Calliope Business Plan

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Company Purpose

Calliope is like Nest, but for water. Our technology products – hardware and software -- help homeowners eliminate the cost and damage associated with wasting water throughout the household. By optimizing water use, it's possible for homeowners in most of the United States to cope with the rising cost of water, and changing water regulations, without drastic changes to their landscaping or behavior.

Problem

In California, 9% of residential water is lost to in-house leaks — approximately 11,000 gallons per year per household. Nationwide, that extends to about 1T gallons lost per year. While some of this water is lost in soft leaks — a dripping faucet, a running toilet — much of it is lost in hard leaks, the kind that destroy floors and walls, and lead to expensive repairs.

Water damage from leaks is the third most common homeowner insurance claim in the United States, with the average claim costing an insurance company $7500.

Homeowners have limited visibility into water wasted from leaks, receiving notifications from their water districts days and sometimes a month after the fact. Unless the leak is easily visible, it can run undetected for months, causing damage and wasting money.

In some areas of the country, such as California, concerns about dwindling groundwater supply have caused municipalities to sharply increase water pricing and to begin water rationing, putting more pressure on homeowners to eliminate wasted water throughout the household.

Existing solutions for leak detection are cumbersome and expensive, involving an invasive installation of multiple sensors, and a separate monitoring service, similar to home security services. These services can cost up to $2000 up-front to install, plus yearly service charges, and require regular maintenance and calibration.

For these reasons, despite obvious homeowner benefits, including money saved on the water bill, avoiding damage to the home, and discounts available on homeowner insurance policies, consumer adoption has been low.

Solution

For homeowners, Calliope optimizes water use so you can detect wasteful leaks before they do serious damage, and meet water guidelines without sacrificing lifestyle.

Calliope's first product, the Calliope Water Manager, is a whole-house flowmeter that measures water flow at a single point near the water main entrance, and streams that information to the cloud via the homeowner's wifi. There, Calliope's data service processes the water use data and disaggregates it into its category components: toilets, shower, bath, washing machine, dishwasher, sinks, outdoor watering. The Calliope app provides simple, intuitive visualizations and reporting on this water use and how it compares to averages. Finally, Calliope sends notifications when it detects water waste – a current leak, unusually high use, or watering on the wrong days, which could lead to expensive fines.

Our device is $250 + $150 install. The basic data service is free for life. On leak detection alone, we will save the average household $60/year on their water bill, plus 5%-10% discount on any major homeowner insurance policy, so payback is approximately two years. We plan to add a premium service at $60/year, which will include automatic water shutoff on leak detection, for an additional $160/year value (pushing the payback period below one year).

