

# Rain and Snow Harvesting for Plant Irrigation in YYC

PIMS Datathon  
2018 Calgary

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Presented at the PIMS Datathon in Calgary on June 24, 2018

# Motivation



- Alberta is facing water shortages
- Even communities where water has been plentiful are not immune to water crises as climate changes

## Question:

How might we reduce the usage of clean water in city parks and households?

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# Focusing on the problem



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# Looking at two case studies

## Case Study 1

Irrigation of public areas within the community



## Case Study 2

Domestic use of sprinklers to water the lawn



# Case Study 1

- The City of Calgary has a program for planting trees.
- Currently the city has planted “over half a million trees on public land,” and “1.5 million privately owned trees”
- There are approximately “9,000 newly planted trees each year”
- Public trees are watered for the first five years of their life” which involves massive amounts of irrigation expenditure (currently \$126,000).



<http://www.calgary.ca/General/Pages/SmartCity/Tree-watering.aspx>

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# Calgary Parks Map

Version 1.0

Calgary

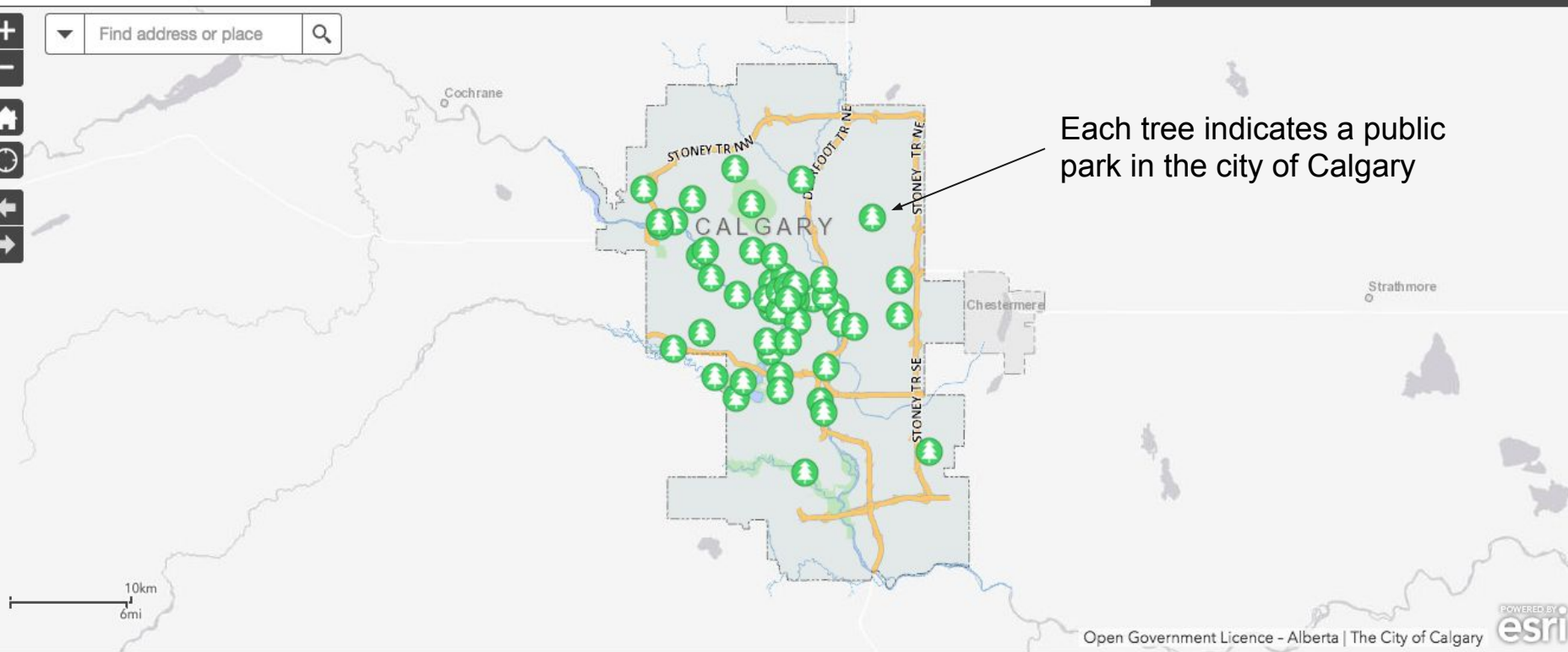


Give feedback

Calgary Parks calgary.ca/parks

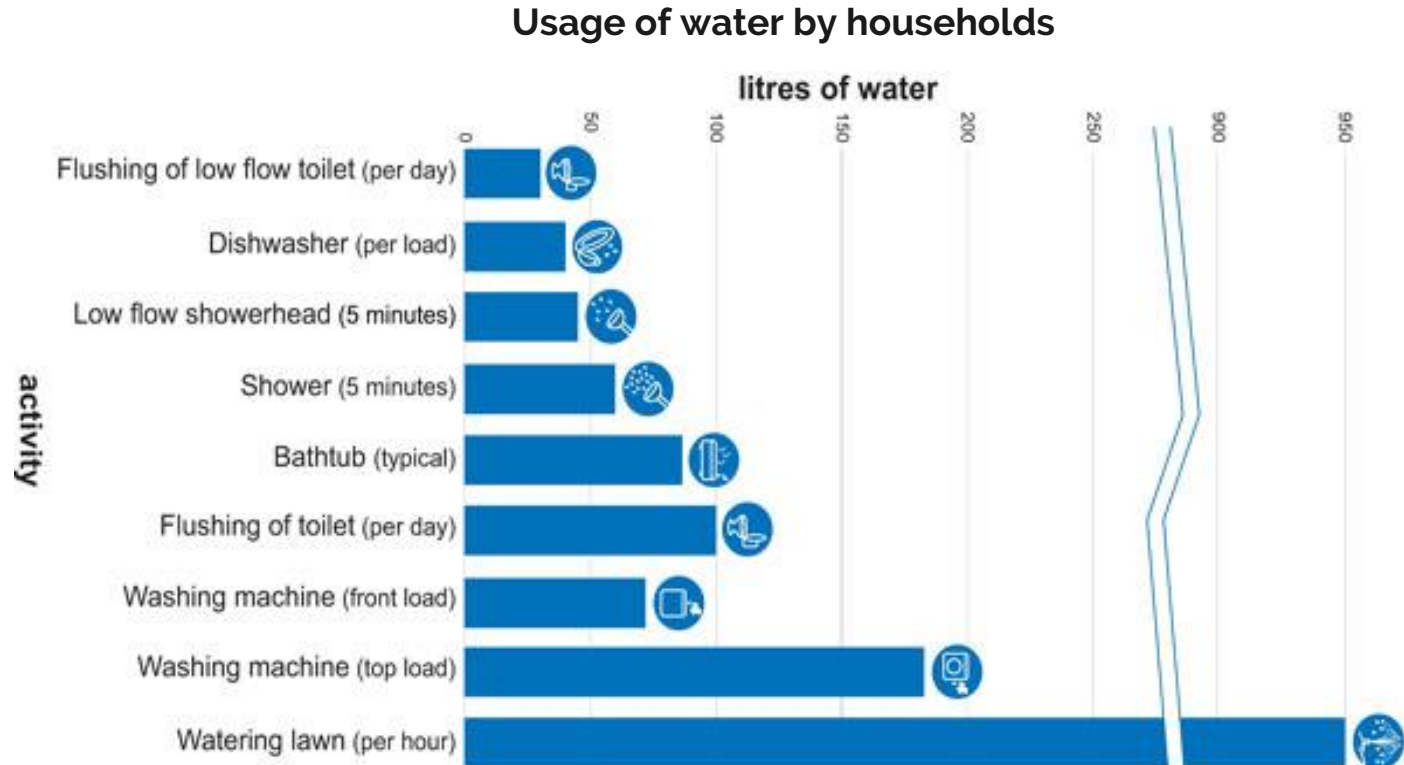


Find address or place



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# Case Study 2



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# Factual Information

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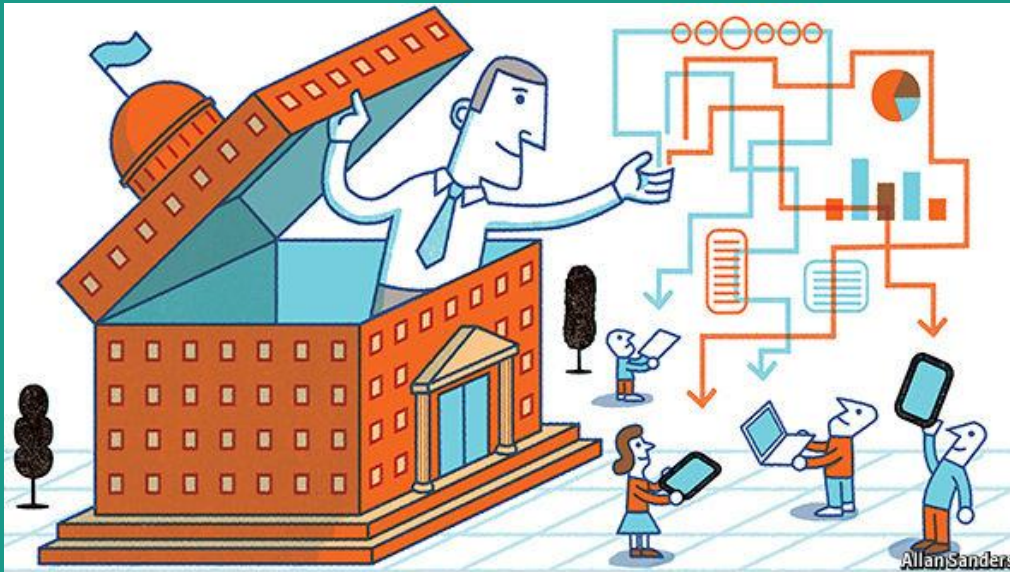
- January 1, 2018: a monthly residential water, wastewater and drainage bill of \$114 has been increased by approximately \$1.88 per month.
- Calgary Parks has over 8,000 hectares of parkland
- Calgary receives an average of 8 inches of precipitation during the growing season.





