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Case Series

HydroPoint Data Systems

Smart Water Management Systems that Save Money and Water

HydroPoint was founded in October 2002 in Petaluma, California, based on a simple, compelling idea for water conservation: create a smart irrigation controller that uses site-specific weather information to automatically apply to lawns the right amount of water at the right time. This technology prevents over-watering, brown lawns, and dead plants. The initial idea also had an appealing additional feature: it was "green" technology. Smart irrigation controllers not only save money on water bills but also conserve water—a precious resource.

Bringing the product—called WeatherTRAK—to market and developing a sound business model was, however, not a simple process. One obvious customer group—farmers, who use tons of water for crop irrigation—was initially ruled out. Most farmers are locked into long-term contracts for very cheap water, mooting the economic attraction. Another obvious customer group, developers of new residential homes, could offer customers new homes that save money on the water bill. This market proved to be a good area of growth for the company initially but the number of new homes built plummeted with the economic recession in 2008-10, making that market unreliable. Another logical customer group—existing homeowners who would retrofit their residences, made for a difficult market segment because reaching hundreds of thousands of homes individually proved inefficient.

The most appealing segment turned out to be commercial properties such as malls, chain stores, and corporate campuses with lawns that require a great deal of water and maintenance. Those companies benefit from a system that uses only the required amount of water. HydroPoint has aggressively—and successfully—targeted that market since 2007.

Going forward, should the management team, led by CEO Paul Ciandrini and co-founder Chris Spain, commit exclusively to the commercial market, abandon the residential segment and continue bypassing the agricultural segment?

This case was written by Jesse Dedman and James Tucker, Graduate Students, and Professor Morten T. Hansen, School of Information, University of California, Berkeley. It is based on public documents and field interviews with executives at HydroPoint Data Systems, Inc. from January 27 to March 4, 2010. It is intended to be used as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

How WeatherTRAK Works

WeatherTRAK is part of a family of products called smart irrigation systems. In addition to WeatherTRAK's satellite controlled system with real-time weather data, this group includes irrigation systems controlled by historic weather data, sub-soil moisture sensors and local miniature weather stations. The global market for smart irrigation products is projected to be $1 Billion between 2009 and 2013, with almost all of the market located in the United States (see exhibit 1).

Consider the residential market. When a WeatherTRAK controller is installed in a home, the first step a landscaper or gardening hobbyist takes is identifying the different zones of the yard. These zones are based on a number of factors including the type of plants, slope of the land, and amount of shade. A lawn is a different zone than perennial flowerbeds, which is a different zone than the hedges. Each zone needs its own watering regimen. The controller is then configured with these zones by type of plant and other specific factors.

Customers can subscribe to a weather information feed sent from HydroPoint's Climate Center to each controller via wireless communications. The first step after physical installation is to call HydroPoint's customer service and to activate the controller so it can wirelessly receive its site specific weather data via the WeatherTRAK ET Everywhere service. The controller uses the weather data to increase irrigation automatically during periods of local hot, dry weather and to decrease irrigation during periods of cool, humid weather.

The ET in ET Everywhere stands for evapotranspiration, the sum of water lost from soil through the natural processes of evaporation and plant transpiration. The secret behind the ET Everywhere service is the mathematical model HydroPoint has developed to calculate evapotranspiration. The service gathers weather data from over 40,000 weather stations across the United States operated by many organizations including the National Oceanic and Atmospheric Administration (NOAA) and uses advanced modeling techniques to calculate ET (Evapotranspiration) down to a square kilometer for all of North America. HydroPoint then transmits the appropriate site specific weather data (ET) via wireless communications to the local controllers at night. The controllers use that information to schedule that night's watering (see exhibit 2).

For commercial customers, HydroPoint introduced Internet management of the controllers in conjunction with two-way communications (communications from the controller back to HydroPoint). With two-way controllers, water flow sensors are installed in the irrigation system to monitor for leaks and other problems. If the controller detects something out of the ordinary, it sends an alert back to a central web site and via text message to a maintenance

person. These features improved management of multiple controllers and sprinkler systems spread over large commercial landscapes and allowed for a single irrigation specialist to efficiently manage multile sites located across a wide geographic area,

Background

Chris Spain, Chris Manchuck, Peter Carlson, Mike Marian and Phil Boland co-founded HydroPoint in 2002 with the goal of providing "smart" water-management services. The idea was to create a product that uses advanced data management and wireless technology to take irrigation to the next level. HydroPoint had acquired a company called Network Services Inc. with technological expertise in small, locally installed weather stations that collect and store weather information and send it to a smart controller on the property. But after reviewing the weather station technology and business model, the co-founders decided the combination would not scale well. The initial cost layout in hardware and ongoing maintenance was just too high and the logistics for finding an appropriate site too complicated. HydroPoint needed a way to feed weather data to the smart controller at lower cost.

Instead of using locally installed weather stations, HydroPoint engineers designed the WeatherTRAK ET Everywhere service to wirelessly provide ET weather data at a square kilometer resolution thereby eliminating the cost and ongoing maintenance and single point of failure associated with an onsite weather station or sensor. After successful pilot studies in municipal water districts and state environmental protection agencies across California, Nevada and Colorado, HydroPoint was able to garner interest from Monitor Ventures. The venture capital group, together with a number of other investors, invested in HydroPoint's first round of venture funding in November 2004.

