

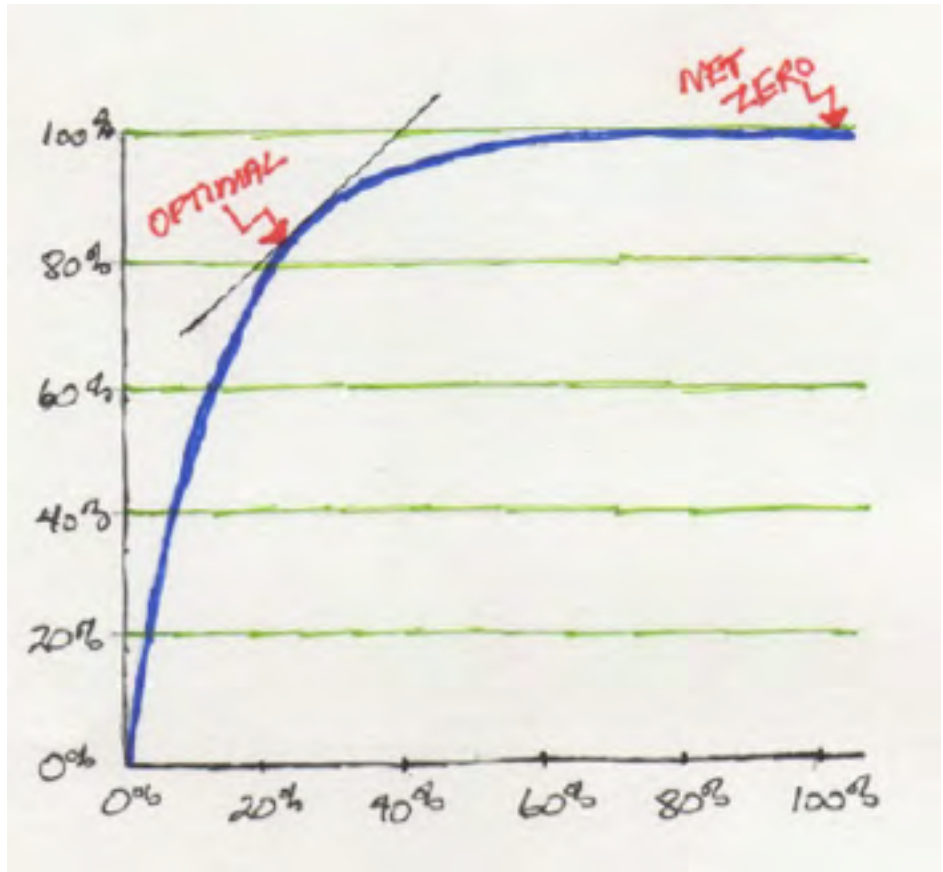


Reducing Residential Water Consumption

May 4, 2016



- Saskatchewan is blessed to have abundant amounts of low cost potable water
- Vereco is committed to designing homes that will last 100 years
- We believe that within 100 years, water will become more scarce and more expensive





Water consumption litres/person/day	
	conventional fixtures/appliances
Outdoor use	120.0
Toilet	70.0
Clothes Washer	56.8
Shower	43.9
Faucets	41.3
Bath	4.5
Dish washer	3.8
Total	340.3

Source: CMHC: Make Your House 'Alternative Water Ready'



Strategy 1: Reduce/eliminate outdoor water use

Water consumption litres/person/day	
	conventional fixtures/appliances
Outdoor use	120.0
Toilet	70.0
Clothes Washer	56.8
Shower	43.9
Faucets	41.3
Bath	4.5
Dish washer	3.8
Total	340.3



Strategy 1: Reduce/eliminate outdoor water use

Vereco recommends reducing/eliminating outdoor use by implementing the following strategies:

- install a roof runoff rainwater harvesting and storage system for outdoor use.
- Install a timer or controller that activates the valves for each watering zone at the best time of the day.
- Use drip irrigation for at least 50% of landscape planting beds to minimize evaporation.
- Use recycled water from clothes washer
- Xeriscaping





