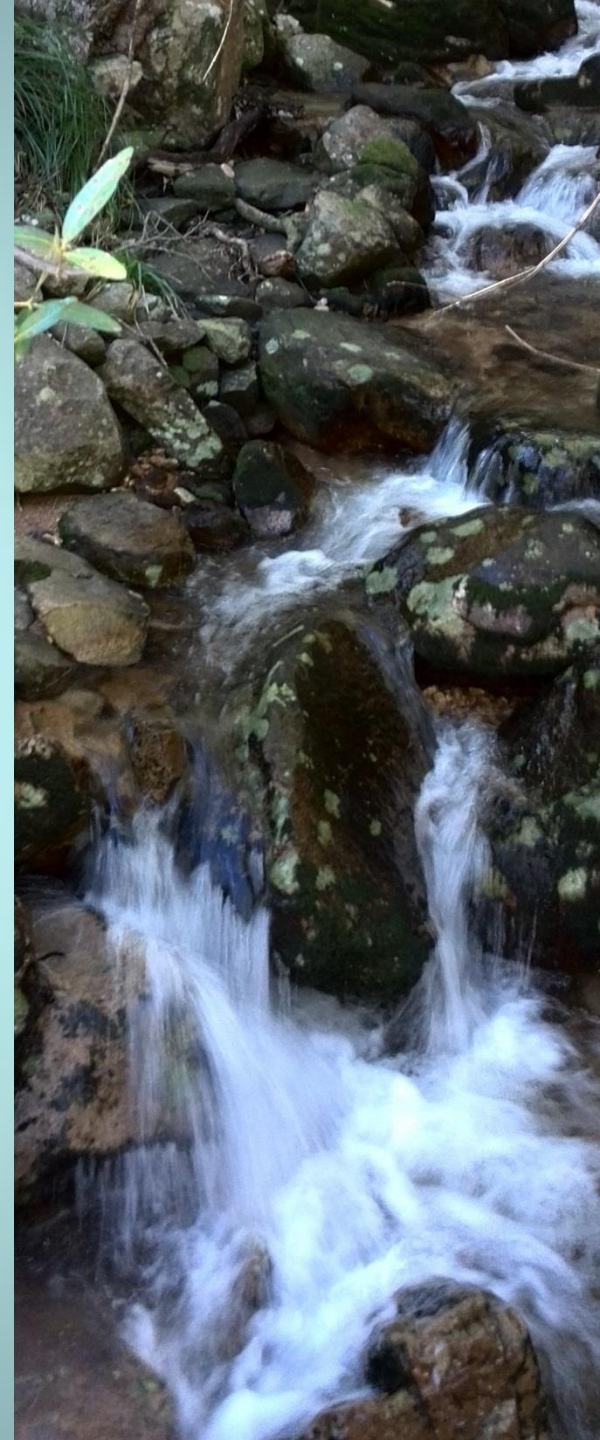**AFRICAN UTILITIES** (PTY) LTD

# *Dropping water into our cellphones –*

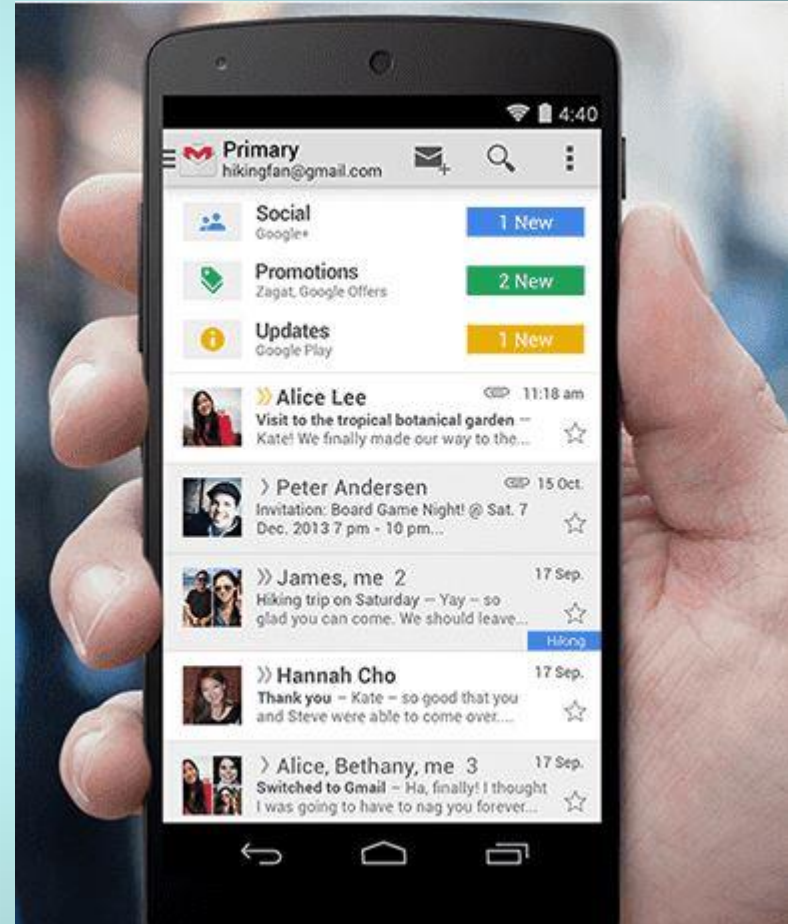*investigating smartphone app innovations for achieving water use efficiencies and reducing impact*

Nicholas  King (PhD, LLM), Research Unit, Environmental  Science & Management, School of Geo & Spatial Sciences, NWU;
Sandy Heather, African Utilities;
Rob Heather, African Utilities;

IAIAsa Annual Conference 2014

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# Overview

1. Brief outline of concept;

2. Progress to date;

3. Review of international examples;

4. Options & Opportunities;

5. Q&A

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- Entrepreneurial company, investing in innovations in natural resources sector;

- Brief: Is it possible to build a business model out of ***reducing human use and impact*** on our scarce water resources in South Africa?
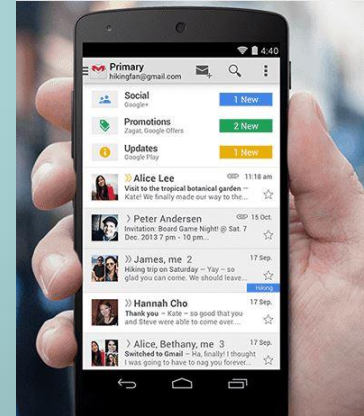

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# Overall objective – business model!

- identify current *information challenges, needs and opportunities* in water use;

- particularly at the *individual household level*;

- primarily to assist with *reducing consumption and user costs*;

- focussing on *efficiencies and demand management*, and;

- overall to *lower human use and impact* on our scarce water resources.

# Info access challenge = opp?

- At personal and household water use level, ***difficult for individuals to access required information*** to measure and manage water needs and impact;

- In particular in efforts aimed at ***reducing water consumption and achieving cost savings***;

- However, ***smartphone app technology*** provides increasing opportunities for provision of such information to individuals in ***real-time, anywhere…..***



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# Scalable, existing & future?

- utilised to reduce water consumption and impacts, from ***the individual, to the household, to the community level,*** both within existing built infrastructure as well as within planning for ***new developments?***

- potentially ***scalable*** to wider water resources management, including at CMA level?