Why Now

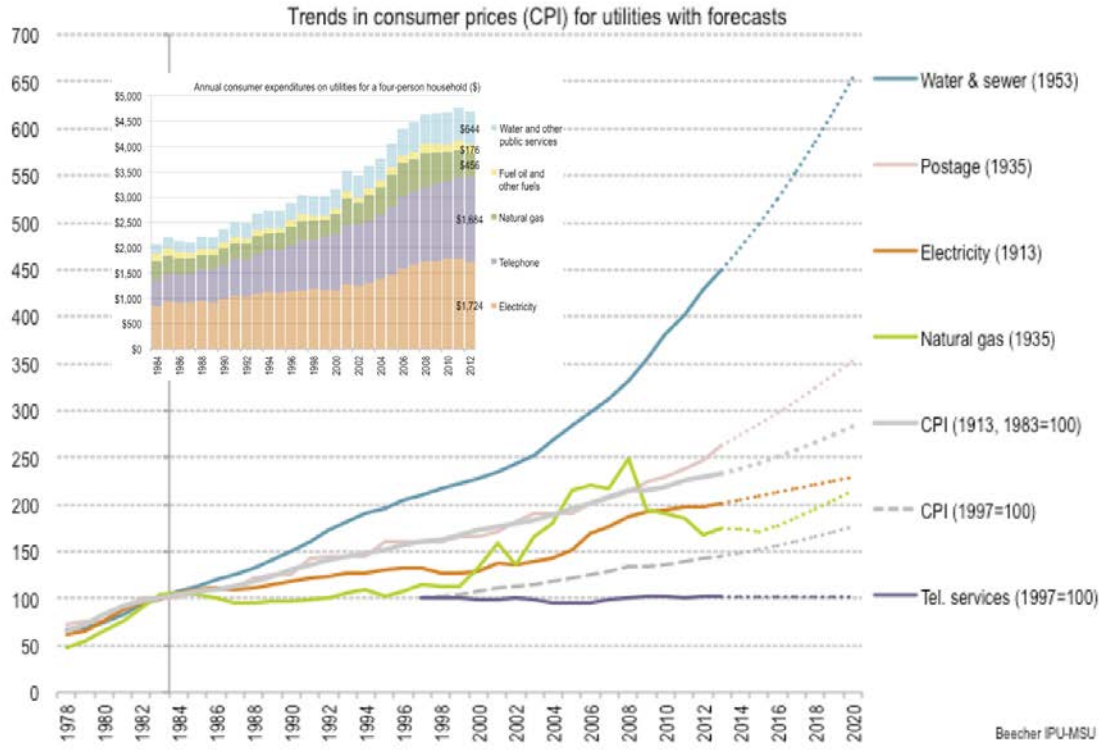
A massive California drought on top of permanently dwindling groundwater supplies has led to mandatory conservation measures statewide, targeting average 20% reduction in urban water use. This has attracted investment in water conservation, which has traditionally been slow and small.

In addition, a critical mass of adoption of other IoT smarthome devices, such as Nest, has made it possible to approach the problem of leak detection in a novel, low-cost way. For example, existing residential leak monitoring solutions use a keypad near the door, similar to an alarm system, for the homeowner to note whether they are home or away, and adjust the sensitivity of leak detection accordingly. However, if the homeowner has a Nest thermostat, it is able to detect home/away automatically, and exposes that via an accessible API. Calliope uses this integration to greatly improve the customer experience.

Finally, water prices, which have traditionally been heavily subsidized by government, are rising much faster than any other utility pricing in the US. As a household bill, it is rising in prominence for US homeowners, who are increasingly open to solutions to reduce waste and cost without further sacrifices to lifestyle.

IPUMSU

CPI trends for utilities (U.S.) with forecast



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Market Size

There is a total addressable market of 115M US households. Our primary customer is a U.S. Homeowner of a single family residence or multi-family residence. So, discounting apartment dwellers or "other," that's approx. 70M households in our SAM.

The IoT SmartHome market will reach $72B ($42B hardware, $30B software services and installs) globally by 2017, according to Deloitte, at a CAGR of 27%. We are going to market initially in a $1B sliver of that -- California homes that are either newly built or being remodeled.

Market segmentation is according to geography, and affinity (attitudes toward landscaping). The various segments by affinity are:

- Water/landscaping minimalists, including xeriscapers.
- Fruit&Veg gardeners, permaculturists
- Turf afficianados
- Indifferent to landscaping/whatever meets code
- No landscaping

We'll target early adopters from the permaculturist, gardener, and turf afficianado segments, with marketing targeted at solving their water budgeting issues and preventing water waste. We'll also market via homeowners insurance companies. By focusing on these segments in California first, we'll be targeting the initial approximately 500,000 homes with lowest potential acquisition costs in years one and two.

Competition

Our biggest IoT competitor is the Belkin Wemo Water, which is a concept product that installs below the kitchen sink, and uses pressure drop to characterize household water use. The product has not gone to production in the last year, and we have a chance to displace them at a major homebuilder by next summer.

The homeowner's next best alternative is an industrial leak detection service, like FloLogic, which is not connected to the internet, costs $1600+ upfront to install, and is complicated to maintain and use.