Strategy 1: Reduce/eliminate outdoor water use

Water consumption litres/person/day		
	convention al fixtures/ appliances	eliminate outdoor use
Outdoor use	120.0	
Toilet	70.0	70.0
Clothes Washer	56.8	56.8
Shower	43.9	43.9
Faucets	41.3	41.3
Bath	4.5	4.5
Dish washer	3.8	3.8
Total	340.3	220.3
Incremental Savings %		35.3%

Strategy 1: eliminate outdoor use



Strategy 2: Install low-flow fixtures

Water consumption litres/person/day		
	convention al fixtures/ appliances	eliminate outdoor use
Outdoor use	120.0	
Toilet	70.0	70.0
Clothes Washer	56.8	56.8
Shower	43.9	43.9
Faucets	41.3	41.3
Bath	4.5	4.5
Dish washer	3.8	3.8
Total	340.3	220.3
Incremental Savings %		35.3%



Strategy 2: Install low-flow fixtures

Vereco recommends the installation of very high efficiency fixtures and fittings:

- **Toilets: 4.1 L/flush**
- **Showers: 6.6 L/min**
- **Faucets: 5.6 L/min**





Strategy 2: Install low-flow fixtures

Water consumption litres/person/day			
	convention al fixtures/ appliances	eliminate outdoor use	Install low flow fixtures
Outdoor use	120.0		
Toilet	70.0	70.0	31.0
Clothes Washer	56.8	56.8	56.8
Shower	43.9	43.9	33.3
Faucets	41.3	41.3	40.9
Bath	4.5	4.5	4.5
Dish washer	3.8	3.8	3.8
Total	340.3	220.3	170.3
Incremental Savings %		35.3%	22.7%

Strategy 2: Install low flow fixtures



Strategy 3: Install low-flow appliances

Water consumption litres/person/day			
	convention al fixtures/ appliances	eliminate outdoor use	Install low flow fixtures
Outdoor use	120.0		
Toilet	70.0	70.0	31.0
Clothes Washer	56.8	56.8	56.8
Shower	43.9	43.9	33.3
Faucets	41.3	41.3	40.9
Bath	4.5	4.5	4.5
Dish washer	3.8	3.8	3.8
Total	340.3	220.3	170.3
Incremental Savings %		35.3%	22.7%



Strategy 3: Install low-flow appliances



Vereco recommends that when you replace your existing appliances, you should use:

- **Install low flow clothes washer**
- **Install low flow dish washer**



Strategy 3: Install low-flow appliances

Water consumption litres/person/day				
	conventional fixtures/appliances	eliminate outdoor use	Install low flow fixtures	Install low flow appliances
Outdoor use	120.0			
Toilet	70.0	70.0	31.0	31.0
Clothes Washer	56.8	56.8	56.8	37.9
Shower	43.9	43.9	33.3	33.3
Faucets	41.3	41.3	40.9	40.9
Bath	4.5	4.5	4.5	4.5
Dish washer	3.8	3.8	3.8	2.7
Total	340.3	220.3	170.3	150.3
Incremental Savings %		35.3%	22.7%	11.7%

Strategy 3: Install low flow appliances

Strategy 4: Install Alternative Water Reuse System

		Clothes Washer		Dishwasher		Faucet ²			Bath / Shower		Toilet	Outdoor Use	
		Wash	Rinse	Wash	Rinse	Kitchen Sink	Hand Basin	Laundry Basin	Bath	Shower		Above-Ground	Below-Ground
Water Volume (L/cap/d)³	Conventional Fixtures / Appliances	56.8		3.8		41.3			4.5	43.9	70.0	120.0	
	Low-Flow Fixtures / Appliances	37.9		2.7		40.9			4.5	33.3	31.0	Variable	
Quality of Water Collected from Fixture or Appliance		Black or Grey	Grey	Black		Black	Grey	Grey	Grey		Black	N/A	

¹ Water volume data from Vickers, A. (2001). Water use and conservation. Amherst, MA: WaterFlow Press.
² Data are not available for each individual faucet and may be reported in aggregate form for some fixtures, as required.
³ Litres of water per person(capita) per day.