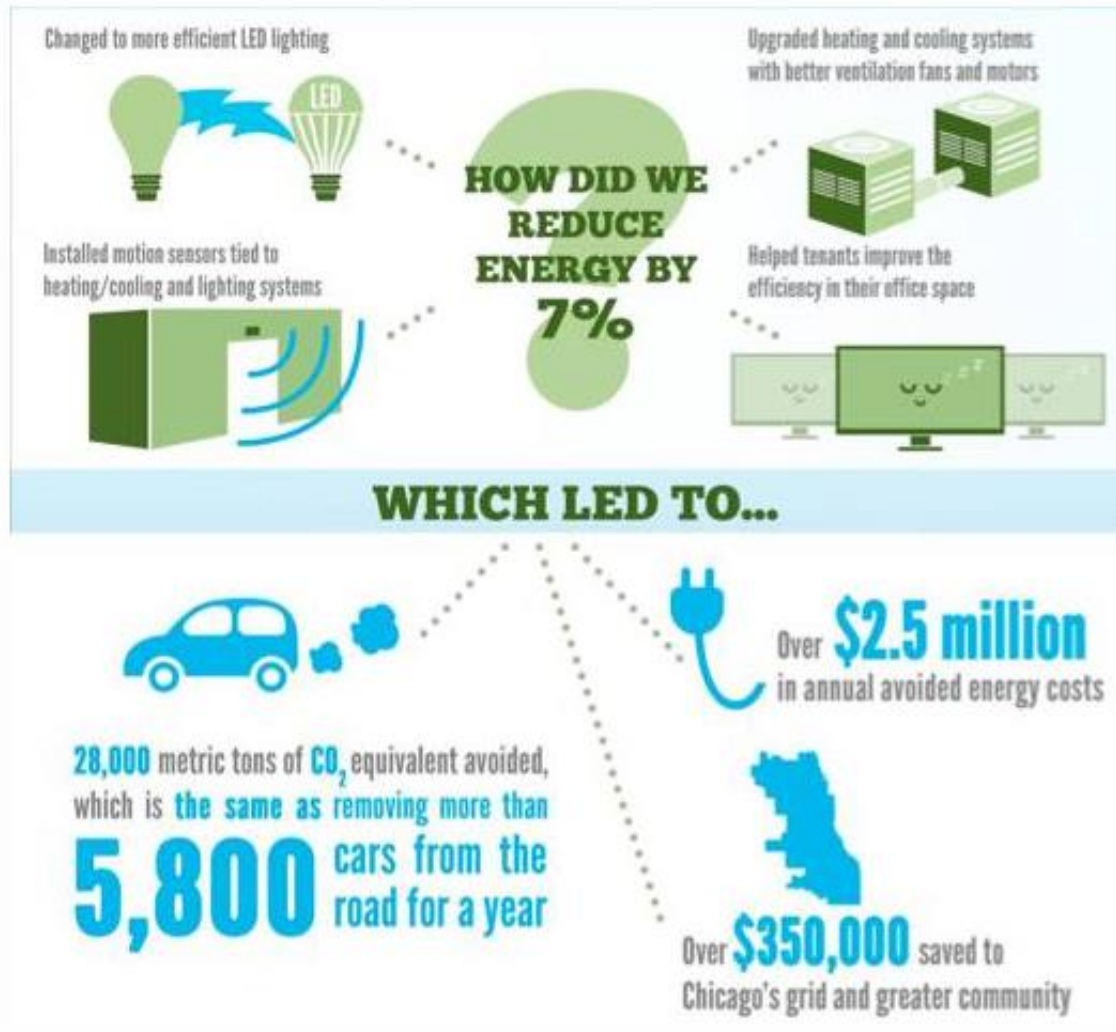- Municipal water budgets?

# Could it work?

- How to enable consumers to *make better decisions* about their daily water use?

- When people estimate their own water use, they often pick a figure that's *only half of what their actual usage* is…

- Knowing how much water is *actually used, and when*, could be a huge help in *understanding* home water consumption and conservation…..

*"We see **clear and positive results** of what happens when you provide energy customers the **digital tools and access** they need **to monitor and control their energy consumption***"

# Cost savings of energy efficiencies



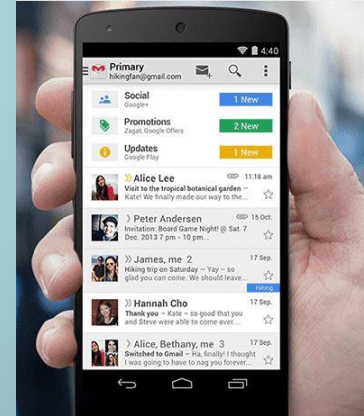Chicago Buildings Cut Carbon, Save $2.5M

# Limitations of current billing

- Basic monthly bill from utility gives a simple ***bulk number of Kl of water*** used;

- Broken down by pricing only in a ***tiered water cost system***;

- By the time bill received, any actions you could have taken to reduce your usage, and hence your bill, ***are a month behind;***

- A leak, or a hose or sprinkler system left on overnight, you may not know about before a ***huge amount of water has been wasted***;

- One solution is to go ***read your meter*** at the same time everyday, and ***manually track it***, to get an idea of how much water you've used each day – ***not very practical!***

- ***Its also just bulk volumes…..***

# Narrowed Brief

- opportunities in SA for using rapidly spreading smartphone app technology to address *real-time information access needs in the water sector*?

