

BAY AREA H2O PROGRAM

Investing in local communities where you do business to transform families and revitalize neighborhoods. Program will serve low-income families, schools and businesses in Northern California.

**An Initiative of
Blue Planet Network and Daily Acts**



because every choice matters



Executive Summary

Overview of Bay Area H20: Blue Planet Network is working in collaboration with Daily Acts to pilot a multi-benefit initiative that will focus on Northern Bay Area businesses, low-income schools and low-income households. This pilot will provide hands-on education, skills-building and on-the-ground support for the installation of greywater systems, water-saving landscapes, water filtration systems and rainwater catchment systems. By 2016, the program aims to scale throughout the Bay Area. Generous supporters and sponsors of the program will help environmental visionaries, like Blue Planet Network and Daily Acts, to bring innovative ideas to life.

Bay Area H20 Pilot Dates: June 2013 to July 2014

Pilot Project Cost: \$25,000

Partners: Blue Planet Network and Daily Acts

Innovation: Bay Area H20 is a multi-benefit initiative that addresses health, water, education and the environment to effectively revitalize the local community and preserve the natural environment.

Beneficiaries:

- I. 15 households (with targeted outreach to low-income residents)
- II. 1 school (serving a minimum of 50% enrollment in the free and reduced lunch program)
- III. 1 business

Bay Area H20 activities include:

- I. Provide hands-on education, skills-building and support for the installation of 15 home-scale greywater systems by conducting three Greywater & Rainwater workshops.
 - City of Petaluma Workshop: Saturday, July 27, 9am–3pm
 - Town of Windsor Workshop: Saturday, August 24, 9am–3pm
 - Rain & Greywater Fed Urban Oases: Sunday, August 18, 10am-2:00pm
- II. Conduct two school Safe Drinking Water Training and installations
- III. Provide hands-on education and support for the installation one Rainwater Harvesting system or one Water-wise Lawn Transformation at a low-income school.
- IV. Provide hands-on education and support for the installation 1 business lawn transformation .¹

¹Businesses may include California wineries and cleantech companies: J Keverson Vineyards, St. Francis Winery (Santa Rosa), Solexant.com (San Jose), Innovalight (Sunnyvale).



Current Challenges | Local Solutions

Global, National and Local Water Scarcity

According to United Nations' statistics, two-thirds of the world, or 5.3 billion people, may be vulnerable to water shortages by 2025. An estimated 36 states in the United States are forecast to face water scarcity in 2013. A General Electric survey found that 66% of Americans felt positive regarding water reuse. The survey also found that 8 out of 10 Americans support using recycled water for such uses as power generation, landscaping, industrial processing and manufacturing, toilet-flushing, car washing and agricultural irrigation. The majority of Americans polled think water scarcity is a national issue as is protection of water resources and have indicated a concern about clean water availability.

In 2011, Sonoma County reported a population of 488,116, of which 10.7% were below the poverty level. The median household income from 2007-2011 was \$64,343-\$69,099, which is hardly enough to survive in today's economy. The average monthly bill for a 4-person family using 150 gallons of water per day in San Francisco costs \$86.00. For a low-income family, that's a high cost to pay from their monthly income. Each year, millions of gallons of water that could be reused in the home goes into Sonoma County's waste water system. One single household has the potential to save between 5,000 – 8,000 gallons of water each year in Sonoma by installing a greywater system.

Approximately 5,000 – 8,000 gallons of recycled laundry water per year can be reused to offset water usage for gardens and landscapes. Studies also suggest that when residents installed greywater systems at their home they also increased other conservation measures which led to additional household water savings. Water re-use is one of the key methods of addressing water scarcity and helping families to reduce their monthly expenses – and in addressing the increasing gap between water demand and supply. When greywater is reused either onsite or nearby, it has the potential to reduce the demand for new water supply, reduce the energy and carbon footprint of water services, and meet a wide range of social and economic needs.