Source: CMHC: Make Your House 'Alternative Water Ready'



Strategy 4: Install Alternative Water Reuse System

Vereco recommends that all new homes be alternative water ready. If your combined water/sewer costs are in excess of \$.035/litre or if other circumstances demand water conservation, Vereco recommends that you consider the installation of an alternative water recycling system.

Strategy 4: Install Alternative Water Reuse System

Be alternative water ready

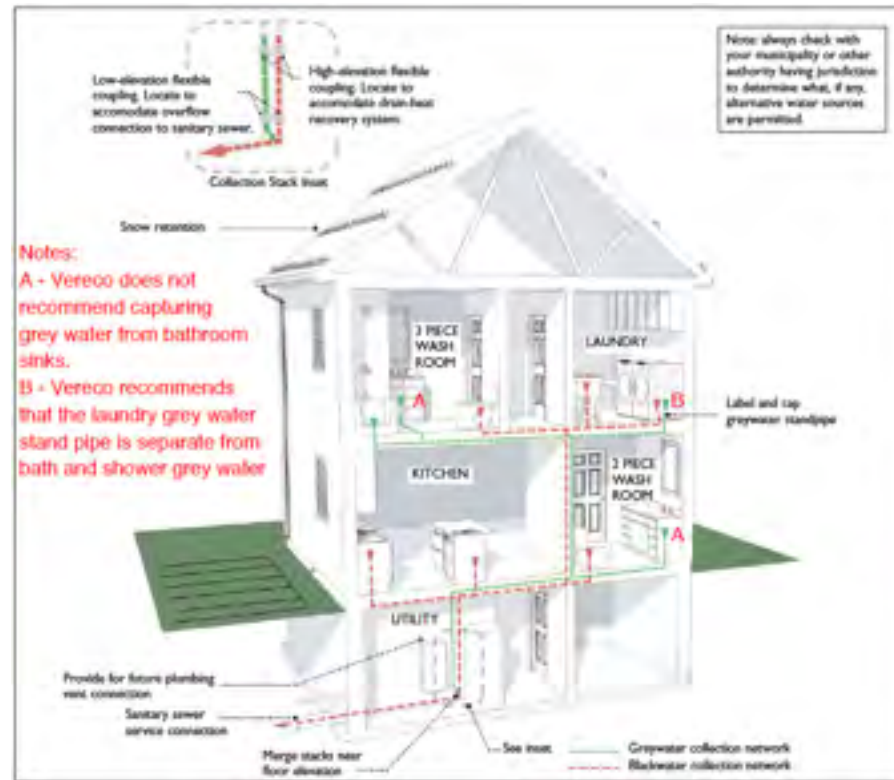


Figure 1 Collection Network (Source: CMHC “Make your house alternative water ready”)

