landscaping ($200)	300
Rebates	Watering Timers ($20)	300

Recommended Water Conservation and Efficiency Strategy Components

Industrial/Commercial/Institutional		Annual Number of Rebates or Participants
Rebates	ULF 6 Litre Flush ($60)	232
Rebates	HET Toilets ($75)	88
Rebates	Dual Flush Toilets ($75)	144
Rebates	Clothes Washer ($200)	30
Installation	Pre-Rinse Spray Valves	23
Other	ICI Audit and Capacity Buyback	1.5

Distribution Leakage Reduction		Annual Number of Rebates or Participants
Other	DMAs	5

Education		
Public Education		
Youth Education		

Ten Year Capital Plan

Ten Year Capital Plan	Total Cost	Total Accumlative Savings (Ml/day)	Cost per Litre
Single Family Detached Residential - Indoor	$ 7,579,870	3,448,980	$ 2.20
Single Family Detached Residential - Outdoor	$ 2,385,000	996,500	$ 2.39
Multi Family Residential	$ 1,413,316	589,770	$ 2.40
New Development Residential - Indoor	$ 2,272,500	583,650	$ 3.89
New Development Residential - Outdoor	$ 1,026,000	294,000	$ 3.49
Industrial/Commerical/Institutional	$ 1,987,900	1,135,700	$ 1.75
Distribution Leakage Reduction	$ 238,500	1,725,000	$ 0.14
Public Education	$ 1,420,000		
Youth Education	$ 1,030,000		
Total	$ 19,353,086	8,773,600	$ 2.21

Funding Allocation	Total
Approved DC Forecast	$ 2,759,958
Current Water Conservation Funding (Rate Base)	$ 5,835,115
Additional Funding (Rate Base)	$ 10,758,013
Total	$ 19,353,086

Note: $10,758,013 of additional funding represents an 8.33% water rate increase in 2010.

Further Recommendations

-that the City of Guelph continue operation of the City's Outside Water Use Program in efforts to reduce impacts of Peak Seasonal Demands

-that the City continue performance testing research of home water softener technologies and promote through a public educational program technology performance results and related environmental benefits

-that the City's Royal Flush Program toilet model eligibility criteria be changed to UNAR and evaluate on an annual basis the implementation of Water Sense labelling as the potential program eligibility criteria under the complete roll-out of the Water Sense program into Canada.

Further Recommendations (2)

-that the City's Purple Pipe study, as endorsed by Council through the Water/Wastewater Master Servicing Plan, evaluate the further potential for a Guelph communal Grey Water Reuse System and design practices for grey water ready homes.

-that rebate program incentives be adjusted to those identified through the 2009 City of Guelph Water Conservation Development Charges Submission upon Council endorsement.

-that the City undertake a feasibility study to evaluate the best practices for multi-unit residential water metering and the frequency of condition assessment works for current bulk metered multi-unit residential customers.

Further Recommendations (3)

-That the immediate introduction of an enhanced public education water conservation program commence in 2009 subject to the availability of program funding.

-That immediate work be undertaken in distribution system loss mitigation in 2009 and that staff further investigate the future potential for distribution system pressure management.

Further Recommendations (4)

- In recognition of water conservation and storm water management benefits provided by the urban canopy, and in accordance with Council Strategic Plan Goal 6.6, that the future re-visitation of the City's Tree by-law further evaluate the protection and preservation of the City's urban forest.

-That external funding sources, and key partnerships, be pursued throughout implementation of Water Conservation and Efficiency Strategy Update program recommendations.

-Water Conservation Rate Structure Recommendation from Public Advisory Committee – To be finalized

Ten Year Maintenance Plan

Ten Year Maintenance Plan	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Costs	Costs	Costs	Costs	Costs	Costs
Single Family Detached Residential - Indoor	$ 16,213	$ 16,426	$ 17,277	$ 17,916	$ 18,554	$ 19,193
Single Family Detached Residential - Outdoor	$ -	$ 18,000	$ 18,000	$ 18,000	$ 18,000	$ 18,000
Multi Family Residential	$ 16,112	$ 16,223	$ 16,670	$ 17,005	$ 17,340	$ 17,674
Industrial/Commercial/Institutional	$ 12,061	$ 12,122	$ 22,867	$ 23,051	$ 28,104	$ 31,881
Distribution Leakage Reduction				$ 47,700	$ 47,700	$ 47,700
Total	$ 44,386	$ 62,771	$ 74,814	$ 123,671	$ 129,698	$ 134,448

Ten Year Maintenance Plan	Year 7	Year 8	Year 9	Year 10	Total
	Costs	Costs	Costs	Costs	
Single Family Detached Residential - Indoor	$ 19,831	$ 20,470	$ 21,108	$ 21,747	$ 188,733
Single Family Detached Residential - Outdoor	$ 18,000	$ 18,000	$ 18,000	$ 18,000	$ 162,000
Multi Family Residential	$ 18,009	$ 18,344	$ 18,679	$ 19,014	$ 175,070
Industrial/Commercial/Institutional	$ 31,907	$ 31,933	$ 31,959	$ 73,985	$ 299,870
Distribution Leakage Reduction	$ 47,700	$ 47,700	$ 47,700	$ 47,700	$ 333,900
Total	$ 135,447	$ 136,447	$ 137,446	$ 180,446	$ 1,159,573

Ten Year Monitoring and Evaluation Plan

Ten Year Monitoring and Evaluation Plan	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Costs	Costs	Costs	Costs	Costs	Costs
Single Family Residential - Indoor	$ 345,000				$ 180,000	
Single Family Residential - Outdoor	$ 45,000	$ 24,000	$ 24,000	$ 24,000	$ 98,460	
Multi Family Residential	$ 315,000				$ 120,000	
Industrial, Commercial and Institutional	$ 297,000				$ 37,700	
Total	$ 1,002,000	$ 24,000	$ 24,000	$ 24,000	$ 436,160	$ -

Ten Year Monitoring and Evaluation Plan	Year 7	Year 8	Year 9	Year 10	Total
	Costs	Costs	Costs	Costs	Costs
Single Family Residential - Indoor				$ 180,000	$ 705,000
Single Family Residential - Outdoor				$ 98,460	$ 313,920
Multi Family Residential				$ 120,000	$ 555,000
Industrial, Commercial and Institutional				$ 37,700	$ 372,400
Total	$ -	$ -	$ -	$ 436,160	$ 1,946,320

Energy Savings and Greenhouse Gas Reductions

	Water Savings per Year (m3/yr)	Energy Savings per Year	CO2 Reductions per Year (tonnes/yr)
Overall Water Savings	3,202,364	2,348,934 KWh Electricity	728 tonnes
Low Flow Showerheads, Faucets	Included in above	684,216 M3 Natural Gas	1,294 tonnes
Pre-Rinse Spray Valves	Included in above	206,325 M3 Natural Gas	390 tonnes
Overall CO2 Reduction			2,412 tonnes

Comparison to Targets in Water Supply Master Plan

Targets from Water Supply Master Plan – 2006

- 8,000 m3 per average day by 2010
- 12,000 m3 per average day by 2015
- 16,000 m3 per average day by 2025