- "Sharing Economy" e.g. Uber, *AirBnB...hugely successful business models*....



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# WaterWise App/s:

What would change awareness / behaviour / consumption, and generate income?

1.   *must do more than just **link metre to phone**;*

2.   *must **auto-convert** water volumes to rands/cents;*

3.   *must show **savings/incentivise**;*

4.   *must be to **centralised home database/cellphone**;*

5.   *must be as **'real-time' as poss** to effect behavioural change...like online banking transactions....*

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# Water apps for smartphones and tablets

| Icon | Name | Author | Platform | Type | Size | Age | Cost | Author Description |
|---|---|---|---|---|---|---|---|---|
| | Water Cycles | ISYGAMES SC | Apple | Game | 14MB | Primary | $1.99 | Will you manage to guide all the water from the mountains to the sea without losing a single drop? On the way, you'll have to cross cities, farms and factories. The water will get polluted and your mission will get harder! Water Cycles, the new app from isygames, is a fun family game, packed with over 100 puzzles at six difficulty levels. Every new challenge is designed to help you gain an intuitive understanding of why water is so important in our lives – how it changes state, how it moves, and what we need it for. And all while playing a fun game! |
| | Lemurs Chemistry: Water | New Lemurs | Apple | Game | 138MB | Secondary | 1.79 | Help the Lemurs grow their plants in this chemistry-based action puzzle game! Slide and collide molecules, start chemical reactions creating water and feed the flowers. Discover spectacular hidden chain reactions - there are many - to earn multipliers, but watch out for those radicals! Figuring out the game teaches the scientific skills of forming theories and experimenting, and the knowledge gained is realâ€"based on cutting edge scientific research on the combustion of hydrogen. |
| | Raindrop Math | Pilot Fish Media | Apple | Math | 0.6MB | Primary | 0.99 | Solve the simple math questions as raindrops fall out of the sky. This game helps you sharpen your math skills and quicken your wits by using motor and mental skills. |
| | Water Capacity | ChusLab | Apple | Math | 9.4MB | Primary/Secondary | Free | It's just the same game as played in (the movie) Die Hard 3. It's a game to leave just the quantity given by mission in the bottle by moving the water and filling in the bottles of different sizes.  It's a kind of simple but highly addictive puzzle game which requires brain manipulation. |
| | Peter the Meter | Southern Water | Apple/ Android | Game | 79.5MB | Primary | Free | Southern Water's metering programme has its very own digital poster boy. Download our free Peter the Meter game and play through 11 fun mini-games of water saving action. From Fill the Drum, where you compete to ping the most undies in the washing machine... to Wash the Veg, where you direct your trusty courgette to perform Olympic style dives into the sink.  Fun, frantic and full of useful tips, Peter the Meter can be played with up to four people on one device. Challenge the whole family to see who can save the most water! |
| | Water Logic | HappyFaceDevs | Android | Math | 1.0MB | Primary/ Secondary | Free | Water Logic is a simple yet addictive puzzle game. The rules are very simple but the solution is always complex.  You have vases of different capacities which you can manipulate. Unfortunately they are not marked so you can only pour water from one vase to another until the initial vase is empty or the other one is full. Add the possibility of filling or emptying each vase and you get a game in which every move counts. Do you think you can complete all the levels in the minimum number of moves? |
| | The Crow and the Water Jug | AppleTree eBooks | Android | Book | 9.7MB | Primary | Free | A long time ago there was a Crow who was very thirsty and decided to fetch some water. The Crow finally found a water jug with little water in it. The neck of the water jug was too narrow that he couldn't reach the water. Finally, the clever Crow was able to drink his fill. How did he do? |