Strategy 4: Install Alternative Water Reuse System

Be alternative water ready

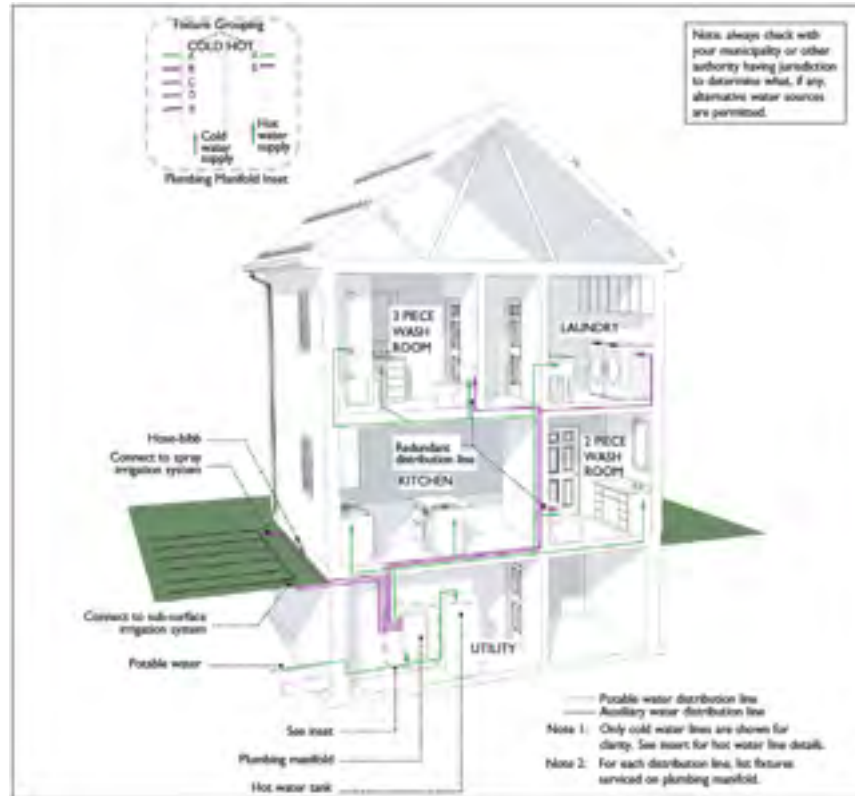


Figure 2: Distribution Network (Source: CMHC “Make your house alternative water ready”)



Strategy 4: Install Alternative Water Reuse System



If your combined water/sewer costs are in excess of \$.035/ litre or if other circumstances demand water conservation, Vereco recommends that you consider the installation of an alternative water recycling system.





Strategy 4: Install Alternative Water Reuse System

Water consumption litres/person/day					
	convention al fixtures/ appliances	eliminate outdoor use	Install low flow fixtures	Install low flow appliances	Add grey water reuse
Outdoor use	120.0				
Toilet	70.0	70.0	31.0	31.0	
Clothes Washer	56.8	56.8	56.8	37.9	37.9
Shower	43.9	43.9	33.3	33.3	33.3
Faucets	41.3	41.3	40.9	40.9	40.9
Bath	4.5	4.5	4.5	4.5	4.5
Dish washer	3.8	3.8	3.8	2.7	2.7
Total	340.3	220.3	170.3	150.3	119.3
Incremental Savings %		35.3%	22.7%	11.7%	20.6%



Strategy 4: Install grey water reuse



Conclusion

Vereco recommends:

1. reducing/eliminating outdoor use by implementing the following strategies:

- install a roof runoff rainwater harvesting and storage system for outdoor use.
- Install a timer or controller that activates the valves for each watering zone at the best time of the day.
- Use drip irrigation for at least 50% of landscape planting beds to minimize evaporation.
- Use recycled water from clothes washer
- Xeriscaping

2. the installation of very high efficiency fixtures and fittings:

- Toilets: 4.1 L/flush
- Showers: 6.6 L/min
- Faucets: 5.6 L/min

3. when you replace your existing appliances, you should use:

- Install low flow clothes washer
- Install low flow dish washer

4a) all new homes be alternative water ready

4b) if your combined water/sewer costs are in excess of \$.035/litre or if other circumstances demand water conservation, you should consider the installation of an alternative water recycling system.