In 2003, HydroPoint entered into an original equipment manufacturer (OEM) agreement with The Toro Co., a lawn-care products manufacturer, to sell the WeatherTRAK to residential and commercial customers. HydroPoint's aim was to have Toro manage manufacturing of the hardware while HydroPoint provided the software and weather-information service as a subscription. When Toro did not move as quickly as HydroPoint needed, HydroPoint decided to jumpstart the process and manufacture the circuit boards for its controllers. Toro made the outer casings and assembled the final controller. This resulted in the benefit of multiple brands using WeatherTRAK-enabled technology (Toro, HydroPoint, and Toro's Irritrol brand). Toro

ordered large quantities of the controller circuit boards from HydroPoint and became an influential first-round investor.[1]

With venture capital in hand and Toro on board as a national brand name, HydroPoint was ready to expand nationally. Its focus was on new residential construction which allowed for volume selling to specific builders and their developments. In 2005, Shea Homes, Inc, a national builder, agreed to install 3,000 WeatherTRAK controllers in new homes in Arizona, California, Colorado, North Carolina, South Carolina and Washington.[2] In its first three years, HydroPoint was successful with the new home market. It secured national specification with largest private home builder in the country and was able to get specified in numerous districts by other nationally known builders as well. By 2006, however, the residential building market in the U.S. began to collapse (see exhibit 3).

To survive, HydroPoint shifted its attention to the commercial market, and in turn, evolved its sales and distribution processes. Normally, HydroPoint sold through large regional distributors that re-sold WeatherTRAK controllers to landscape contractors or companies. In the commercial segment, HydroPoint's enterprise sales team began selling directly to corporate officers. As was the case with the new home builders in the residential market, it was more efficient to deal with large corporate entities with multiple locations nationwide (see exhibit 4).

Market Segments

Residential market segment

According to the Irrigation Association, gardening is the number one hobby in America, with 85 million households maintaining outdoor lawns and gardens. [3] This provides a total estimated U.S. market for 28 to 35 million smart controllers (see Table 1). There are 49 million single-unit houses (19 million on lots over half an acre in size) located in the South and West regions of the country where the climate is hotter and dryer. These are ripe markets for retrofitting existing controllers (see exhibit 5).[4] The new-construction market is also important since it offers the

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[1] Spiers, Lauren, "Toro Teams with HydroPoint", Commercial Dealer Magazine, December 5, 2003. Stevens, Loralee, "HydroPoint Gets $11.9 Million Funding," North Bay Business Journal, November 15, 2004.

[2] "Shea Homes Chooses WeatherTRAK", HydroPoint Data Systems, Inc., http://www.weathertrak.com/weathertrak-updates/, July 11, 2005.

[3] Kimmell, Thomas, "Smart Water Application Technologies (SWAT) Brings Residential Irrigation into the 21st Century", The Irrigation Association, www.irrigation.org, June 2004.

[4] U.S. Census Bureau, "American Housing Survey for the United States: 2007", Released September 2008.

potential to pre-install smart irrigation systems through contracts with major builders. In the four years from 2004 to 2007, 4.8 million new single-family homes were built. With the housing crisis beginning in 2006, however, new building permits were cut in half from 980,000 nation-wide in 2007 to a predicted 435,000 in 2009 (see exhibit 3).[5] The market remains flat, but this condition is not likely to last forever.

Commercial market segment

The commercial market has seen faster adoption compared with the residential market. Fortune 500 companies, golf courses and college campuses have taken advantage of the technology.[6] About 2.7 million commercial buildings sit in the South and West regions, where water access is of great concern. Across the United States, 350,000 new commercial buildings were constructed from 2000 to 2003 (see exhibit 6). This new construction market, like the residential market, is flat since the recession of 2008 to 2009.

Agriculture market segment

Agriculture represents one of the largest opportunities for smart irrigation, but growth in this segment has been slow as farmers are reluctant to adopt new technology. There are technological precedents, however, with some farmers using precision technologies like GPS-guided auto-steering of machinery and fertilizer application. Assuming aggressive adoption, investment analysts estimate the worldwide agriculture market for smart controllers to reach $451 million in revenue between 2009 and 2013.[7]

Hydropoint's value propositions

As shown in table 1, what WeatherTRAK does for it's customer (value proposition) differs by market segment.

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[5] U.S. Census Bureau, "Housing Units Authorized By Building Permits, Table 1A: United States and Four Regions, New Privately Owned Housing Units Authorized", February 2010.

[6] Cox, Michael, "Getting 'Smart' in the Water Space: Using IT to Reduce Water Loss", PiperJaffray, July 2009.

[7] Cox, 2009.

Residential Market

There are four main actors in the Residential Market: homeowners, builders, landscapers and water agencies. Each benefits differently from a WeatherTRAK.

