Rain and Snow Harvesting for Plant Irrigation in YYC

PIMS Datathon
2018 Calgary

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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?

Focusing on the problem

Looking at two case studies

Case Study 1

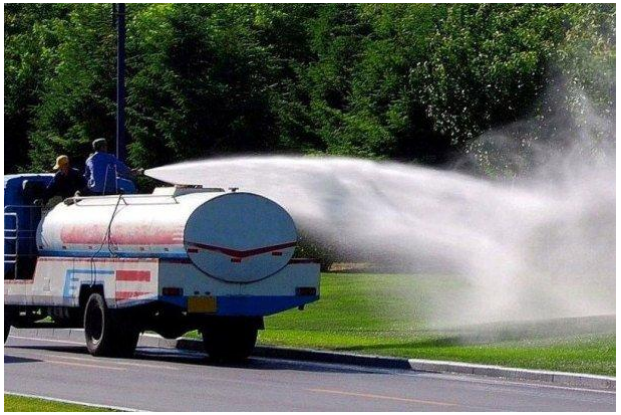
Irrigation of public areas within the community

Case Study 2

Domestic use of sprinklers to water the lawn

Case Study 1

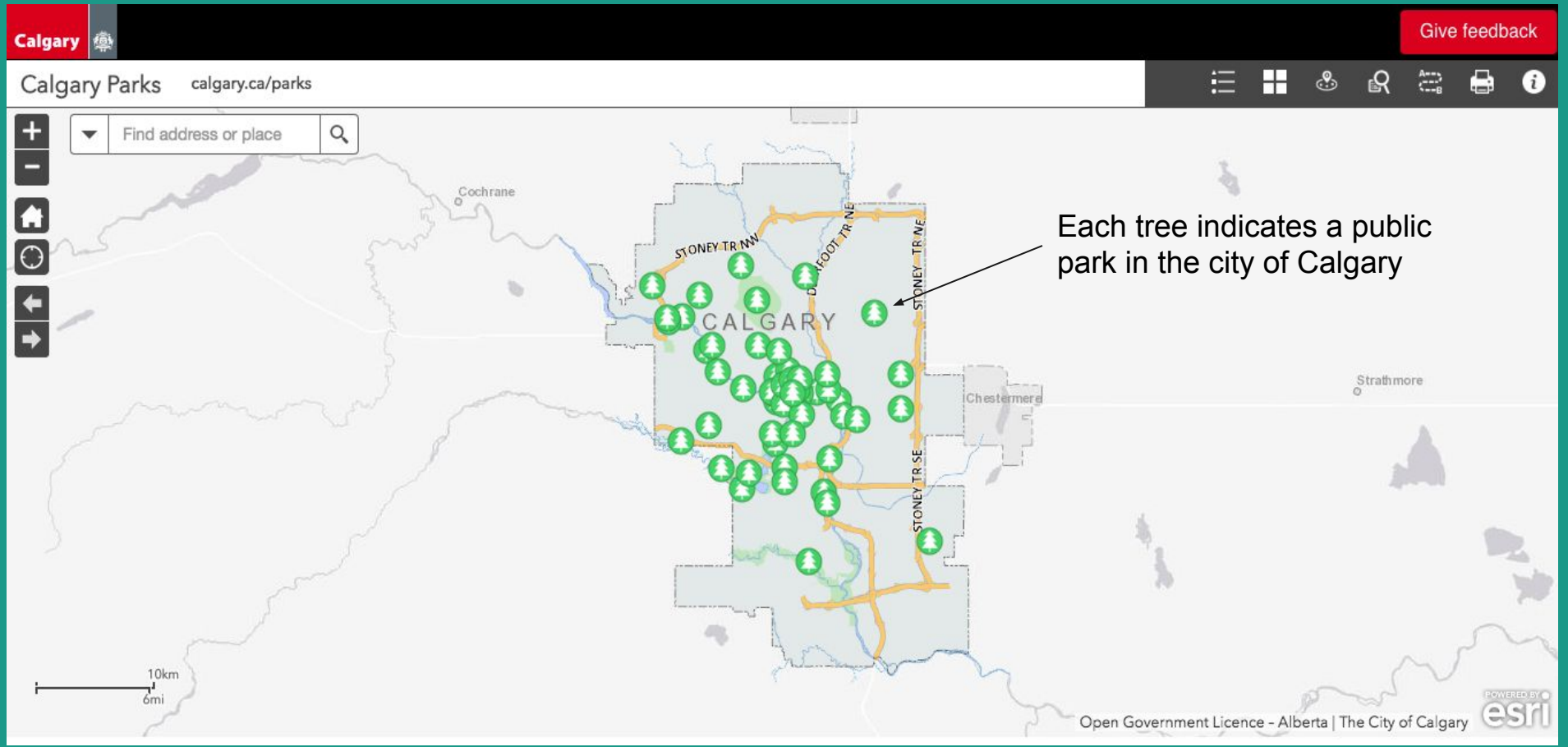
- The City of Calgary has a program for planting trees.
- Currently the city has planted “over half a million trees on public land,” and “1.5 million privately owned trees”
- There are approximately “9,000 newly planted trees each year”
- Public trees are watered for the first five years of their life”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