# Water apps for smartphones and tablets

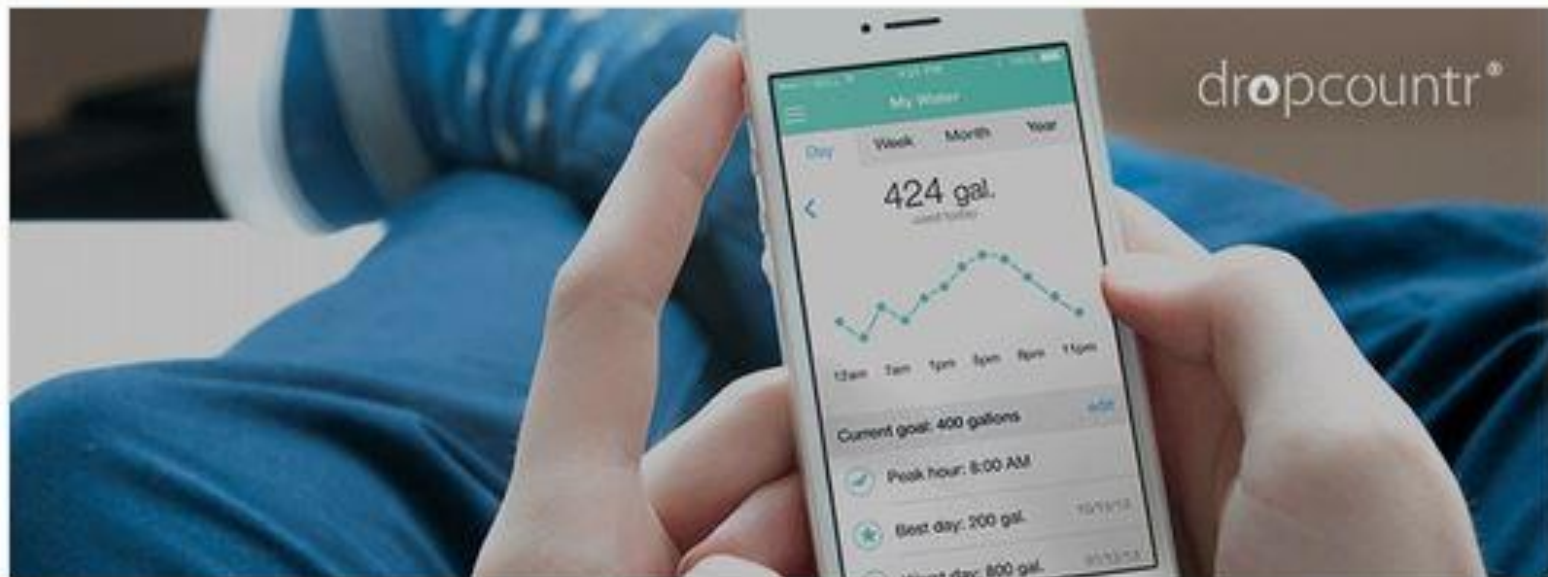| Icon | Name | Author | Platform | Type | Size | Age | Cost | Author Description |
|------|------|--------|----------|------|------|-----|------|--------------------|
| | WaterFacts! | Stuart Woolley | Apple | General | 1.2MB | Primary/ Secondary | Free | WaterFacts puts thousands of items of Water related facts and trivia at your fingertips. Simply click on the 'Another WaterFact!' button to receive a random fascinating fact about the substance that is vital for human life and has been found all through our own galaxy! |
| | Water: An Environmental Quiz Deck | AA+ | Apple | Science | 0.3MB | Secondary | $1.99 | As a substance, water constitutes 50 to 65 percent of each of us and covers 70 percent of the planet's surface. As a subject water rewards contemplation with fascination. These engaging questions and answers present 48 concise examinations of worldwide water and our often troubled relationship with it. What is Earth's wettest place? Where is the saltiest seawater found, and why does salinity vary? What major corporation decided not to strip-mine the Okefenokee Swamp and instead made an immense grant to protect it? How does a geyser work, and how many geysers are there in the world? Consult this quiz for lucid answers rendered in appealingly casual prose. A lively test-your-knowledge game for multiple players, Water contains enough erudition to satisfy the solitary reader as well. |
| | Water Facts | Escape Plan B | Apple | General | 0.4MB | Primary/ Secondary | 0.99c | Water Facts is a collection of interesting facts about water and water conservation. Did you know that only three percent of the earth's water can be used as drinking water? |
| | HowsmyWater? | Valitics | Apple | Science | 3.1MB | Secondary | $5.99 | Improve the accuracy, ease, and functionality of your pool and spa maintenance program by using the HowsMyWater application. HowsMyWater (HMW) captures test strip results with your iPhone camera and uses sophisticated image analysis and an intelligent treatment calculator to generate customized treatment plans for your pool or spa. |
| | Water Buddy - Water Usage Tracker | Aiden Cooper | Apple | Health | 1.1MB | Primary/Secondary | 0.99c | Water Buddy keeps a history of your water meter readings provides an instant overview of your usage and whether you are keeping within your target. Whether your target has been set by local water companies or you just want to save money, Water Buddy will help you meet those targets. |
| | My Water Diary | DED Associates | Apple | Conservation | 0.5MB | Primary/ Secondary | Free | My Water Diary' is brought to you by the Free Radicals as part of Water Amnesty project. Track your water usage over a week and aim to reduce your consumption. |