Overall Potential for Water Efficiency

- 13,661 m3 per average day

Overall Achievable Water Efficiency by 2019

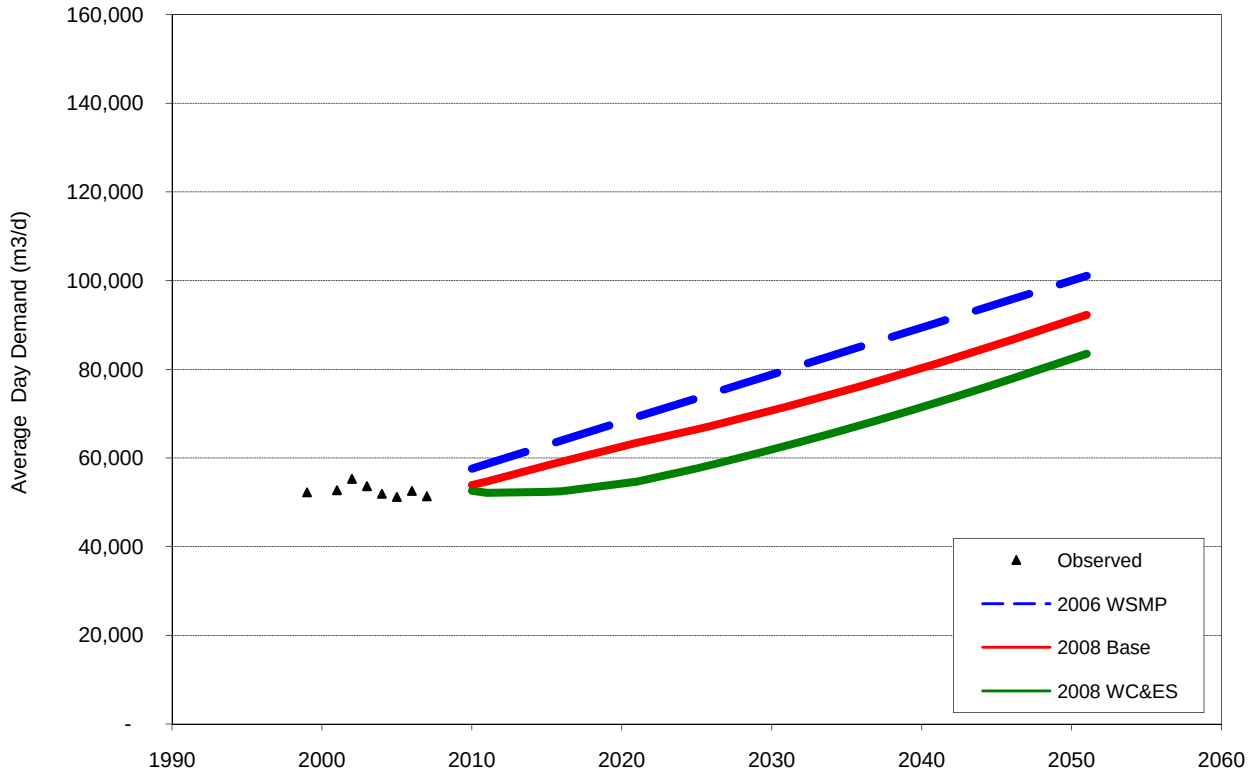
- 9,657 m3 per average day

Overall achievable water efficiency of 9,657 m3 includes reported water savings of 883 m3 per average day since 2006.

Water Conservation and Efficiency Strategy

- Takes full advantage of existing market potential
- Not all, but most of the inefficient appliances and fixtures will have been replaced by the end of the ten year plan
- Additional savings beyond this plan will come from emerging technologies such as grey water reuse and rain water harvesting

Average Day Water Demand Projection



Moving Forward and Next Steps

Public Consultation Program

- Public Information Centre #3 – February 4th 2009
- Receive feedback from PAC and Guelph staff on submitted draft strategy – January 26th 2009
- Post Draft WC&E Strategy Update report on webpage for public reference and comment – Feb 2nd 2009

Anticipated Project Timelines

- Submit Final Strategy – February 2009
- Water Conservation and Efficiency Strategy Update Guelph City Council Workshop – February 25, 2009
- Presentation of Final Report to City Council – March 2009

Water Conservation Rate Structure Review

Agenda

- Proposed Goals and Objectives
- Review of Current Rate Structure in Guelph
- Existing Conservation Initiatives
- Conservation Rate Structure Options
- Summary

Proposed Goals/Objectives

- A variety of alternative rate structures can be used depending on the goals and objectives of the municipality
- The following are the proposed goals and objectives **(Not Ranked):**

- *Conservation & Water Efficiency*
- *Affordability*
- *Fairness and Equity*
- *Full Cost Recovery*
- *Environmental Soundness & Sustainability*
- *Revenue Stability & Rate Predictability*

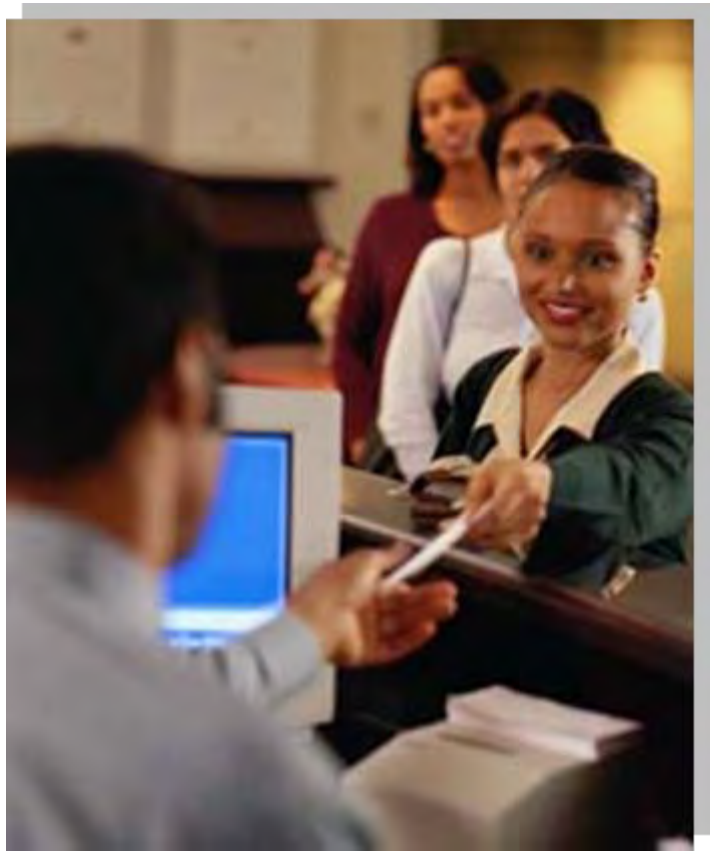
Consistent with the City's Existing Goals and Objectives

Current City of Guelph Rate Structure

Existing Water Rate Structure

Two Part-Rate Structure

1. Uniform Rate Structure
   - Every m^3 of water consumed and sewer treated is charged the same rate, regardless of the amount used
2. Customer related basic charge
   - About 15% of the budgeted water and wastewater costs are allocated to fixed