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

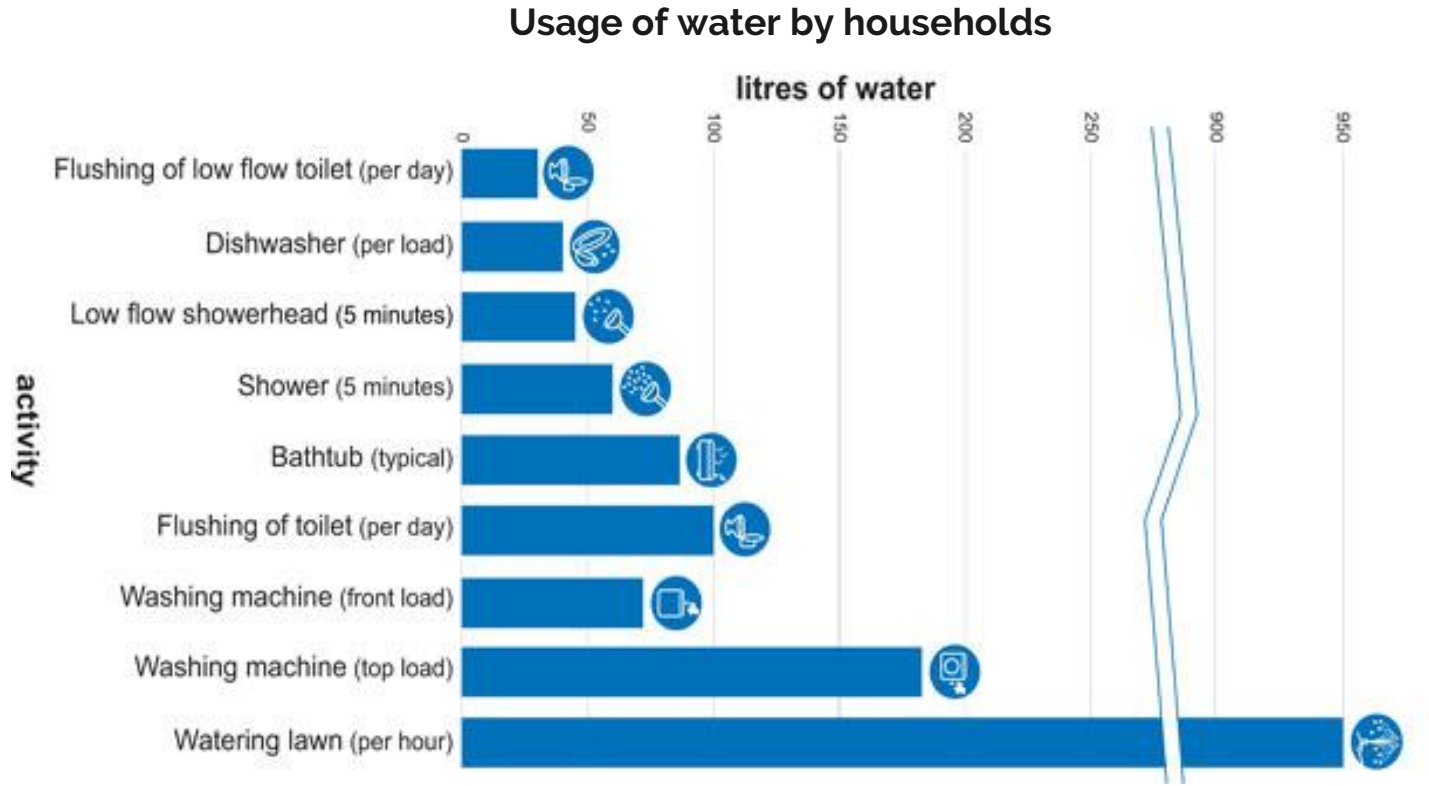
Calgary Parks Map

Version 1.0



Each tree indicates a public park in the city of Calgary

Case Study 2


Usage of water by households
litres of water
0
50
100
150
200
250
900
950
activity
Flushing of low flow toilet (per day)