# Water apps for smartphones and tablets

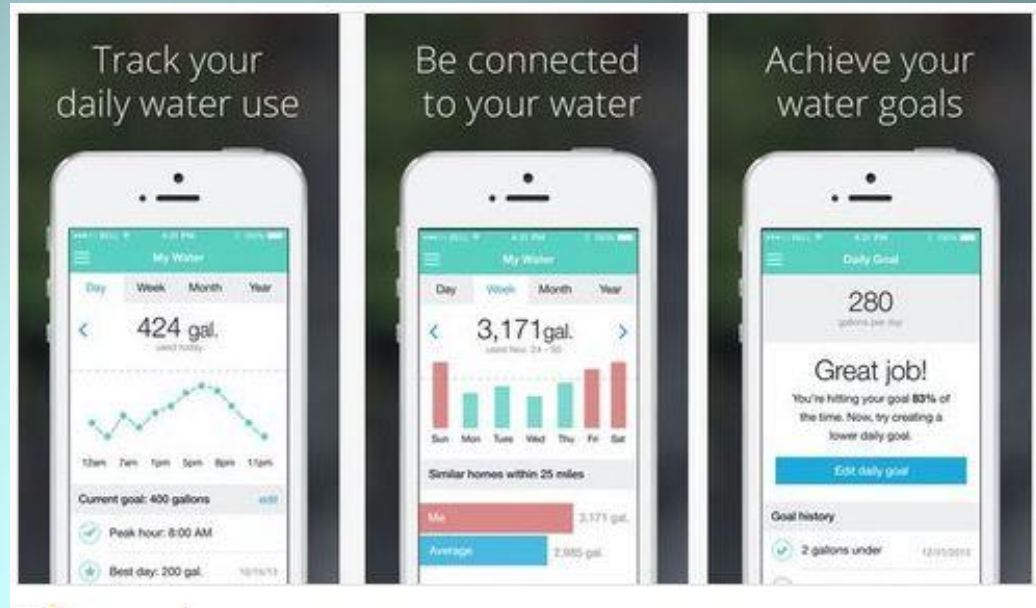| Icon | Name | Author | Platform | Type | Size | Age | Cost | Author Description |
|---|---|---|---|---|---|---|---|---|
|  | Virtual Water | Raureif | Apple | Science | 5.5MB | Primary/ Secondary | $1.99 | The vast amount of water consumed and polluted in the making of products has an enormous impact on the ecological footprint of human civilization. Carry the Virtual Water digital companion anywhere and grow more concious about how much water our everyday food and beverages really consume. |
|  | Energy Consumption Analyzer | Christoph Zens | Android | Science | 291K | Primary/ Secondary | Free | This application keeps track of your energy consumption. Add your meters for gas, electricity, or water to the database and record the current meter readings from time to time. Readings can be color-coded and comments may be added to remember special situations which may explain unusual energy usage. A regular reading interval is not required, take a reading whenever it is convenient. From the entered data, the application calculates the average normalized rate of consumption per hour, day, week, or month (bewteen two readings) and draws a graph showing the consumption rate over time. |
|  | Energy Costs Calculator | AB-Tools.com | Android | Science | 201K | Primary/Sec ondary | Free | Do you often wonder which household appliances use so much power? You don't know why your water bill is so high?  This free power and water consumption calculator makes it easy to find the appliances responsible for your high bills.  Big appliance database and many tips on energy savings included. |
|  | Ten Drops | TinoMe Tech Co., Ltd. | Apple | Game | 12.3MB | Primary/ Secondary | Free | The focus of 10 drops is conservation and intelligent use of resources. You begin each level with a set number of drops, and you must use them to expand water blobs that burst when they become too large. The goal of the game is to wisely use the drops on each level to cause all the blobs to bust. |
|  | Water Warrior | Triton Showers | Apple | Game | 16.8MB | Primary | Free | Carry water from the pump to the well along a treacherous track in the shortest time possible, while losing as little water as possible. Watch out for lions, rock falls, snakes, goats and also the rickety bridge. |
|  | Shower Time | mV8 Studios | Apple | Science | 1.3MB | Primary/ Secondary | 0.99c | Shower Time is an app developed to help people take shorter showers. This has been tested successfully to work on kids that don't realize that time has passed since they started the shower. The app gives vocal notification of the time passing so you can put the iPhone or iPod in the bathroom (but away from any water) and you can hear the time spent while in the shower. For example if you select to be notified every 5 minutes, at the 5 minute mark it will say "5 minutes", then at 10 minutes it will say "10 minutes" up to 40 minutes. It also shows the user how much water they have used. |
|  | myUse | Dirk-Jan Faber | Apple | Science | 1.6MB | Primary/ Secondary | $1.99 | The application myUse can keep track, graph and mail your electricity, gas and water usage. Keeping track of your environmental footprint is becoming more and more important. Not everyone is keeping track of the electricity, gas or water usage as often as they should. Main reason for that is that it is not so user friendly to walk to the meters every once in a while, write down the numbers on a piece of paper, walk to the computer, add the numbers into your spreadsheet and do some calculations with it. |