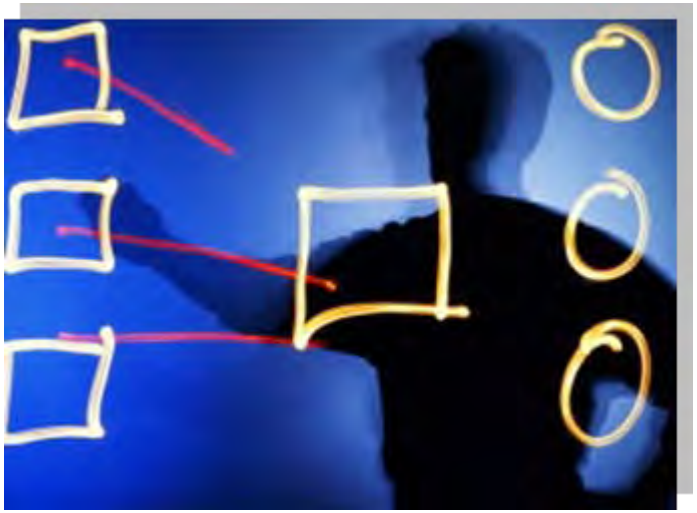


- Two-part rate structure is aligned with CWWA recommended approach
  - Used by 72% of 80 Ontario municipalities surveyed
  - The amount allocated to fixed varies across the survey

General Findings of Existing Rate Structure

- From a technical perspective, the majority of the water/wastewater costs are fixed and do not vary based on volumes consumed and from a fairness and equity perspective could be recovered through a fixed monthly charge

- While the City recognizes the fixed nature of water/sewer costs, to support conservation initiatives, the City has allocated 15% of the total costs to be recovered from fixed



Preliminary Recommendations

- Continue with two-part rate structure
- To improve *Fairness and Equity* everyone should pay their fair share of the following costs:
  - ✓ Billing
  - ✓ Reading
  - ✓ Collection
  - ✓ Meter replacement

- These costs exist, regardless of the water consumed, and therefore all customers should contribute
- To support conservation, do not include other fixed costs such as:
  - ✕ Reserve contributions
  - ✕ Capital improvements
  - ✕ Debt servicing costs
- Marginal change to current practice - equal to approximately 17% of total costs compared to the current 15%
  - Continues to support conservation initiatives
  - Continues to be well below the allocation in comparable municipalities

Existing Conservation Initiatives

Strategies to Support Conservation

- In addition to conservation pricing rate structure options, municipalities have a number of strategies to support conservation:
  - ✓ Allocate relatively small amount of costs to be recovered through the fixed monthly fee as is the current and recommended practice in the City of Guelph
  - ✓ Introduce municipal conservation programs and initiatives. E.g.:
    - Watering restrictions
    - Retrofits and rebate programs
    - Meter change out programs
    - Education programs and workshops
    - Metering all properties
    - Water system audits
    - Leak detection and repair strategies

  - ✓ The City has successfully implemented a wide range of programs and initiatives to support conservation

Current Conservation Resources

- Watering Use Regulations—Strictly enforced since 2001
- Toilet Rebate Program - Over the past 5 years, approx. 5,300 homeowners have used the program. Toilet retrofits can reduce household water consumption by 15-20%
- Metering Properties—Virtually all properties in the City are metered. Metering is proven to reduce end-use consumption by 15-20%
- Education and Awareness—City regularly releases information about water conservation. Estimated to reduce consumption by 2%-5%
- Low Unaccounted for Water—The City's unaccounted for water (lost water plus unmetered water such as water used for firefighting, etc.) is low. Plans to further reduce over the next 5 years

Water Conservation is a Priority in City of Guelph

Effective programs are in place in the City of Guelph

Effectiveness of Guelph's Conservation Initiatives

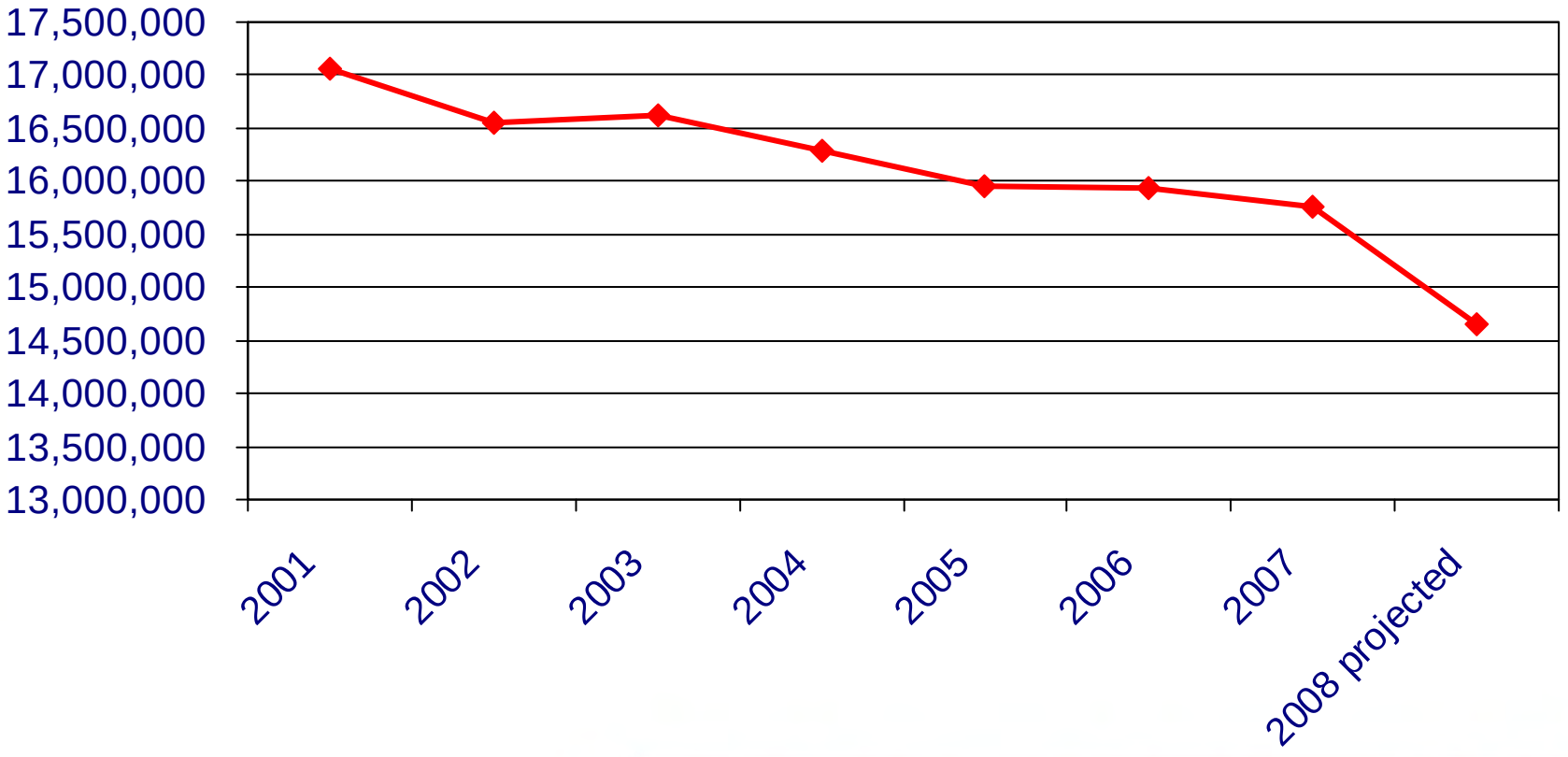
- Success of the City's programs are reflected in a number of key indicators

  - Downward consumption trends
  - Low winter/summer average monthly consumption differential
  - Low maximum day factor
  - Low peak day factors
  - Low average residential consumption compared to other municipalities

Total Billable Water Consumption (m^3)

Guelph's total billable consumption has declined significantly over the past several years due to part to the success of the City's programs