An adjacent competitor is WaterSmart technologies, which sells a data service directly to water utilities. They perform a similar disaggregation function for the utility, using data collected from customer smart meters. However, they are limited to the resolution of the data that can be gleaned from these meters, which are not accessible in real-time, and which gather data at low resolution to save power and battery life. By relying on the customer’s wifi, we are able to offer a superior experience for end users. For example, they are unable to offer leak detection alerts in anything close to real-time. They are probably a complementary solution, and we are exploring cross-marketing opportunities with them.

Product line-up

Form Factor

The Calliope Water Manager is a single device that is installed on the house side of the water main shutoff and pressure regulator. It is relatively simple to install, requiring a pipe to be cut in two places, and then two telescoping fittings to expand and “shark bite” onto the exposed ends of the pipes. A licensed contractor installer is recommended, however, as sometimes a bit of problem solving is required on site to incorporate the device into a sub-assembly of pipes at the optimum installation point. For the first version, 110v wall power is required nearby. The device must also be able to see the house’s wifi network, or an optional cell data hotspot (with monthly charge) may be used.

Features:

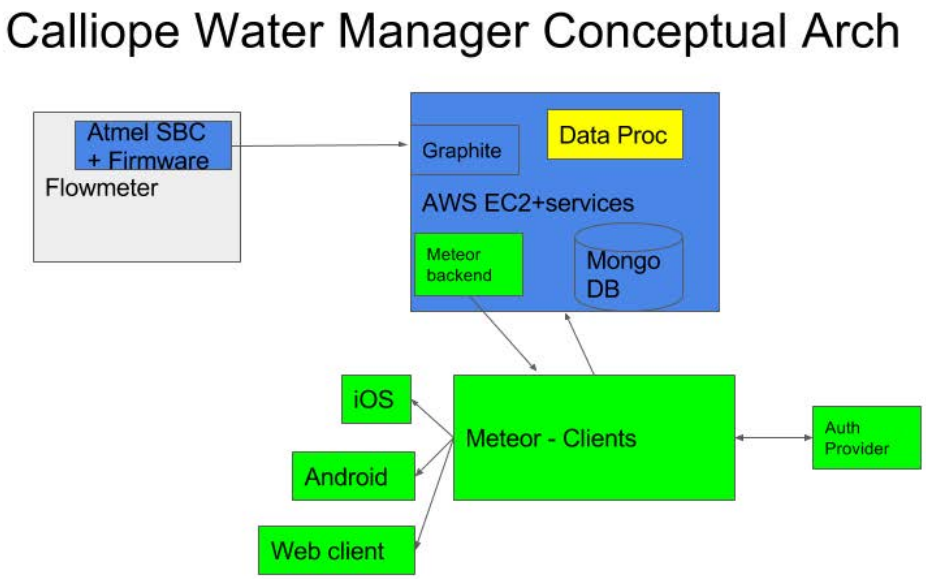
- View water use by time for the last 8 days, including the ability to see volume, flowrate, and duration for individual water activities, and to recategorize if Calliope was incorrect. Calliope learns from this and constantly improves categorization
- Notifications on usual use, possible leaks detected, and watering on wrong day for your district
- 

Architecture

The first hardware platform is constructed of known US-certified, off-the-shelf parts, including a flowmeter from Badger, and an Atmel single-board computer with wifi.

The platform requires DC line power, and if wifi is not locally available, a hotspot device may be used for cell data connectivity.

The software stack is Meteor, with MongoDB as the database running on AWS. The main data processing algorithm – core IP – runs as a service written in python at AWS.



Roadmap

1. The next hardware version will be available in June 2016. It will be redesigned to be smaller, powered by a battery charged hydroelectrically, and will include a novel new low-cost shutoff device, that can be actuated via the app. It will also include 900mhz technology to allow it to network with other Calliope devices, such as tank volume sensors, moisture sensors, and flowmeters on secondary water supplies.