Homeowners

Don De Fever lives in a home surrounded by manicured lawns and colorful flower beds in Los Gatos, CA. He waters his flowers twice a week and his lawns three times a week. He installed WeatherTrak in 2006 to save money on his water bill. He is also aware of local water mandates that will require smart controllers on all new landscaping by 2011. The WeatherTRAK controller cost De Fever about $200 after rebate plus the cost of installation. Each month he pays a subscription fee to HydroPoint of about $4. After installation, De Fever found his home's overall water consumption decreased by 40%. De Fever said, "I have had this device for over a year and it has nearly paid for itself."[8]

Table 1: HydroPoint's Value Proposition

Market	Estimated Number of Controllers[9]	HydroPoint Value Proposition	Challenges
Residential			
Retrofit	28 to 35 million	Homeowners save water and maintain beautiful lawns and gardens. Fast payback time period.	Landscape contractors must take on new role of educating homeowners about water resources. Subscription data service is unpopular with homeowners.
New	100 to 300 thousand	Builders advertise their new homes as "green" and reduce liability for water damage, mold and mildew, runoff pollution.	The building market dropped off in 2006. Landscape contractors are forced to install WeatherTRAK by builder. Education is required.
Commercial			
Retrofit	800 to 950 thousand	Managers enjoy convenience offered by software and system minimizes corporate risk [?]. Fast payback time period.	Finding the right audience for water management solutions within the company.
New	50 thousand or less	Builders can install a smart system from scratch with same benefits as retrofit.	Very few new commercial buildings.

[8] "Water Conservation", NBC-11 News, San Jose, CA, June 2007.

Source: Company sources and case writer analysis.

In addition to installing irrigation controllers, De Fever also installed low-flow faucets and shower heads and efficient dishwashers inside his home. Customers like De Fever value a fast payback period on their home efficiency investments.

HydroPoint's conservative estimate of WeatherTRAK's time to payback is only 18 months to three years, compared with up to four years for a low-flow toilet, seven years for an energy efficient refrigerator and ten years for a solar water heater (see exhibit 7). Smart irrigation has helped De Fever maintain the appearance of his gardens while saving water, all with a fast payback time period.

Builders

The value of smart irrigation to home builders depends on local attitudes towards conservation and on the attitudes of the builders themselves, who have a great deal of influence on which irrigations systems are put into new homes. Builders have a ten year liability for water intrusion damages and want their new homes to look beautiful. As new homes are sold, smart controllers help builders avoid aesthetic and liability issues on their properties such as water damage, runoff pollution, and mold and mildew. These benefits make installing a smart controller an easy way to market a new development as environmentally friendly and to expedite the permitting and planning process in communities where water management is a big issue. And even if the builder does not take the initiative, more and more local governments are mandating smart controllers. Some water agencies offer incentives to builders to install the controllers. In 2007, for example, the Metropolitan Water District in Southern California offered an $80 rebate per production home and $200 per model home.[10]

Water Agencies

When Western Municipal Water District (Western) in Southern California was looking for ways to reduce the amount of water it imported from other districts, a huge expense for a water utilities, it found a large conservation opportunity in its customers' lawn watering, even more so than by installing low-flow toilets. Through a new program it calls "Smart Yard", Western arranges for a water audit and controller installation services and sells the homeowner a

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[9] The numbers in the Estimated Number of Controllers column are case writer estimates based on data from the U. S. Census Housing Survey and the Energy Information Administration (see exhibits 5 and 6).

[10] Johnson, Suzanne, "Smart Irrigation: The New Law of the Land", Builder News Magazine, May 2007.

WeatherTRAK controller with a 50% rebate. Homeowners pay the other 50% of the cost with a fixed fee of $9.99 a month that appears on their water bills for five years.[11] Water rates in California are destined to rise in coming years after the state has mandated increases. The Smart Yard program will help the homeowner avoid these higher rates. The value to the water agency is that they realize a return on their investment due to the reduction of imported water.

Landscape Professionals

Jeff Welch, owner of the landscape maintenance companies Welch Landscape and H2O Designs, has used smart water management to differentiate his companies from his competitors. He understood that his customers were facing rising water rates and that his contractors could see first hand the damage over-watering causes. Welch also recognized it was important to educate his customers that smart irrigation was not just a tool for keeping their plants alive, but also a tool for managing their water resources. According to Welch, "This was a little challenging at first because they probably assumed we were managing water before. With the old technology in place, this was not possible. Welch continued, "With the tools now available together with increasing demand there is a real opportunity to step out of the typical landscape stereotype of just mow, blow and go and become a true resource manager, to manage the customers landscape and water resources." [12] However, while some landscapers like Welch saw the opportunity, many others still needed to be convinced.

Commercial Market

HydroPoint has customers in many commercial industry sectors. Property management companies and large nationally recognized corporations are two industry groups that exemplify the value proposition of WeatherTRAK for the commercial market.

Property Management Companies

The previous board members of Paul Beckman's homeowners association thought they had purchased a "smart" water controller system in 1999. But instead of saving the association money, the system ended up wasting water and causing water runoff complaints from

[11] HydroPoint Data Systems, "Western's Smart Yard Program to Save One Billion Gallons of Water", Press Release, www.weathertrak.com, April 13, 2010.

[12] HydroPoint Data Systems, "Smart Water Management Case Study: Strategies with Proven ROI for HOA and Property Managers," Sustainability 2.0 Series, February 20, 2009.

neighbors downhill from the community. Beckman is a director on the newly-elected board of the Anaheim Hills Planned Community Association (AHPCA), which manages 110 acres of land in the common areas around its members' 2,273 homes, mostly in long strips of land next to roadways. With controllers spread over such a large area, the association could only afford to have the watering schedules adjusted twice a year. "We knew we were over-watering but had no way of controlling the usage and costs," said Beckman. By 2006, the high water and labor costs generated by their expensive irrigation system were forcing the board to increase member dues. This was enough for the community association to look elsewhere for a new smart irrigation solution.