Reductions have been experienced in Residential, ICI and large industry



Winter Versus Summer Average

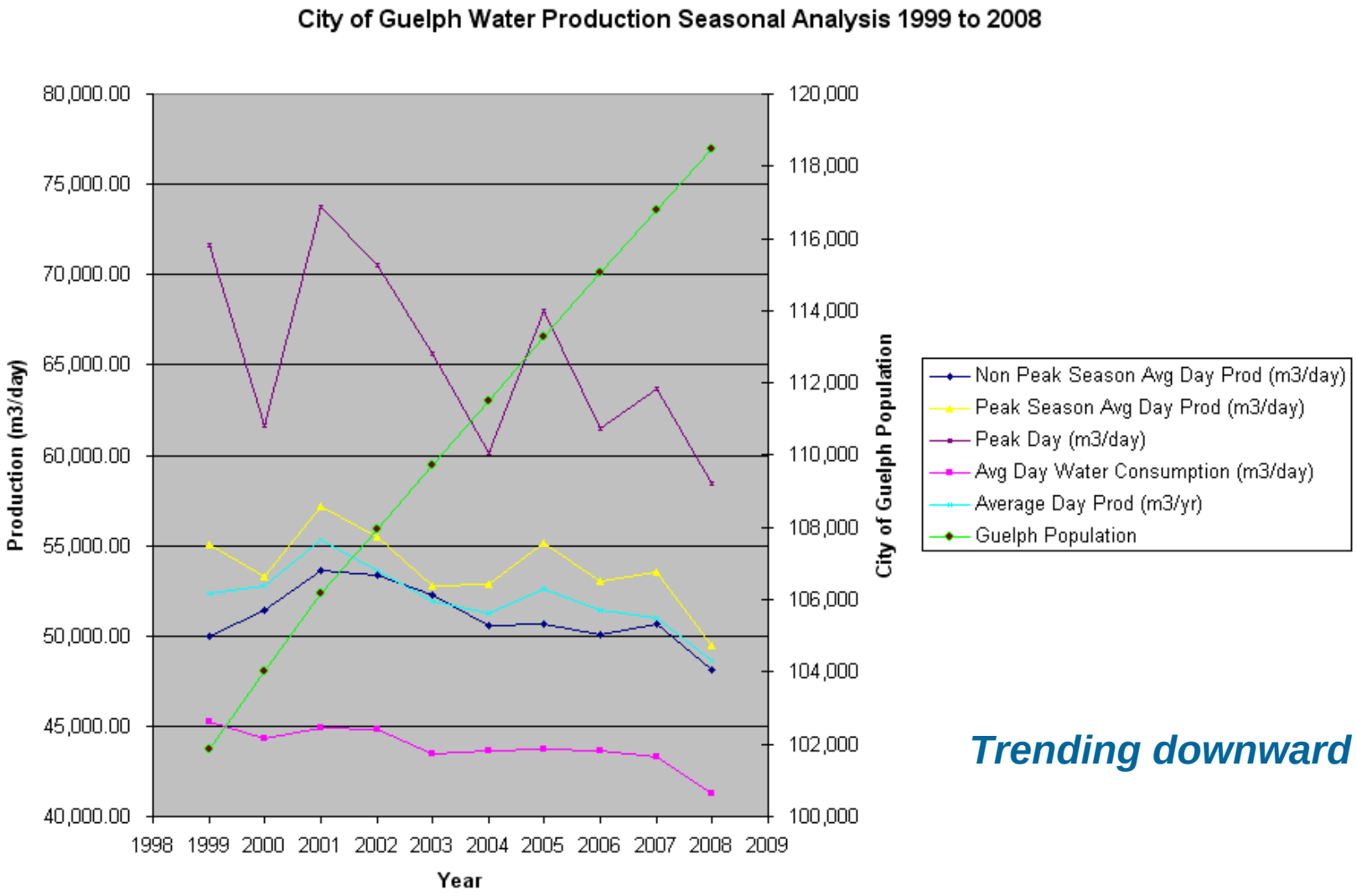
	Winter Average	Summer Average	% difference
2000	1,593,620	1,631,871	2.4%
2001	1,632,813	1,750,245	7.2%
2002	1,589,788	1,686,750	6.1%
2003	1,562,469	1,593,117	2.0%
2004	1,530,730	1,606,962	5.0%
2005	1,551,994	1,676,429	8.0%
2006	1,528,519	1,611,341	5.4%
2007	1,497,572	1,626,788	8.6%
8 year average			5.6%
4 year average			5.1%

- Low differential between the summer and winter average suggests the City's conservation efforts are effective
- Years with the biggest winter/summer differences tends to be when summer precipitation was low – (2001, 2005, 2007)
  - The watering restrictions help to keep peaks low even in dry summers

Maximum Day Factor

- City's Water Supply Master Plan
  - The maximum day factor - ratio of peak day use to average day use
    - ✓ Guelph 1.20-1.35
    - ✓ MOE guideline 1.50-1.65
  - Low maximum day factor - credited to the success of water efficiency programs, i.e. public education, Outdoor Water Use by-law, etc.

Peak and Average Day Statistics



Trending downward

Factors Impacting Consumption

- Many factors impact average consumption including:
  - Weather conditions, temperatures, precipitation
  - Size of the properties and housing stock
  - Household size
  - Conservation initiatives and programs
  - Type of rate structure and how it is structured
  - Cost of water/sewer services