2. Premium data service to be introduced in June 2016, including automatic water shutoff on leak detection, and support for recycled water and other secondary water supplies.
3. Integrations with other connected home APIs. Examples:
    A) Nest Thermostat (correlate at home/away data with water consumption and leak detection sensitivity)
    B) Amazon Echo via IFTTT ("Alexa, how much water has Dash's shower used so far?" "Alexa, turn off backyard drip system")
    C) Rachio irrigation controller (better accuracy on outdoor leaks, advice on water budgeting for lot)

4. Additional sensors at point of consumption, local on/off control

5. Network 2 or more Calliopes (one on an ADU on the same water meter, for example)

Business Model

Revenue Model

Homeowners will purchase directly from us via the web, or via a reseller/installer. The purchase price includes the hardware to install, and a lifetime subscription to the cloud service for monitoring water usage, remotely activating shutoff valve, and comparing water use to other Calliope users.

The basic data service will be free for device life, but we plan to upsell approximately 25% of customers to a premium service, which will include automatic water shutoff on leak detection, as well as support for multiple water sources and reading from additional sensors (tank volume, etc).

Additional revenue will come from selling additional products to subscribers via the app, and from selling data services to water districts. We're currently investigating the business model for data services.

Pricing

$250/unit on estimated $200 BOM for beta, $100 BOM in production quantities.

Basic data service free, Premium Service $100 annual or $400 lifetime.

Customer Lifetime Value

For a homeowner customer:

$100 GM on the base flowmeter device

$400 lifetime membership to Premium * 25% conversion rate = $100

$20 per shutoff module * average 5 replacements = $100

Additional devices, including irrigation control, volume sensors, moisture sensors, accessories, average $100

TOTAL = $400

Sales&Distribution Model

We'll market direct to consumers online and via email, primarily in upper-funnel, awareness building campaigns. We'll funnel customers to our website, where we plan to have content and calculators to help homeowners establish a water budget, and make landscaping plans. We'll use these activities to nurture a community of homeowners concerned about water issues.

We'll target our lower funnel activities primarily through our reseller/installer partners, through cross-promotion to their existing customers. We'll market directly to reseller/installers via landscape architect trade groups, solar installer resources, and events.

Customer/Pipeline list

We're currently engaged with one major reseller/installer partner for the Central Coast and Bay Area of California, and plan to sell approximately 150 devices through them in a pilot program in 2016. In addition, we're exploring two opportunities for pilots of about 50 units each with new homebuilders. We're also pursuing a grant through the state of California which would fund the installation of 200 units in a disadvantaged community in Santa Cruz county.

Team

Co-founders are Keri Waters, Richard Lane, and Joel Boutros.

Keri, CEO & Co-founder, was previously CEO at Arqetype, a real-time mobile messaging and gamification platform that she sold to the UK-bsed EdTech company Vivo Rewards Ltd in 2014. Prior to that, Keri was CEO&Founder at Chopwood, a Devops professional services company that she grew from $0 to $1.5M in revenue in 3 years. Prior to that, she led strategic marketing for Micronas and for Magnum Semiconductor. Keri holds a BS in mechanical engineering from MIT, and an MBA from UC Berkeley.

Richard, VP Engineering & Co-founder, was previously VP Engineering at Kaleidescape, the prosumer home theater company. He holds a BS in Electrical Engineering from Imperial College London.

Joel previously held senior engineering roles in production engineering, network security, and IT, at Specific Media/MySpace, Force10Networks, and Tachyon Systems.

The rest of the full-time team includes

Hilary Bryant, Chief Marketing Officer. Hilary was previously Mayor of Santa Cruz, where she became well acquainted with water policy issues as she worked on securing local supply and investigated building a desalination plant to service the city. Prior to that, she worked as a real estate broker, and brings relationships with major mass market homebuilders.

Carroll Wainwright, data scientist. Carroll holds a Ph.D. in Physics from UCSC, and previously was data scientist at Tuul.

David Macintosh, full-stack developer. David was previously a lead developer at Tuul, and prior to that ran his own professional services company.

We also have a couple of part-time contractors, including Steve Kingsley-Jones, product, and Alexander Artsvuni, Ux and design.