In 2007, after a indepth vendor selection process, the AHPCA retrofitted its existing irrigation system with 45 WeatherTRAK ET Pro2 controllers. HydroPoint offered the community association a leasing program through an affiliated lender that helped push out the cost of the controllers and the installation over five years. This leasing option, which added low financing fees, was important to the association, as it avoided drawing down their reserve account, the special cash account associations keep to pay for large improvement projects.

Table 2. Value Proposition for Anaheim Hills Planned Community Association: Lower Costs, Fast Payback, Fewer Complaints and More Financial Stability

Before WeatherTRAK	After WeatherTRAK
• January 2006 2-month Water Bill: $25,000	• January 2009 2-month Water Bill: $10,000
• 2006 Annual Water Bill: $184,000	• 2008 Annual Water Bill: $108,000 ($76,000 saved versus 2006)
• High landscape maintenance and repair costs	• Lower contractor labor and repair costs
• Complaints about water runoff	• No more water runoff complaints
• Member dues increasing	• Member dues stabilized

Source: HydroPoint Data Systems, "Smart Water Management Case Study: Strategies with Proven ROI for HOA and Property Managers," Sustainability 2.0 Series, February 20, 2009.

After installation in 2007, the association noticed an immediate improvement on its water bills. In 2008, the first full year after installation, the AHCPA spent $76,000 less than in 2006, the last full year before installation (see Table 2 above). "When we look at our January 2006 water bill at $25,000 and then at our January 2009 water bill at $10,000, when we didn't have a drop of

rain for that two month period, we know WeatherTRAK works for us", Beckman said. After 16 months of operation, the water bill savings combined with a rebate from the water agency enabled AHCPA to break even on the total cost of the controllers and the installation. Each month after that point, they have pocketed the savings. This does not include the savings from drastically reduced repair and labor costs. The annual savings more than made up for the leasing payments, have brought financial stability back to the association and have kept member dues from rising. [13]

Large Companies

When Jack in the Box, the fast food restaurant chain, was looking at energy use at its Southern California corporate campus, its energy auditor recommended the company examine its water usage. Pumping water consumes significant amounts of electricity. The officials at Jack in the Box believed that the test kitchen, bathrooms, gym, and locker rooms on this particular campus would drive up energy use. Officials found that indoor water use went through the roof. Jack in the Box hired a third-party water auditor, the San Diego Water Authority to do an independent water audit. The auditors recommended swapping out the urinals, adding low flow toilets, putting new hand sprayers in sinks, and installing new energy- and water-efficient dishwashers. The auditors also determined that 75% of Jack in the Box's total water use was outdoors. Company officials were caught off guard when they found outside water management was as important as indoor water management.

The WeatherTRAK value proposition for companies varies for different constituencies within the company that have a stake in irrigation. Traditionally, irrigation controllers were sold to a technologically unsophisticated buyer. The product was taken for granted by the company's facilities manager, and the landscape contractor mostly wanted to achieve a good mark-up on a simple controller device. The challenge for HydroPoint was to demonstrate WeatherTRAK's value to a consumer that does not have water management on the list of priorities. HydroPoint's strategy was to move up the chain of command to find an internal stakeholder who deals with long-term budgets and savings as opposed to yearly operational budgets. As Chris Spain put it, "We needed to find an executive who understood P&Ls (profit and loss statements)."

When HydroPoint meets with companies like Jack in the Box, its sales people meet with the key decision makers higher up in the company. These executives may be sustainability officers or

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[13] HydroPoint Data Systems, "Smart Water Management Case Study: Strategies with Proven ROI for HOA and Property Managers," Sustainability 2.0 Series, February 20, 2009.

operations executives. Instead of leading with irrigation controllers, they start the conversation at a higher level talking about lowering corporate risk and the large return on investment (ROI) of implementing WeatherTRAK. They also mention that reducing water consumption reduces energy costs.

Business model

HydroPoint has multiple revenue streams: hardware revenues, subscription revenues, services revenues (direct and sub contracted) and licensing fees.

A typical transaction includes three of these four revenue streams.

1. Hardware revenues are generated from the sale of the WeatherTRAK controller (residential street price = $275, commercial street price = $1200 to $4000 depending on configuration). Margins are typical for a hardware product.
2. Subscription revenues are from the sale of daily ET Weather and customer support subscriptions (residential subscription = $48 per year per controller, commercial subscription = $225 per year per controller). As is typical of a subscription model, subscription margins are higher than the hardware margins.
3. Service revenues include site surveys, installation, training and troubleshooting. These services can either be performed by HydroPoint Product Specialists (direct) or by partners who have been trained and certified by HydroPoint (sub-contracted). While the margins are higher for the direct services than the indirect services, the company has the majority of its services revenues through partners due to the partners' ability to assist on large national projects. Additionally, these partnerships help to increase revenues through distribution due to the partners direct experience with the product and subsequent recommendation of the product to the their existing client base.

In addition to the above typical transaction HydroPoint also generates licensing fees through OEM sales. Finally, HydroPoint also receives additional subscription revenues from businesses and water agencies who purchase weather intelligence data from HydroPoint's Climate Center.