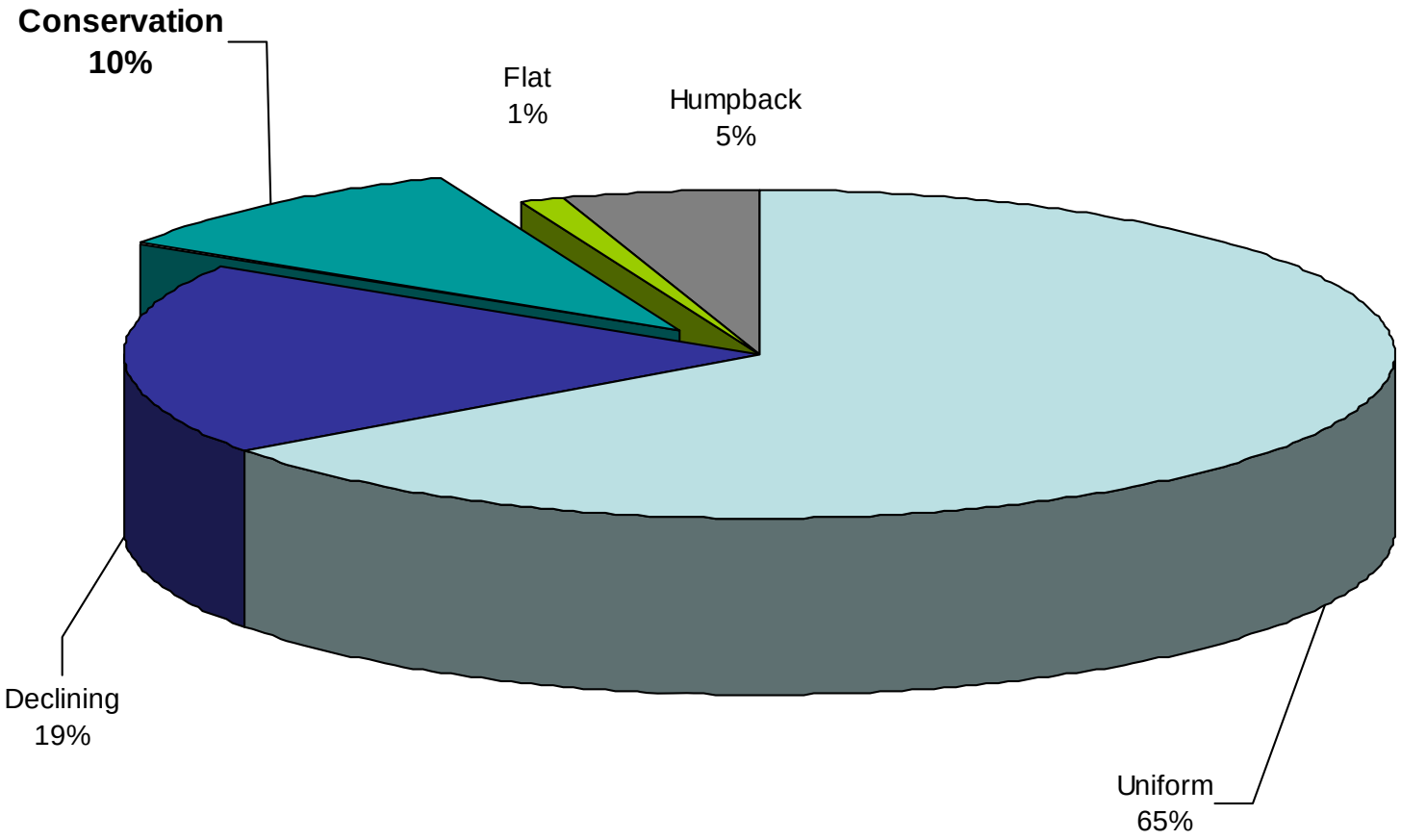
Average Consumption Comparison

- 2005 Study – Guelph's average residential consumption amongst the best 28 in Canada (lowest) - Consumptions have continued to decline

- Lower average consumption in relation to municipalities with similar rate structure to Guelph (Uniform)

- Lower average consumption in comparison to municipalities that have implemented a conservation rate structure

Type of Rate Structures Employed - ON



82 Ontario Municipalities surveyed – 85% of ON pop.

Comparison to Conservation Rate Structure

Municipality	Resid. Annual m^{33}	W/S Cost 2008 for 250 m^3	% increase on first threshold	Res/Non Res?	Comments
Sault St. Marie	235	$ 383	179%	Both	Humpback to assist large users. Continue to have high summer peak demand. Incomes and weather may also be factors in low consumption.
Kingston	240	$ 774	15%	Res only. ICI declining	Water only
Barrie	250	$ 492	100%	Both	100% premium on water and 70% on sewer. Under review. 4 Res. Water blocks.
London	250	$ 655	5%	Res only. ICI declining	Water only - under review
Halton	272	$ 638	15%	Both	Humpback to assist larger users. Water only.
Windsor	294	$ 792	93%	Both	Excess Use Charge
Owen Sound	300	$ 740	2%	Both	Water and sewer
Average	263	$ 639			
Guelph	225	$ 562			

Low avg usage

General Findings – Conservation Pricing

- To be effective, research has shown that in a conservation rate structure:
  - Premiums need to be significant due to the limited impact that price has on water demand
    - Sault Ste. Marie (179%)
    - Barrie (100%)
    - However, high premiums pose a challenge in terms of *Affordability* (e.g. large families with low incomes)
  - Should be applied to water and wastewater—but there are public acceptance issues to applying a premium to wastewater
  - Applying to non-residential improves effectiveness but poses economic development challenges

Summary of Success of Current Efforts

- ✓ Consumption reductions have been experienced from 2001 – 2008 estimated at 14%
- ✓ Low differential in winter and summer average consumption
- ✓ Low peak day demand
- ✓ Declining average day demand
- ✓ Low average residential consumption compared to other municipalities – even compared to municipalities with conservation rate structures
- ✓ Success on City programs and initiatives - toilet program, water restrictions, education, low unaccounted for water