Water and Children's Health

Overweight and obesity among children is a national epidemic, with one in three children categorized as overweight or obese. Research shows that consuming water in place of sugar-sweetened beverages and juice can help combat obesity, since such beverage substitutions result in lowered caloric intake. One school-based strategy to combat the obesity epidemic is to encourage an increase in the consumption of water. Recent research cites that many children in the United States may not be drinking enough water. In California, a survey by the California Department of Public Health's Project Leaders Encouraging Activity and Nutrition (LEAN), found that approximately 40 percent of responding school districts reported that they did not provide access to free drinking water during school meals. In addition to the positive nutritional impact, proper hydration can also improve academic and physical performance.



Approach

Blue Planet Network, and its partner Daily Acts, are working on new approaches to the way people in California plan, manage, and use water. Daily Acts has been at the forefront of the sustainability movement in Sonoma County since its inception in 2012 and has been a leading advocate for low-tech, low-cost and home-scale solutions that conserve our natural resources. At the same time, Blue Planet Network is working with community partners to help schools reduce childhood obesity by installing accessible water systems. This multi-benefit initiative targets the importance of water on health, environment, local economies and education.

Bay Area H2O offers innovative methods required to conserve and reuse water sources that tackle critical water issues. The program also works to create awareness and a new mindset towards gathering and distributing water, thus addressing long-term environmental solutions through currently available, low-cost and easily dispersed methods that build communities. Only by developing a new approach that makes sustainability and efficiency paramount can effective and permanent solutions to the water problem in California be found.

Worldwide venture investment and corporate awareness in water is rising, and rising in contrast to other green technologies, as referenced by cleantech.org. While overall investment in cleantech sectors went down by 30% last year, water tech investment went up by 34%. Water was US\$355 million of the US\$6.8 billion in cleantech investment in 2012, with 68 deals worldwide out of the 806. The Cleantech Group identified water as one of the three most promising areas for cleantech investment during 2012, and CEO Sheeraz Haji sees water as one of the sectors set to grow dramatically in 2013.

Bay Area H2O's long-term goal is to scale the program throughout California so more families, businesses and schools can benefit from cost-effective and sustainable water conservation systems and can deepen their awareness of critical water and health issues.

Program Description, Goals and Impact

The one-year pilot program will benefit:

- I. 15 households (with targeted outreach to low-income residents)
- II. 1 school (serving a minimum of 50% enrollment in the free and reduced lunch program)
- III. 1 business

Bay Area H2O activities include:

- I. Provide hands-on education, skills-building and support for the installation of 15 home-scale greywater systems by conducting 3 Greywater & Rainwater workshops.

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Household Greywater Systems

On average, a family of four uses 5-8 thousand gallons of water annually in their washing machine. 60 families could save over 500,000 thousand gallons of water a year by offsetting the use of potable water for irrigation with greywater. Additionally, diverting laundry water from the sewer to the yard also reduces waste water treatment costs and its associated energy use.



A Laundry-to-Landscape Greywater system is one of several cost-effective retrofit systems that are low-income household and renter-friendly. These systems use the washing machine pump to distribute the water. Wash water is redirected into gardens and landscapes for irrigation, recharging ground water supply and feeding watersheds. Laundry-to-Landscape is the simplest, least expensive, lowest effort way to irrigate with residential greywater and, in California, it does not generally require a permit.

A study was completed in November 2012 on 83 residential greywater systems in San Francisco, Monterey and Santa Rosa by Greywater Action, Ecology Action of Santa Cruz and Daily Acts. Overall, the program key findings included: Per capita water consumption decreased by an average of 17 gallons per day after greywater system installation. Greywater did not negatively effect either soil or plant health. The quality of greywater was typically suitable for long-term irrigation of plants. Participants were overwhelmingly satisfied with their systems.