HydroPoint's focus is on increasing subscription revenues as a percentage of total revenues. There are multiple reasons for this focus, the primary reason being the increased enterprise value companies receive when a majority of their revenues are subscription based. Consequently HydroPoint has invested a significant amount of capital (approximately over $1 million) in back-end infrastructure to manage these subscribers. In addition HydroPoint has made a significant investment in developing and maintaining its Climate Center.

A key metric the company tracks is subscriber renewal rate. For the lifetime of the company the commercial renewal rate is 97.5% and the residential renewal rate is 82%. The lower

residential rate occurred during the 2009 recession and could perhaps be tied to increased foreclosures though it is difficult to determine since typically non-renewing customers are often unreachable.

The high subscriber retention rate is due to several factors. Customers are likely to stay with a subscription for a long time once they see the value of the subscription itself. If they cancel it they can no longer use local weather data feed and thus cannot save on water. The smart terminal becomes a "dumb" irrigation controller.

In 2009, during one of the worst economic downturns in the last 80 years, HydroPoint was able to grow revenues 22% (see exhibit 8). Currently the company is on track to grow revenues in 2010 66%. By 2012 the company forecasts that subscription revenues will comprise 48% of total revenues from 24% in 2010.

Total subscribers forecasted by the end of 2012 are 44,500 total subscribers, with 25,000 residential and 19,500 commercial.

Challenges and Opportunities

Agricultural Market

The first challenge was a lack of familiarity with the overall smart irrigation market. It seemed obvious to assume farmers would leap for a system using less water and saving them money. This was not the case. There was no obvious value for farmers. Water contracts can run as long as 50 years and if the farmer does not use a certain amount of water one year, he loses the right to use it the next, thus negating an incentive to conserve.

Yet with the flattened residential market, and as droughts took their toll on farmers in California in 2008, HydroPoint revisited the value proposition for farmers. HydroPoint partnered with Steve Schweizer, who grows avocados in Riverside County, to study the impact of WeatherTRAK on water conservation in an agricultural setting. "We want to be proactive in saving water, and anything that will benefit our industry, we definitely want to take advantage of that," said Schweizer.[14] The preliminary results of the study have been encouraging. As expected, WeatherTRAK yielded 35 to 40% savings in water in the avocado orchard. What surprised everyone, including Chris Spain, was that crop yields also increased by 50% in that time. If HydroPoint can show revenue boosting potential in the form of higher crop yields on

[14] Souza, Christine, "Irrigation Technology: Smart water solutions for state's farmers", California Farm Bureau Federation, July 9, 2008.

top of water savings, it may have the value proposition it needs to break open the huge agricultural market.

Residential Market

Customers' acceptance of HydroPoint's subscription model is a challenge. Residential customers are unaccustomed to paying a subscription for smart irrigation.

One solution to help residential consumers see the value of the data feeds and minimize concerns over the subscription fees is to put the cost of the subscription on the water bill itself as noted previously in the example of the Smart Yard program run by the Western Municipal Water District (WMWD). In this way, the effects of the water savings are visible on the bill and made automatic through the billing process. The customer sees the hardware, the subscription and their water consumption at a lower overall cost to them. To promote this program, HydroPoint is working as a marketing partner for the WMWD, helping the utility coordinate the marketing roll-out of their Smart Yard program. This includes conducting focus groups with WMWD customers.

Another challenge involves landscapers. While HydroPoint has been successful in partnering with many landscape management companies, both large and small, targeting residential landscapers remains a challenge for HydroPoint. This market is dominated by independent landscapers in local communities. Most landscape contractors choose irrigation controllers based on a combination of quality and ability to mark up the price for profit. The initial setup of a WeatherTRAK controller requires more work than timer based sprinkler systems and setup can require a greater level of technical expertise than the landscaper has. Without education, it is difficult to help landscapers see the value of smart water management and the opportunity for larger revenues.

Finding and educating this large group of independent landscape contractors is also very difficult. To remedy these issues, HydroPoint has implemented a web-based tutorial for landscape professionals to teach themselves the controller features and functions in 20 minutes. [15]

Commercial Market

To date, HydroPoint has made strong inroads into the commercial retrofit market. However, HydroPoint would like to expand its market penetration. The sales team has adopted a direct enterprise sales model. For example, the Product Specialists, the technicians that had before

[15] "HydroPoint, Toro Launch Web Training for WeatherTRAK Controllers", Lawn and Landscape, September 20, 2005.

supported the residential builder installations, now lend technical support to the enterprise-level sales process. Having interacted with an executive level audience, HydroPoint's sales and marketing leaders see opportunity in developing a holistic view, called a 360-degree view of water management that addresses both outside and within-building water usage. According to Chris Spain, "we have by now over 22,000 subscribers and we are seen as water experts among the true purchasers—this is a key asset for us that we can explore."

This approach would mean expandng the solutions for commercial customers, by providing applications that analyze water consumption within the building, such as water usage in factories, warehouses, retail stores, and office buldings. In this scenrio, Hydropoint would analyze consumption patterns across a large user base and suggest solutions for how to reduce a company's overall water footprint. "Right now," says Spain, "many companies don't even have benchmark data to assess whether their water usage is high or low." Over time, Hydropoint could share successes across users within a company, such as Wal-Mart with thousand of stores, and suggest projects with high success rates. They could also analyze usage and successes across companies in different industries and provide specific suggestions for how companies could save on water. In this model, Hydropoint would become more of a software analytics company using an ever-growing database of water consumption patterns.