Conservation Rate Structure Options

Conservation Rate Alternatives

Three most common types of conservation rate structures

Inclining

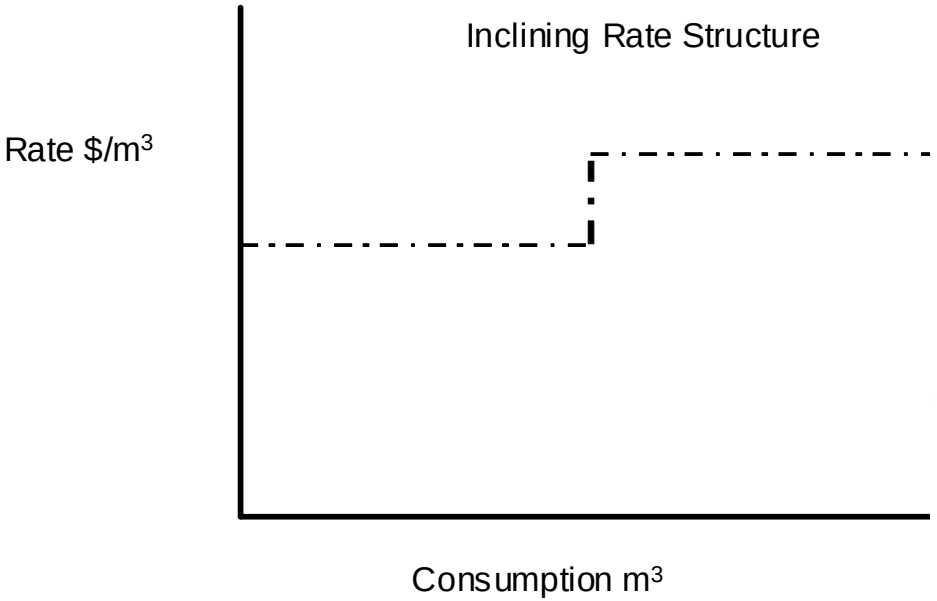
Seasonal

Excess Use

Inclining Block Rate Structure

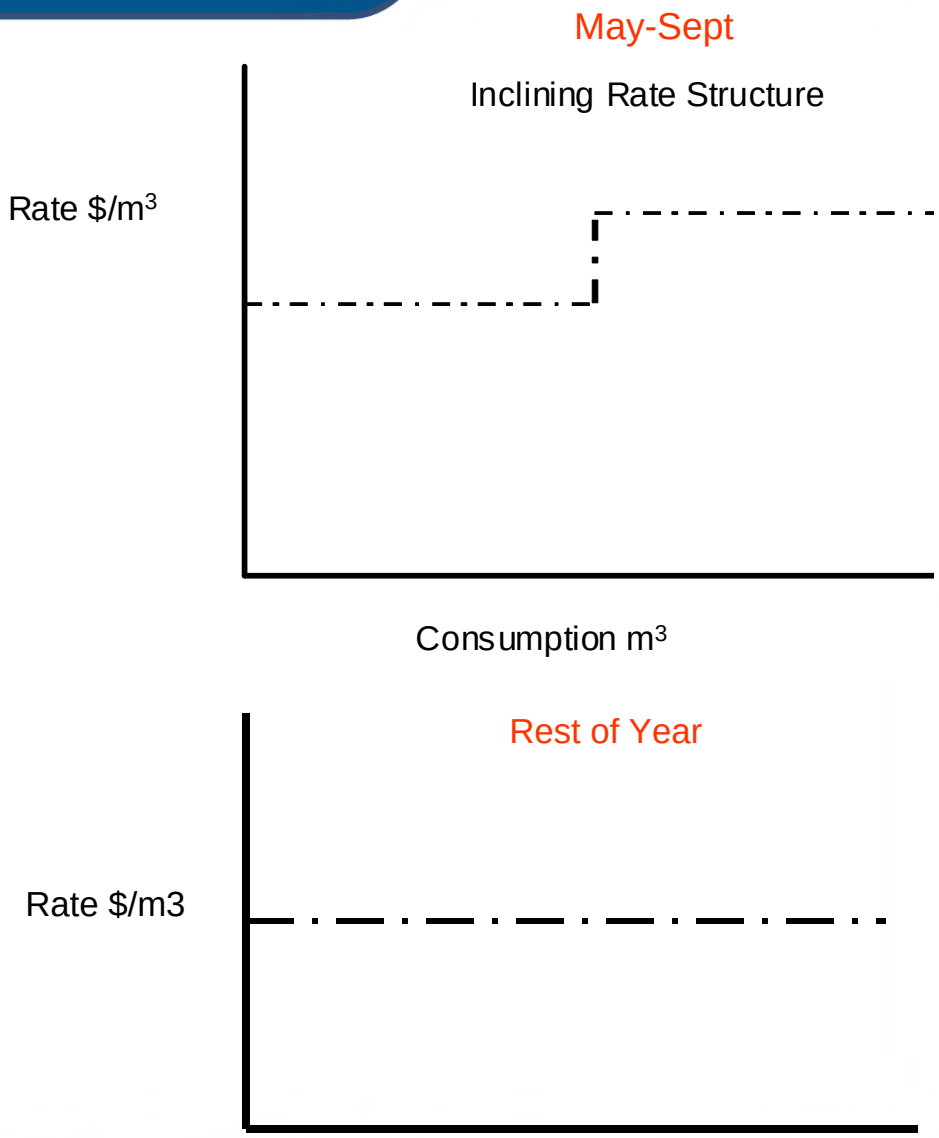
- The rates increase as consumption increases by establishing thresholds or blocks at which the rate would change

- For inclining block rate structures, the block (quantity) shift points are generally based upon the unique demand characteristics of each user class and are focused on user demand points to enhance water usage awareness



Seasonal Rate

- Seasonal rates are used to reflect the different consumption requirements between seasons and encourage water conservation during peak summer demand periods
- Seasonal charges in effect from May to September and are normally used in conjunction with a uniform rate system for the remainder of the year
- Surcharge during peak demand periods exceed prices during off-peak periods



Excess Use

- An excess use rate structure considers the consumption patterns for each user and charges a premium for the consumption in the peak demand season exceeding a threshold (e.g. a customer's winter use)
- The advantage to this approach is that it encourages conservation since it is purely consumer-driven and takes into consideration differences in family sizes, (only pay a premium over the user's specific winter month average)
- Unlike a seasonal rate which could be punitive towards the ICI sector which may have a fairly regular consumption pattern throughout the year, an excess use rate structure is fairer
- This approach is administratively more challenging in that the billing software would need to be programmed to calculate each users winter average

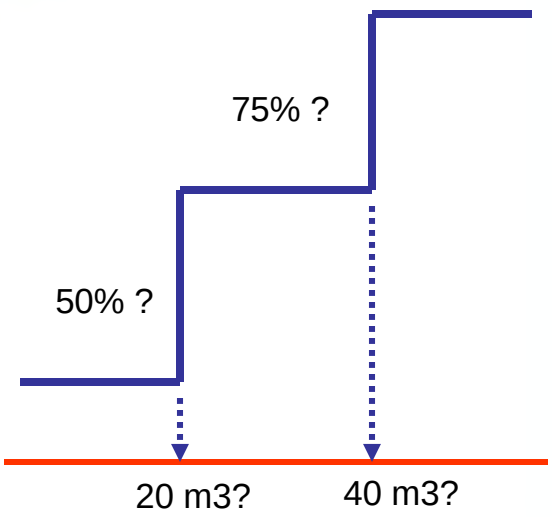
Assessing the 3 Alternatives

Goals/Objectives	Inclining Rate Structure	Seasonal Rate Structure	Excess Use Rate Structure
Conservation	Year round conservation	Summer only	Summer only
Fairness and Equity	Difficult to justify the premiums		
Affordability	Presents affordability issues for large low income families	Less affordability issues compared with year round program as this only targets usage in the peak demand months (summer)	Least impact on affordability as it compares winter to summer use
Revenue Stability, Rate Predictability	Increase revenue instability compared to uniform rate	Revenue instability but to a lesser extent than inclining	Revenue instability but to a lesser extent than inclining
Environmental Soundness	Promotes year round conservation	Promotes a reduction in peak usage	
Full Cost Recovery	Yes but costs may increase as a result of a potential need to move to additional read/bill cycles		
Comments			Most administratively complex and costly to maintain database

Challenges to Consider

Fairness and Equity

- Typically, block rate thresholds for residential properties try to establish the first block to reflect indoor water use and the second block to reflect outdoor use
  - Challenge in establishing thresholds as average consumption will vary based on family size



- Depending on how the rate blocks are established, inclining rate structures can become quite complicated and subject to claims of unfair allocation of charges and controversy regarding the appropriateness of the blocks that are established, unless tied directly to underlying costs

Challenges to Consider

Affordability

- Inclining, Seasonal Rates structures can pose affordability problems for large families

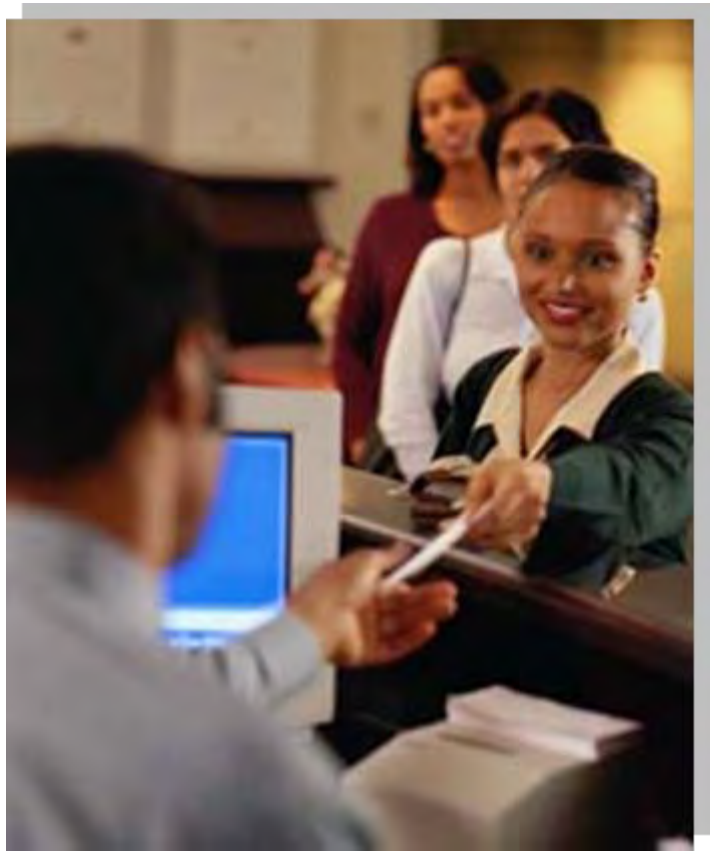
Economic Development

- An inclining rate structure can discourage economic development, and generally can be punitive to the ICI sector as a whole unless the block rate structure is established for the residential class only