We're very fortunate to have assembled a strong advisory board already, including the following:

Mark Mitchell, Sand Hill Angels – assisting with fundraising

Jay Adelson, Center Electric, CEO Digg, CTO Equinix, CEO Revision3 – fundraising and business development

Toby Corey, CEO Tuul , CRO Solar City – go-to-market strategy

James Allen, CEO Allterra Solar, installer partner

Scott Lipscomb, Lipscomb Landscape Associates – product-market fit

Ian Waters – developer recruiting, software architecture

Bill Norris, Dir. Manufacturing Engineering at Plantronics – design for manufacturing

Dave Hutchings – front end development.

Financials

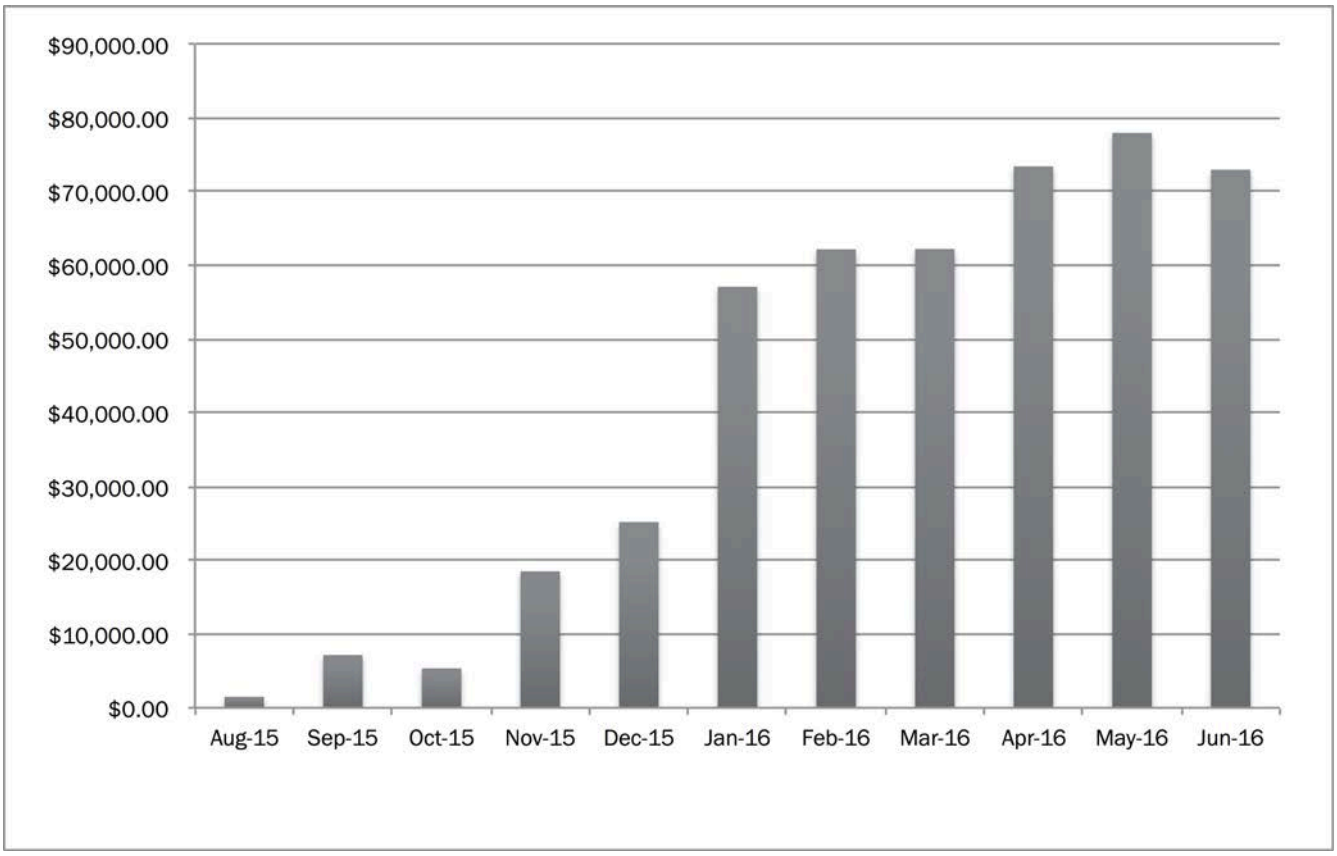
To date, the company has been bootstrapped entirely by the founders, with approximately $70,000 in cash, and $30,000 in assets. Beta devices will begin shipping in December. Throughout 2016, we plan to install 100-250 beta devices prior to first customer ship of our production units, and then to replace each beta unit with a permanent production unit, finishing the year at an install base of 1000 production units.