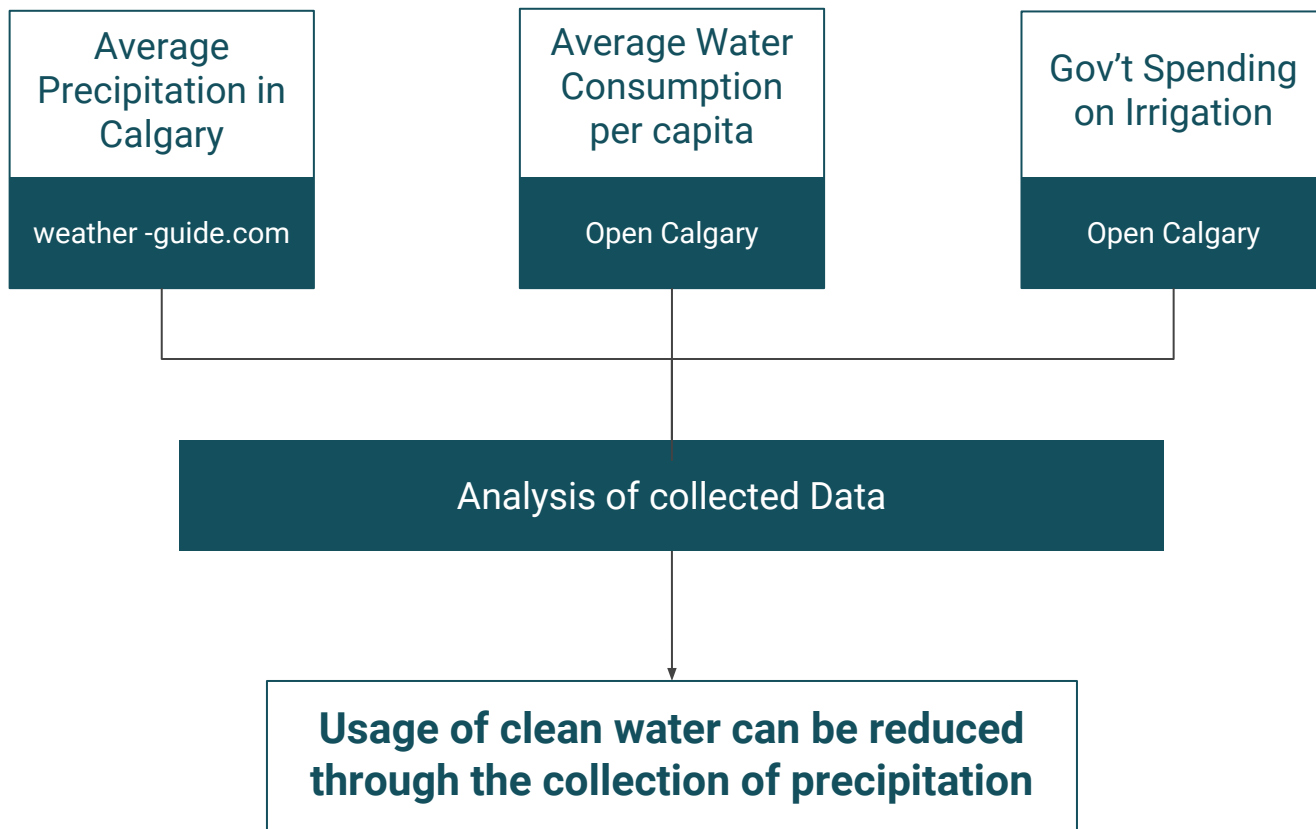
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# Data



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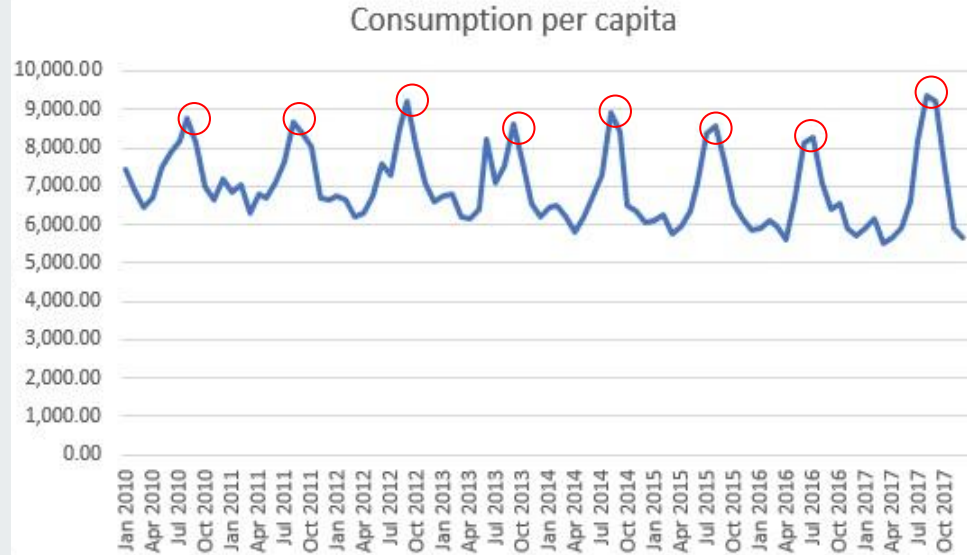
# Map of Datasets