Challenges to Consider

Technical Issues and Administrative Costs

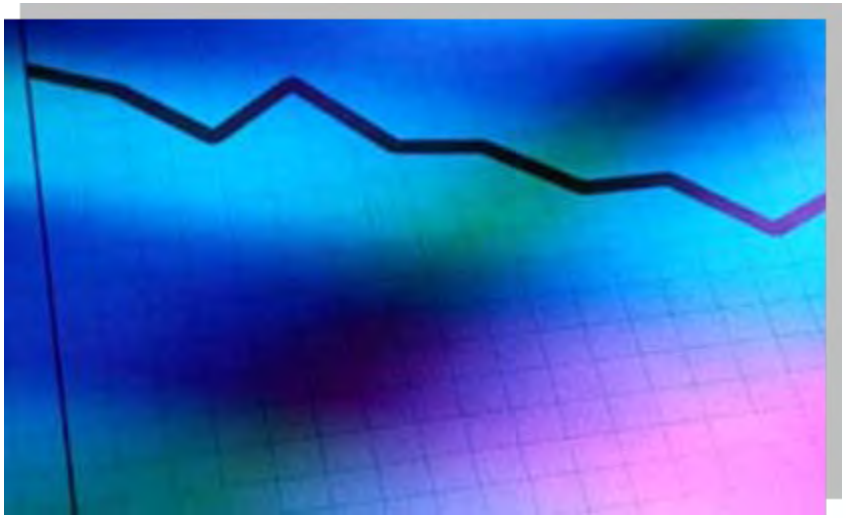
- Current Residential reading/billing cycle is every two months
  - Monthly is preferred for fairness and equity as the month that a meter is read impacts the amount charged
  - Also monthly is preferred to inform customer and provide an opportunity to modify behaviour on a timely basis
  - Increase in cost to move to monthly reading/billing is estimated to be significant. $200,000-$400,000
  - Also potential one-time costs to reprogram billing system



Other Considerations

Elasticity of Demand

- Price Elasticity measure the extent to which a change in quantity demanded is sensitive to a change in price
- Research has shown that water demand can, to some extent, be manipulated by price for discretionary uses (lawn watering, car washing, and swimming pools)
- However, water demand is relatively price inelastic (changes in price do not materially impact demand), particularly when other conservation programs have been implemented, as is the case in the City of Guelph
- Range of elasticity of residential demand is -0.20%-0.40% , meaning that a 10% increase in price lowers demand by 2-4%



Other Considerations

Budgetary Increases and Declining Consumptions

- There significant increases in rates projected for the next 5 years (10%+) and based on the elasticity of demand, consumptions will already be decreasing during this time, regardless of whether a conservation rate structure is employed
- As such, is it appropriate to introduce a conservation rate structure during a time when rates are already increasing significantly?
  - Affordability
  - Fairness and equity
  - Effectiveness - How much more discretionary use is in the system?

Summary

- The City's low fixed cost promotes conservation
- Wide range of effective conservation initiatives and programs have resulted in:
  - Low peak demand
  - Low average consumption
  - Declining consumptions
- Significant cost increases projected over the next several years – affordability becomes a factor
- While a conservation rate structure may be considered
  - Given the success of the current programs and in light of the other goals and objectives, will the benefits of conservation rate structure outweigh the potential costs (administrative, affordability, revenue stability)?
- Preferred option, should a conservation rate structure be recommended:
  - Seasonal rate – least costly to implement, less impact on affordability, address peak seasonal demand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Minutes

City of Guelph

Water Conservation and Efficiency Strategy Update

Public Advisory Committee Meeting #4

Wednesday, January 14th 5 pm – 8pm
Guelph Waterworks – Waterworks Boardroom
29 Waterworks Place, Guelph

In Attendance:

Kathleen Farrelly (KF)	City Councillor – Ward 1
Patricia Quackenbush (PQ)	Resident
Chantelle Leidl (CL)	University of Guelph
Mike Darmon (MD)	Guelph Green Plan Steering Committee
Lloyd Longfield (LL)	President Guelph Chamber of Commerce
Ludwig Batista (LB)	Sleeman's Brewing Company Ltd
Paul McLennan (PM)	Resident
James Etienne (JE)	Grand River Conservation Authority
Jeremy Shute (JS)	Resident
Anastasia Lintner (AL)	Council Wellington Water Watchers
Khosrow Farahbakhsh (KF)	University of Guelph
Rob Case (RC)	Guelph International Resource Centre

Project Consulting Team

Michael Brooks (MB)	RMSi
Kingsley Blease (KB)	RMSi
Jim Bruzzese (JB)	BMA Management Consulting Inc.

City of Guelph Staff

Peter Busatto (PB)
Wayne Galliher (WG)
David Auliffe (DA)
Karl Cober KC)
Jennifer Gilks (JG)

Regrets

Peter Lambe	Cargill Meat Solutions
Alicia Piccoli	Fusion Homes

1.0 Welcome

Round table introductions

2.0 Public Information Centre # 2 Feedback – M. Brooks

- MB gave feedback on the last Public Information Centre (PIC), and said that for residents who could not attend, there was a facility on line to do so
- General and online feedback from the PIC covered:

  - Rainbarrels and the associated rain barrel water capacities
  - Where did the data inputs to the strategy come from
  - Water rates in Canada
  - Sub metering practices of apartments
  - Smart metering, and more information on the water bill
  - Value of a robust canopy of trees, and the links to water efficiency

3.0 Draft Report Recommendations Presentation – M Brooks

MB made a PowerPoint presentation of the draft report recommendations. Highlights are as follows:

- Slide 2 – total gross water demand had declined by 17% between 1999 and 2007, while population had increased by 14.6% over the same period
- Slide 3 – the ICI focus was on the high water using customers
- Slide 4 – the single family residential rebates proposed are higher than typically used in Ontario
- Slide 5 – multi-family measures are similar to single family, except the ICI clothes washer rebate program which will be offered a higher rebate due to the added cost of industrial models and larger associated water savings
- Slide 7 – the ICI rebates were similar to the current Royal flush program. *Question* (CL): why was participation for the ICI audits so low at 1.5 per year? *Answer* (MB): based of a participation rate of 18%(past Ontario program data), so there would be 10 audits and on average 1.5 facilities implement
- Slide 8 – *Question* (CL): For 10 year capital plan the overall cost per litre was $2.21, but why a larger plan to bring the cost upto $4.00 per litre, which was the suggested screening target? *Answer* (MB): the 44.00 was not confirmed, but a starting point based on the range in Ontario. (WG) stated that this would be looked at over time. The Water supply Master Plan projected demand was not being materialized, so a cautious approach was being taken (MB) potential and then achievable water savings have been estimated to arrive at the 10 year capital plan
- There were a number of further recommendations that were not in the draft plan which had been sent for review by the PAC, which would be included, and they were then summarized in slides 9, 10, 11, 12

- Slide 13 – The importance of a maintenance program was emphasized, because just like a new water treatment plant, say, water efficiency measures have ot be maintained
- Slide 14 – there is a need to verify that the water savings are being achieved, and also to recognize successes
- Slide 15 – The co-benefits of water efficiency are energy savings, and they were shown for pumping and treating water and wastewater, plus hot water savings. "Hot off the press" data from the POLIS study for the Ontario Ministry of the Environment was used. *Question* (JS): could utility energy savings be build into the cost benefit
- Slide 16 – Overall potential and achievable savings were compared to the Water Supply Master Plan targets
- *Question* (KF): Is the overall saving based on investment by the City – this assumes that people won't take initiative and are waiting for incentives. Guelph people are conserving, so surprised that not taking advantage of the current culture. *Answer* (MB): he believes that the savings will be greater than achievable shown, and somewhere between the achievable and potential. There will also be the influences of education, which have not been factored in, as not able to quantify
- *Question* (LL): how many more people could move to Guelph does the volume saved represent? The wastewater study gives an idea of growth. *Answer:* (MB) That could be calculated
- Slide 17 – The strategy takes into account current market potential – for example many appliances will be replaced in 10 years
- Slide 18
- Slide 19 – Next steps