These units will be deployed through pilot programs with our initial installer partners, new homebuilders, and in conjunction with water districts. While our beta users will pay for their devices, the margins on manufacturing the initial units will be slim, and the company will bear the cost of replacing beta units with final production units, at no additional charge to the consumer.

We expect that we will have zero contribution margin from revenue in 2016, but will set the stage for growth to 10,000+ units in 2017, and reaching cashflow positive by 2018.

	2015	2016	2017	2018	2019
Revenue ($M)	$0.0	$0.2M	$3.75M	$12.0M	$62.0M
Expenses ($M)	($0.1M)	($1.6M)	($4.5M)	($9.0M)	($27.0M)
Net Income ($M)	**($0.1M)**	**($1.4M)**	**($0.75M)**	**$3.0M**	**$35.0M**

Burn Rate



Currently a team of 6 is working for equity. The plan is to start small salaries and health insurance in January, ramping to 60% market rate for 11 people by June 2016. We have a 3500 sf office on the westside of Santa Cruz with a total cost of approximately $6000/month, but we sublease half to another startup at $4500/month.

Cap Table

			$0.005			$0.05				
	Founders' Common Stock	% Ownership	Investment	Common Stock	Options Exercised	Cash Investment	Current TOTAL	Current Voting %	Fully Diluted TOTAL	Fully Diluted %
Founders:										
Keri	5,000,000	78.74%	$25,000.000				5,000,000	69.81%	5,000,000	50.00%
Richard	650,000	10.24%	$3,250.000				650,000	9.08%	650,000	6.50%
Joel	700,000	11.02%	$3,500.000				700,000	9.77%	700,000	7.00%
Options Purchased:										
Mark Mitchell #2					100,000	$5,000.00	100,000	1.40%	100,000	1.00%
Ian Waters #3					100,000	$5,000.00	100,000	1.40%	100,000	1.00%
Steve Kingsley-Jones # 6					12,000	$600.00	12,000	0.17%	12,000	0.12%
Hilary Bryant #8,11					500,000	$25,000.00	500,000	6.98%	500,000	5.00%
Carroll Wainwright #4					100,000	$5,000.00	100,000	1.40%	100,000	1.00%
					0		0	0.00%	0	0.00%
Stock Options Pool				3,650,000					2,838,000	28.38%
									0	0.00%
									0	0.00%
									0	0.00%
TOTAL	6,350,000	1	$31,750.000	3,650,000		$40,600.00	7,162,000	1	10,000,000	1

Funds Required and Their Uses

The company is currently raising $750,000 on a convertible note. Funds will be used primarily for day-to-day operations, with about $50,000 to be used to acquire 1000 initial users, and about $50,000 used to file three patents.

These funds will support a team of 11, growing to about 16, through the end of 2016. During this time, the company will redesign its flowmeter device for size, style, and cost, and will acquire and install the first 1000 users.

In 2016, we will raise another $2M+, through some combination of non-dilutive capital and venture capital. We are currently applying for $1M in grant money from the State of California.

This additional funding will support us through 2017, as we ramp to 10,000+ devices deployed throughout California, and approach profitability. We will raise one final round of growth capital by 2018, in order to expand nationally and achieve profitability.