Which markets to target?

As Chris Spain and Paul Ciandrini, sat on their porch in their Tuscan-style Napa vineyard, sipping an oaky California Chardonnay, they both leaned back and gazed at the smart irrigation system at work in the vineyard in front of them. HydroPoint had come a long way in its young life and had learned to adapt quickly to changes in the marketplace and learn from experiences in each market segment. The company had gained traction in the commercial market. The residential market had proven more complicated in terms of distribution, but it was also large and attractive. The farming segment is also very large, and the test results showing improved crop yields in drought-stricken regions, though preliminary, were better than expected. Should they concentrate on commercial only or go full steam ahead in all three segments?

Exhibits

Exhibit 1: Size of Global Smart Irrigation Management Market

Market Size and Growth Estimates:
Smart Irrigation Management

	2009	2010	2011	2012	2013
Agricultural sensors/controllers	40	57	79	124	151
Commercial/residential sensors/controllers	66	86	112	134	161
TOTAL REVENUE ($ million):	***106***	***143***	***191***	***258***	***312***
5-Year TOTAL REVENUE ($ million):	***1010***				

Source: PJC estimates

Source: Cox, Michael, "Getting 'Smart' in the Water Space: Using IT to Reduce Water Loss", PiperJaffray, July 2009.

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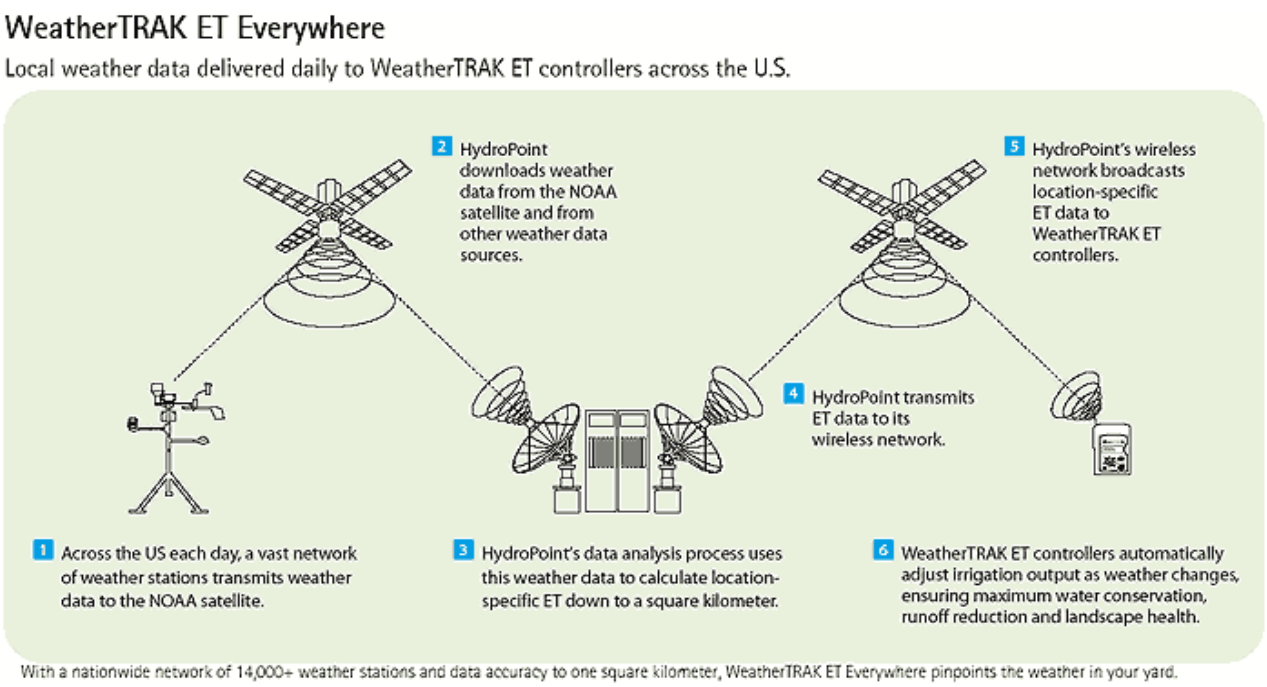
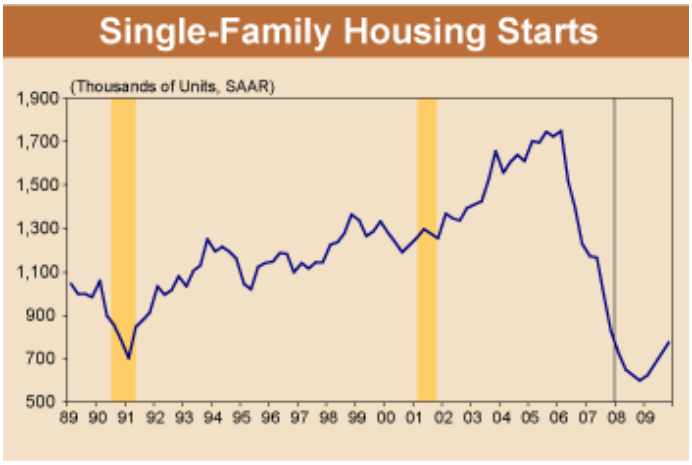
Exhibit 2: Diagram of How WeatherTRAK ET Everywhere Service Works