Dishwasher (per load)
Low flow showerhead (5 minutes)
Shower (5 minutes)
Bathtub (typical)
Flushing of toilet (per day)
Washing machine (front load)
Washing machine (top load)
Watering lawn (per hour)

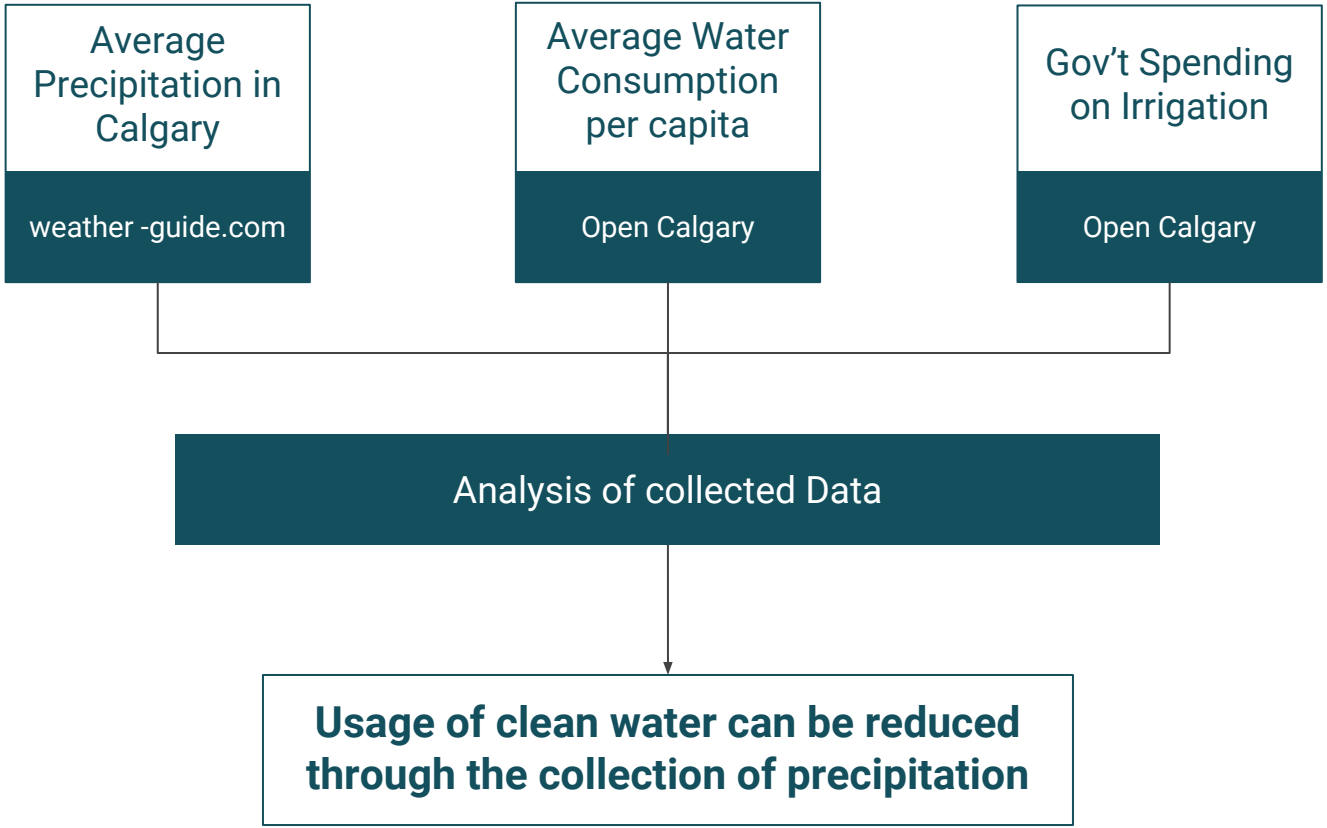
Factual Information

- 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.