Business Lawn Transformations & Sheet Mulching Systems

Sheet mulching is an environmentally-friendly way to convert high water-use turf to low water-use landscaping. Replacing turf in this way dramatically reduces water use and significantly reduces water and maintenance costs.

² Businesses may include California wineries and cleantech companies: Thomas George Estates (Healdsburg); Family Wineries; Bella Vineyards; Merry Edwards (Sebastopol); Dutton-Goldfield Winery (Sebastopol), J Keverson Vineyards, St. Francis Winery (Santa Rosa), Solexant.com (San Jose), Innovalight (Sunnyvale).

Sheet mulching is a layered system. The first layer is a biodegradable weed barrier – usually cardboard or multiple layers of newspaper – placed directly on the ground. This is covered in a thick layer of compost and/or manure. A layer of mulch such as wood chips is placed on top.



In October 2009, the City of Petaluma, Daily Acts, Petaluma Bountu, and Rebuilding Together Petaluma teamed up with 230 volunteers to transform the water-intensive turf around City Hall into a dynamic, water-harvesting model, complete with community gardens, water catchment, and native and edible plants. The landscape provides food and habitat while demonstrating innovative water-saving techniques. This effort transformed 25,000 square feet of land and is saving 625,000 gallons of water annually for the City of Petaluma and is reducing their annual water costs by \$25,000. The partnership also saved \$60,000 in installation costs.

In May 2009, Daily Acts partnered with the City of Petaluma to transform the Cavanagh Recreation Center, converting over 3,500 square of lawn into a water conserving landscape of food, medicinal, and habitat plants. Over 150 volunteers participated to plant more than 100 food, medicinal, and natural plants. This project has reduced annual water use by 80% (over 65,000 gallons/year).

The [Harbor Bay Business Park Association](#) in Alameda successfully completed a sheet mulching project in 2007. The irrigation water use was reduced dramatically, from 7.6 million gallons in 2007 to 1.8 million gallons in 2011.

Sheet mulching has been featured in numerous media outlets, including [The Huffington Post](#) and [San Francisco Chronicle](#).

Safe Drinking Water in Schools and Water Conservation

The Bay Area H2O program will have two primary focuses in schools:



- 1) the consumption of water as a health issue; and
- 2) the conservation of water as an environmental issue.

All children deserve access to free, clean, safe water in schools; however, many schools throughout California do not have clean and accessible water for children to drink. Many children may not be drinking enough water and are consuming too many calorie-dense, nutrient-poor beverages. Given the potential health implications of this trend, it is important for schools, businesses and our local community to more actively encourage clean water consumption. A growing research base shows that increasing water consumption is good for a student’s health



and well-being and can help improve weight and academic performance. In fact, the Surgeon General recently included a recommendation to promote water in schools in her report on combating childhood obesity.

<http://www.surgeongeneral.gov/library/obesityvision/obesityvision2010.pdf>.

Providing access to clean drinking water, along with proper education, can increase student health and reduce the associated cost of obesity. A report published by the California Center for Public Health Advocacy puts the cost of overweight, obesity, and physical inactivity in California at \$42 billion.

A barrier to water filtration in schools is the lack of infrastructure, such as adequate water fountains, water jets, and hydration stations. The cost of adding such infrastructure is likely daunting to many cash-strapped school districts. However, with generous funders, Blue Planet Network's Bay Area H2O program works to bring accessible clean water to low-income schools identified by program leaders.

Schools use a tremendous amount of water every day, and require water for their heating and cooling systems, restrooms, drinking water faucets, outdoor playing fields and lawns. There are ways for students to learn more about water and how it is used in schools, how to protect it and conserve it. Conserving water in schools can also save schools money. Today's students are tomorrow's homeowners, business owners, and water customers, so it's important that they understand the value of water. The Bay Area H2O program aims to increase employee, faculty, and student awareness of water conservation so everyone can be conservation-minded watershed stewards who become inspired to take charge of their water solutions.