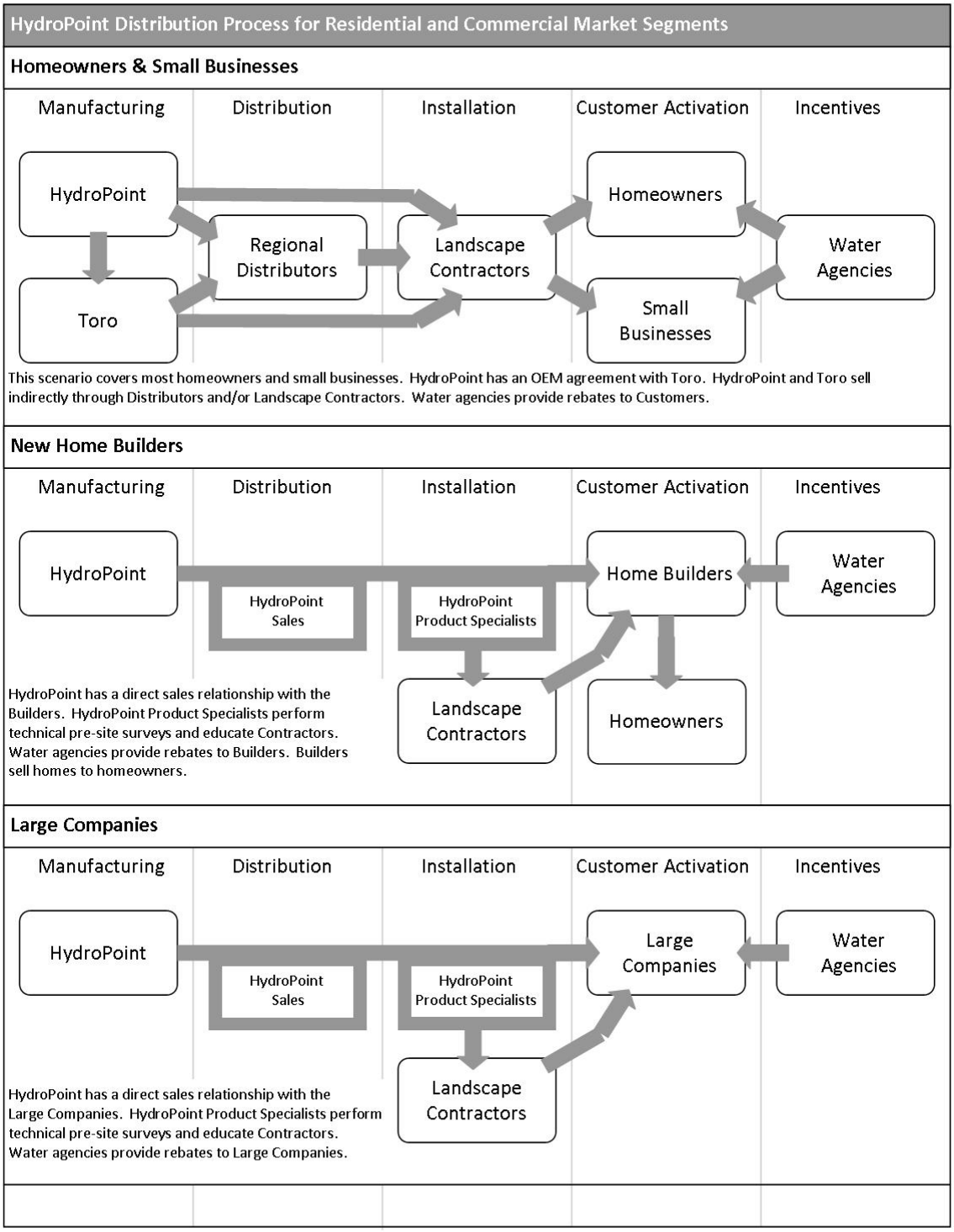
Source: HydroPoint Data Systems, Inc.

Exhibit 3: Chart of New Homes Beginning Construction Nationwide, 1989 to 2009



Source: "Housing Starts",National Association of Home Builders.www.nahb.org, April 2010.

Exhibit 4: Diagram of the HydroPoint Distribution Process for three Market Segments



Source: Case writer analysis.

Exhibit 5: Table of U.S. Residential Market Breakdown by Lot Size, Number of Single Unit Homes in 2007[16]

		Lot Size Breakdown	
All numbers are in thousands.	**Homes: All lot sizes**	**Homes: Lot size ½ acre or Less**	**Homes: Lot size greater than ½ acre**
Total	**82,030**	**50,208**	**31,822**
New Construction (2004-2007)	4,797	2,849	1,948
Urban and Rural Breakdown			
Urban	55,831	42,914	12,917
Rural	26,199	7,294	18,905
Regional Breakdown			
Northeast	12,998	7,321	5,677
Midwest	19,331	12,136	7,195
South	32,390	17,297	15,093
West	17,311	13,454	3,857

Source: U.S. Department of Housing and Urban Development and U.S. Census Bureau, "American Housing Survey for the United States", 2007.