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# Average Monthly Water Consumption Per Capita in Calgary

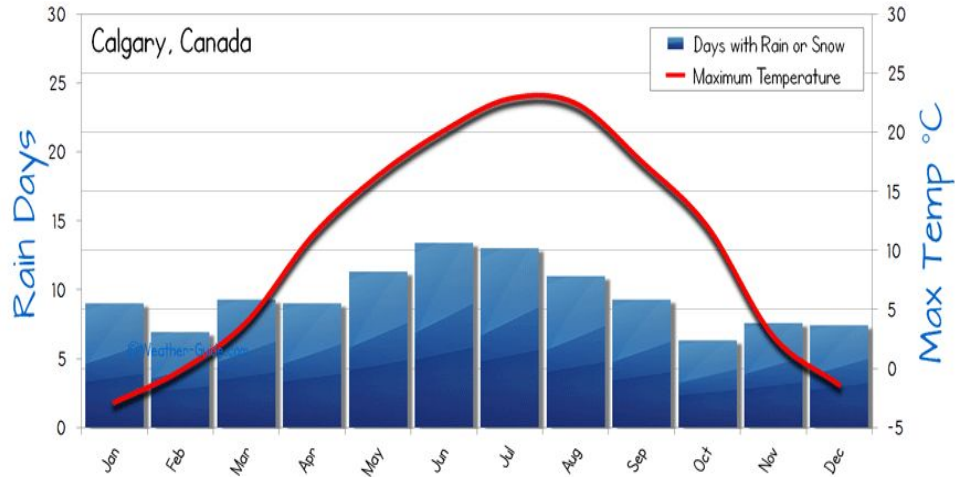
(The graph is based on the data set of the monthly water consumption by a single family available on <https://data.calgary.ca/Government/Water-Single-Family-Consumption/j7mp-hg75> )



# Average Precipitation in Calgary Per Month (2017)

Data organized by and obtained from Weather-Guide.com (2018)

The highest peaks of water usage correspond with the highest amount of precipitation in Calgary (during the months of May through August)





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# Solution



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# Storm water to conservation



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# Proposal

Gaining Support

Promotion of using household rain barrels



Starting small

Implementation of rain barrels for all families



Going Big

Creating public reservoirs and snow/rain storage



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# Summary



1. We propose to store natural rainwater and snowwater (first starting with family households)
2. Rain water is mostly available during the spring, and can be stored for usage throughout the months when water is needed the most.
3. By storing this water, we are simply taking advantage of natural resources in order to:
  - better our awareness of the environment,
  - saving money for both government and households,
  - reducing the impact of floods
4. Much like how the mandatory recycling bins, followed by the mandatory composting bins, came into play within our city, this is a reachable goal.



# Bibliography



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<https://data.calgary.ca/Government/Water-Single-Family-Consumption/j7mp-h975>

<http://www.calgary.ca/General/Pages/SmartCity/Tree-watering.aspx>

<http://www.calgary.ca/UEP/Water/Pages/Water-conservation/Indoor-water-conservation/Water-Use-in-the-Home.aspx>

<https://www.cbc.ca/news/canada/calgary/calgary-snow-storage-capacity-1.4569924>

[http://climate.weather.gc.ca/historical\\_data/search\\_historic\\_data\\_stations\\_e.html?searchType=stnName&timeframe=1&txtStationName=calgary&searchMethod=contains&optLimit=yearRange&StartYear=1840&EndYear=2018&Year=2018&Month=6&Day=22&selRowPerPage=25](http://climate.weather.gc.ca/historical_data/search_historic_data_stations_e.html?searchType=stnName&timeframe=1&txtStationName=calgary&searchMethod=contains&optLimit=yearRange&StartYear=1840&EndYear=2018&Year=2018&Month=6&Day=22&selRowPerPage=25)



# Thank you for your attention



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# Questions?

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