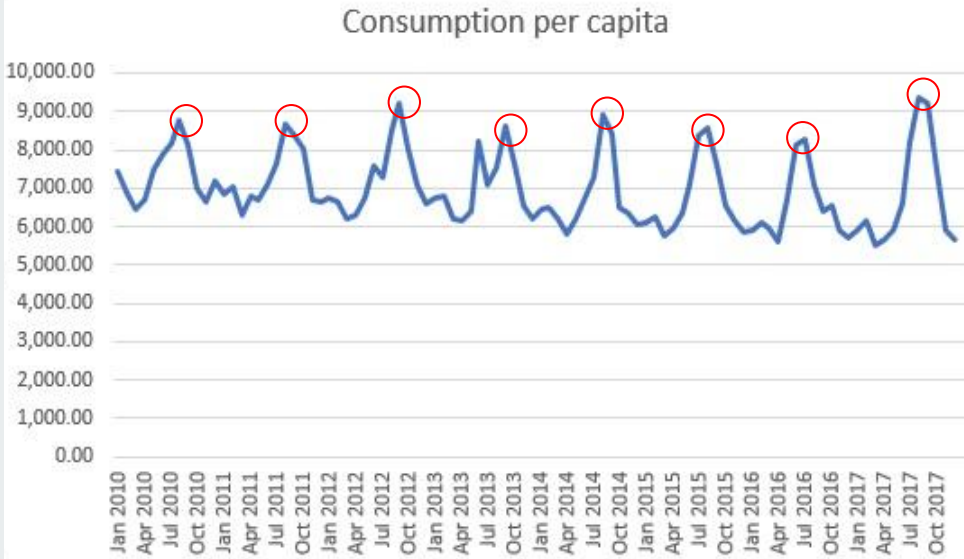

Data

Map of Datasets



Average Monthly Water Consumption Per Capita in Calgary

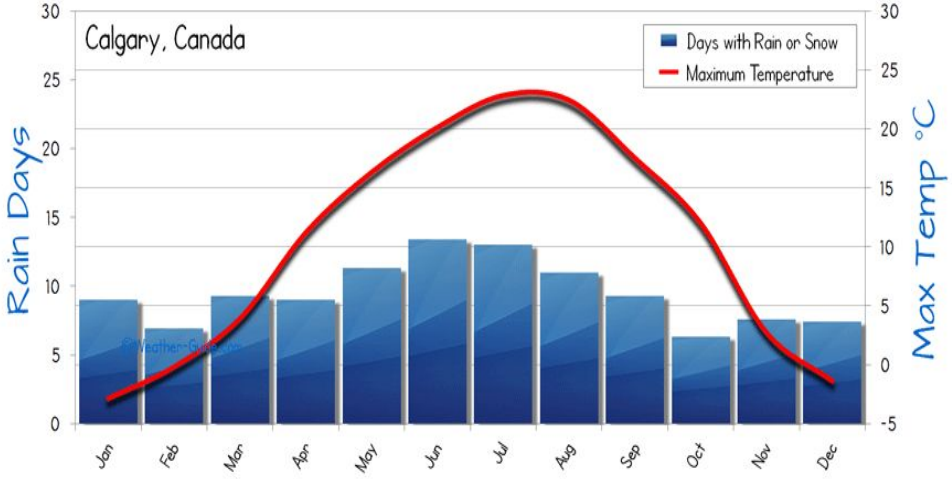
(The graph is based on the data set of the monthly water consumption by a single family available on https://data.calgary.ca/Government/Water-Single-Family-Consumption/j7mp-h975)



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)



Solution

Storm water to conservation

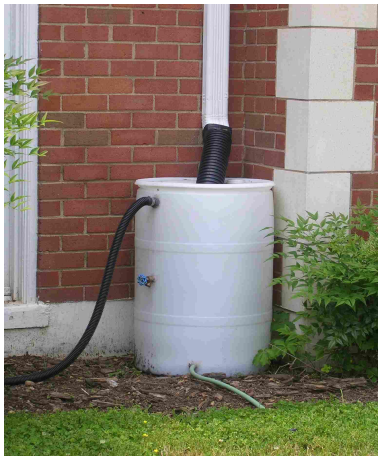
Proposal

Gaining Support

Starting small

Going Big

Promotion of using household rain barrels



Implementation of rain barrels for all families

Creating public reservoirs and snow/rain storage

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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Thank you for your attention

Questions?