Water consumption litres/ person/day		
	Before	After
Outdoor use	120.0	
Toilet	70.0	
Clothes Washer	56.8	37.9
Shower	43.9	33.3
Faucets	41.3	40.9
Bath	4.5	4.5
Dish washer	3.8	2.7
Total	340.3	119.3
Total Savings %		64.9%



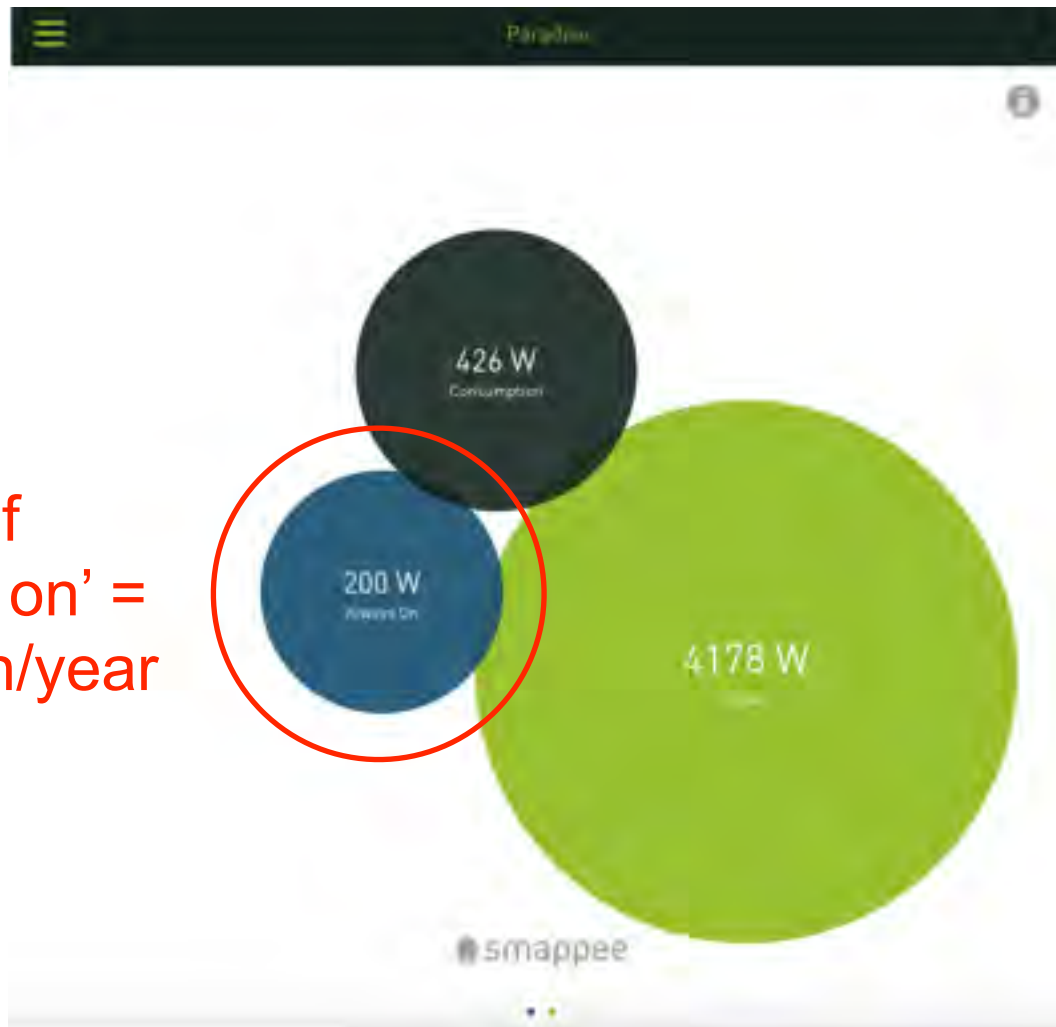
Our experience

	LCD
Saskatoon (2)	520.0
CMHC study before (1)	340.3
Saskatchewan (2)	290.0
Langham (2)	247.0
Martensville (2)	204.0
Warman (2)	191.0
Lepage before grey water system (3)	129.3
CMHC study after	119.3
Lepage after grey water system (forecasted)	100.9
Sarilia Average (3)	74.0

- 1) CMHC: Make Your House 'Alternative Water Ready'
- 2) Water Security Agency SASKATCHEWAN COMMUNITY WATER USE RECORDS 1998 to 2012
- 3) Sarilia Community Association water delivery records

What about monitoring?