BREAK

4.0 Water Conservation Rate Structure Presentation – J. Bruzzese

5.0 Roundtable Feedback Session

Question: What are the proposed water and wastewater rates:
Answer: (PB) these rates have been approved and apply to all customer groups (residential and ICI), and are for water and wastewater

- 19% increase in 2009
- 10% increase every year for the following 4 years
- Overall increase in 5 years will be 74%

Comment: (PB) The main drivers for the increase were a drop in water consumption, and additional capital works. There are also new regulations and municipalities have to complete a condition assessment, 6 year plan, by 2010. What drove the 19% increase was approximately 1/3 from drop in demand, and 2/3 catching up on infrastructure maintenance, and optimizing the system with new infrastructure. The 10% every year for 4 years is again the drop in consumption and to carry on with the Master Plan recommendations

Comment: (WG) as an example of reduced consumption, the University of Guelph completed water efficiency at 7 buildings in 2007, which resulted in between 300,000 to 400,000 m^3 water reduction a year.

Comment: (PB) Guelph residential water use is 220 m^3 per year, whereas the Ontario average is between 250 and 280 m^3 per year. The Guelph average residential bill is $643 per year, compared to several around $600 (Stratford $600, Waterloo $608, Cambridge $637, Orangeville $685), at the high end were Centre Welligton $994 because they have a smaller population base, Niagara $884. The Ontario average bill is $677 per year

Comment: The rebates will give immediate savings, but because of the rate increases the bill may not go down. However, the increase in the water bill will be lower because of water efficiency

Question: (CL) Is this program enough?
Answer: (KB) At this time nobody really knows, but as there is a significant monitoring program, the effect of the water efficiency measures, and the overall water demand changes will be known, and the water efficiency strategy can be adjusted up or down to suite in future years.
Comment: (PB) the Water Supply Master Plan updates are every five years, so as it was completed in 2006, the next update will be in three years

Comment: (WG) there will be adjustments over time because of new and emerging technologies, different demographics. WG reviewed the Water Supply Master Plan targets, and discussed percentages and actual volumes, and said that targets re being set by volume

Question: Will there be any benchmarking on new developments if put in all water efficient devices?
Answer: (MB) In developing the strategy, a recent study in Durham Region for new homes was used. These new homes were fitted will water efficient devices, and the volume of water used in these homes was used as a target for Guelph, with the addition of water used by water softeners in Guelph (which were not used in Durham, because surface water source, not groundwater as in Guelph). The water volume used in the strategy for new homes was 153 litres per person per day

Question: could the City demand that all new homes be built to this standard?
Answer: (WG) Those builders that are innovative will build these very water efficient homes, but other builders will just built to meet the building code requirements. (MB) Generally the strategy is looking to encourage implementation by incentives, rather than by regulation

Question: (JS) was the soil content of new homes looked at, in particular more soil so that lawns to help lawns survive after laid?
Answer: (PB) He believed that council did approve an increase in soil depth about 2 years ago, which would help to reduce the amount of water used, and help lawns get established
Action: (WG) will check

Comment: (JE) said that RMSi did as much as they could in the plan measures. He wanted purple pipes to be promoted and put in somewhere, and for sure keep this option open. (CL) stated that in 2010 purple pipes would be mandated for new construction in British Columbia

Comment: (KF) Make sure that the list of innovative activities is kept upfront to consider in the future. MB agreed

Question: (KF) When will the water efficiency strategy be re-visited?
Answer: (WG) Normally updates would follow the same cycle as the Water supply master plan – every five years, but maybe the water efficiency strategy can be reviewed and updated more frequently

Question: (JS) How is new technology tracked, and can changes be made?
Answer: (WG) (PB) there is a formal opportunity to seek a review at Council annually if new technologies represent a good opportunity for the City

Question: (LL) Guelph Hydro meter reading – is there an incentive around smart metering. In 2010 the electric utility will move to smart metering
Answer: (WG) The City is currently looking at smart metering. KB observed that the City of Moncton have water meters that they can read every day, and let customers know if they have a high water use, and potential leak

Comment: (KF) for industrial sites, the whole notion of metering and benchmarking is important. Need to put in the plan "to assist industry with benchmarking". WG commented that the City had concentrated on the "capacity buy back" incentive for industry, and did not concentrate on best practices

Comment: (PB) historically the city had put in meters to collect revenue, not for the customer to utilize. The City could focus on the larger customers and put in smart meters

Question: (PQ) Could the top users have a better meter?
Answer: (PB) The city already has some smart meters for larger customers

Question: (RC) I like grey water etc, so who does the education to be helpful and more specific?
Answer: (MB) This will be at the next stage after the strategy, when each of the programs are designed

Comment: (WG) we are missing a good school program now (have the water festival). As the City's move to design the education programs we can actively involve local groups to help develop local measures

Comment: (JE) MB eluded to before that the Province is undergoing a water efficiency strategy, and it is refreshing to know this is happening

Question: (JS) How does this Provincial strategy tie in with the Guelph strategy?
Answer: (MB) The Provincial strategy is part of the Great Lakes Annex initiative, and Ontario is the first province to develop a strategy (2 states have so far). The province will likely be looking at the Guelph strategy

Question: (PQ) As the strategy is moving forward, can we gain any insight why there has been a decline in consumption over the last 2 years?
Answer: (PB) for 2008, the approximate estimates by the City for the drop in consumption are:

- 30% drop in outside use
- 10% customer rebate programs
- 10% ICI capacity buy back
- 30% ICI and residential use decrease (including business closures – significant closures)
- 20% private side initiatives

Comment: (PB) the water rate has already doubled since 2000 (post Walkerton)

Question: **(PB) Jim Bruzzese put in his presentation several water conservation rate structures. What does the PAC feel about introducing a conservation rate in the City? The only one perhaps to consider would be the seasonal rate.**

Comment: (PQ) When there is not a big difference in winter and summer demand, what is to be gained with a conservation rate

Comment: (JB) true, the City is already facing large rate increases. Perhaps leave this year, monitor results and be able to get a better judgment a year from now. He would be concerned about affordability, which could become a big issue

Comment: (PB) However a conservation rate sends a message to the community

***PAC Agreement*: Hold off on the conservation rate for this year. Evaluation of feasibility of Guelph Conservation Rate structure to be reviewed through future iteration of Water/Wastewater Rate Review.**

Comment: (PQ) Could have negative feedback on fairness with the conservation rate

Comment: (JE) There are too many variable things going on now, may not be able to measure the effect of a conservation rate

Question: (WG) Moving forward, does the PAC want to meet again?

Comment: (WG) There will be some changes to the draft document to that section of the document beyond technologies

Agreement: after the public meeting (PIC) update any changes, as should not be too significant, and likely not too much. If the PAC cannot meet formally, WG could meet individually

Question: (JS) Will there be a summary of comments received?
Answer: (WG) The City has been compiling the comments, and WG can circulate then, plus whatever comes out of the next PIC, plus suggestions and comments from tonight

ADJOURNED at 8pm