In the South and West regions where the climate is hotter and dryer, there are 49 million homes (19 million on lots over half an acre in size). In the four years from 2004 to 2007, 4.8 million new single-family homes were built.

[16] Residential homes are defined at single-unit residential structures.

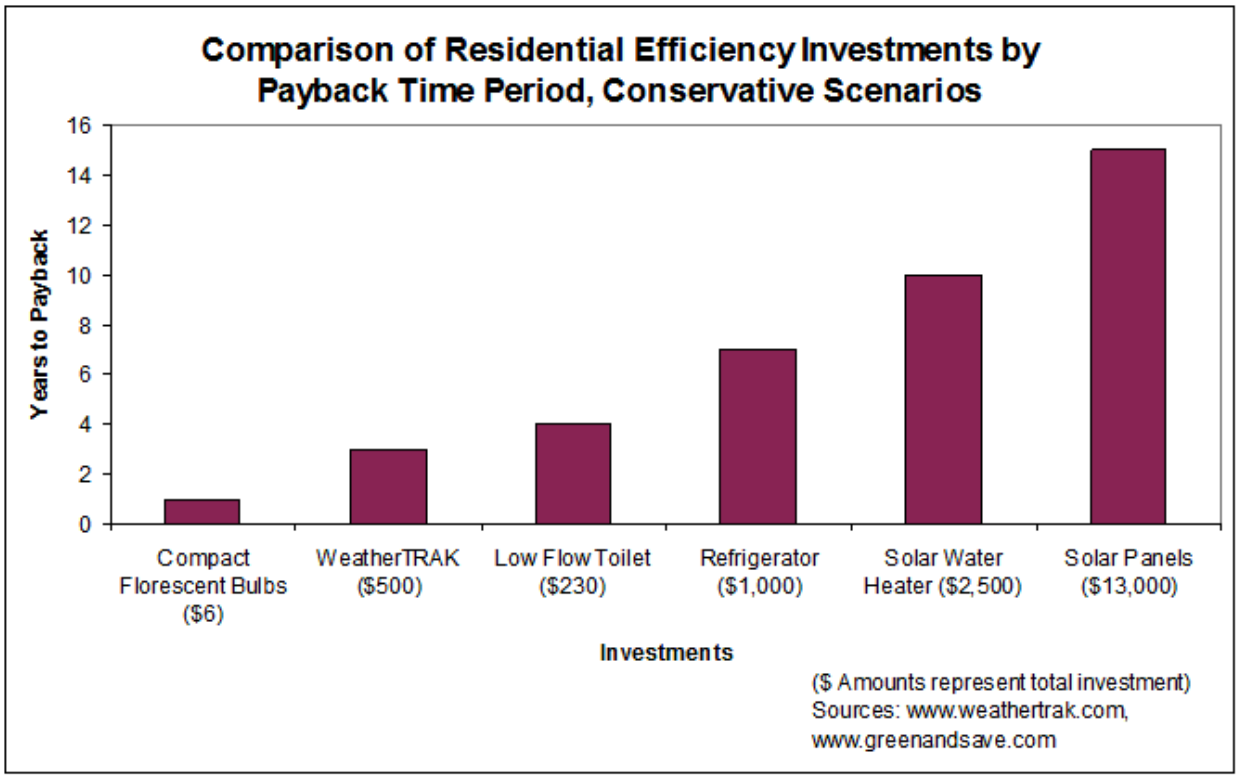
Exhibit 6: Table of U.S. Commercial Market Breakdown, Number of Buildings Including Malls in 2003

All numbers are in thousands.	**Number of Buildings**
Total	**4,859**
New Construction (2000-2003)	347
Breakdown by Principal Activity in Building	
Education	386
Food Service	297
Health Care	129
Lodging	142
Mercantile (Retail Malls and Non-Malls)	657
Religious Worship	370
Public Assembly	277
Other Activity	2,601
Regional Breakdown	
Northeast	761
Midwest	1,305
South	1,873
West	920

Source: "2003 Commercial Buildings Energy Consumption Survey: Building Characteristics Tables", Energy Information Administration, 2003.

In the South and West regions, where water access is of greater concern, there are 2.7 million commercial buildings. Across the United States, 347,000 new commercial buildings were constructed from 2000 to 2003.

Exhibit 7: Chart of a Comparison of Residential Efficiency Investments by Payback Time Period, Conservative Scenarios



Sources: HydroPoint Data Systems, Inc., www.weathertrak.com. GreenAndSave.com, www.greenandsave.com.

This chart compares conservatively estimated payback time periods for energy and water efficiency investments by homeowners. HydroPoint's conservative estimate of WeatherTRAK's time to payback is 18 months to three years. (In this chart, only the upper limits are compared.) WeatherTRAK's payback is faster compared to comparable investments like the four years for a $230 low-flow toilet and seven years for a $1,000 energy efficient refrigerator.

Exhibit 8: Table of HydroPoint Revenue Growth and Employee Growth, 2005-2009

Year	Revenue Growth	Number of Employees
2005	298%	23
2006	55%	32
2007	-9%*	45
2008	70%	50
2009	22%	55

Source: HydroPoint Data Systems, Inc.

**Caused by the meltdown in the U.S. housing market*