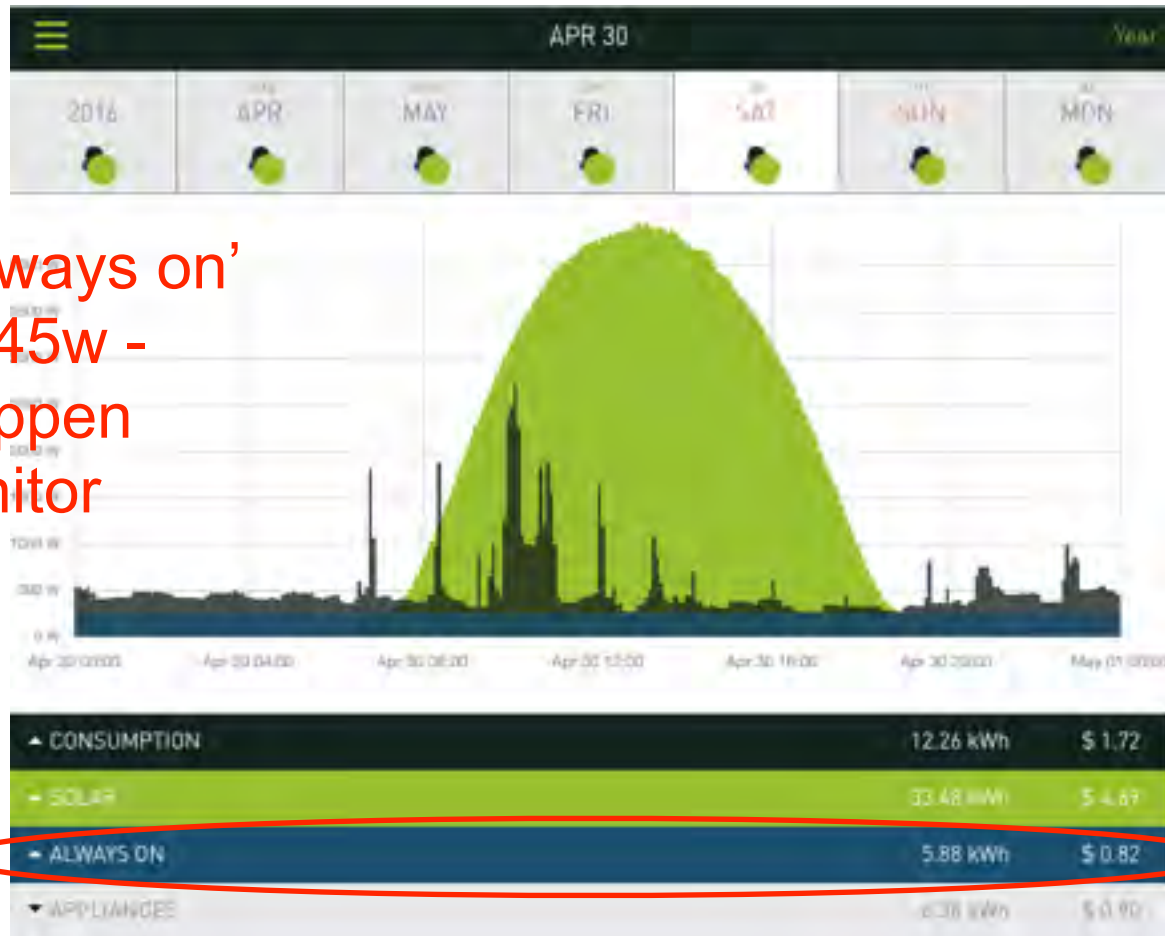
100W of
'always on' =
875kWh/year





What about monitoring?

We reduced 'always on' from 725w to 245w -
What would happen if we could monitor water??



Questions?



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