# "Dropcountr"

Derek Markham (@derekmarkham)
Technology / Gadgets
August 5, 2014

**Share on Facebook**



© *Dropcountr*

Would knowing how much water you used each day, as opposed to only knowing your total for each month, as shown on your water bill (a month later), help you to conserve water? One company thinks so, and their app aims to give consumers access to their own data in order to spur water conservation at the household level.

Track your daily water use — Be connected to your water — Achieve your water goals

- tracks *daily water use*;
- tips for *saving water*;
- access to *savings rebates*;
- water conservation *goal setting and tracking*;
- *directly message* the water utility;
- can *compare* own water budget and actual water usage with that of others;
- see *trends and spikes over time*, allowing a better understanding of own water footprint and take action to reduce it;
- thus effect savings – *water and cash*!

# Poss 'Water-wise' Apps:

1. Manual to digital real-time metering on **all/main home/office taps/outlets?**

2. **'Smart-grid' metering** of garden irrigation systems, soil moisture content and/or pools?

3. Analysis of Census data and municipal accounts to determine **'normal'/average water use**, for individuals, households etc, per dwelling type – flat, suburban house, rural home, etc; these could provide initial **'baselines' to beat**;

4. **'Game-ing' options** to instil competitive/fun component – making the consumption data (probably volumes and/or savings) **visible/shared/in public domain** – public metres in blocks of flats, streets, communities, towns; linked to social media e.g. municipal websites, Facebook pages, etc;

5. Provision of **'true-cost' water footprint of consumer goods**, like SASSI 'FISH-MS', could type in product and get instant **'water-footprint' info** in return, to assist 'water-wise' purchasing;

6. Take-up by **CMAs**? Municipalities?

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# Thanks!

Questions?

Suggestions?