Training & Workshops

Households: The program includes a training and sweat equity component that teaches low-income families and program participants how to install the greywater system. This two-day course offers participants expert support and empowers them to learn how to assemble parts which saves approximately \$1,000 per household in installation costs. Participants will be instructed in plant selection, system design, and plumbing skills to safely, ecologically, and confidently direct water from washing machines to landscape. The second day is hands-on time where participants will install a greywater system at their home, supported by experts who will ensure proper code compliance, answer questions, and offer helpful techniques to ensure successful installations. Participants will register their greywater system and be counted as part of the Bay Area H2O Program.

Businesses: The program includes a one-day training and employee engagement component that teaches businesses about water conversation and through a hands-on workday, teaches them the step-by-step techniques to converting turf. This course offers employees the opportunity to turn their company into an eco-friendly and environmentally responsible agent in the local business community. We encourage companies to reward employees who volunteer for this activity.



Schools: The program includes a one-day training and student engagement component that empowers students and faculty to learn more about the importance of water conservation and water for health. This course offers students, parents and faculty the opportunity to engage in fun activities such as installing rainwater catchment systems and/or garden and lawn transformation installations. Bay Area schools also will have the resources to build a sustainable safe drinking water system for students if sponsored by a company.

Sustainability & Innovation

Business: Companies who participate in the Bay Area H2O program are asked to match 50% of the project cost. This can be through: 1) in-kind employee participation; and 2) matching 1:1 the hourly pay with the time employees spend on the projects activities. As employees learn more about water-reuse and water conservation, they can adopt these new techniques at home and within their local community. Additionally, we ask the company to inspire another company to follow in their lead. This engagement activity will scale the program and exponentially conserve water within the business community.

Schools: Low-income schools who participate in the Bay Area H2O program are asked to involve students in 100% of project activities. The school will be able to sell tour tickets to parents and community members who want to learn more about their new Rainwater Harvesting project or Sheet Mulching water conservation system. The funds raised will be used to maintain the water system. For example, one tour per quarter of 25 parents and community members paying each \$5 will help raise \$500 for maintenance costs annually as needed.

Monitoring & Evaluation

Blue Planet Network's unique online platform and monitoring and evaluation services will ensure tight integration of all Bay Area H2O Program partners and provide ongoing, actionable impact analysis. Blue Planet Network, and a committee of experts in the water sector, all of whom are members of Blue Planet Network, will rigorously vet and approve the Bay Area H2O program before program implementation.

Bay Area H2O Program will be monitored and evaluated using Blue Planet Network's project reporting and management platform so that all data will scale impact and optimize performance in next project phases. Blue Planet Network will train Bay Area H2O Program participants to use its SMS-based reporting service and Android application to upload project progress and track ongoing data. More about Blue Planet Network's technology and monitoring program can be found here: <http://washfunders.org/Blog/How-Can-SMS-Texting-Increase-the-Impact-of-Safe-Drinking-Water-Programs>.



Blue Planet Network is an online network of nearly 100 water funders and community organizations around the world. Blue Planet Network is instrumental in improving the impact, scalability, and accountability of water and cleantech projects in 27 countries. Water industry leaders use Blue Planet Network’s open-access technology platform to plan, track, analyze and monitor over 1,600 water and sanitation projects globally. Because data from member projects is stored and shared on Blue Planet Network’s network, Blue Planet Network members learn from each other’s experiences and work together to improve their programs and results.

Project Phases

YEAR I	Activity
January – March 2013	Program planning and partnership development.
April – June 2013	<p>Daily Acts will join Blue Planet Network as a member and have the Bay Area H2O Program peer reviewed and vetted by experts in the cleantech and water conservation community.</p> <p>Program pre-implementation research and surveys will be conducted to assess readiness of beneficiaries, schools, and businesses. Information collected will include: 1) school’s low income student ratio, current water systems, interest in rainwater systems, lawn transformations and readiness for new systems; 2) key businesses interested in lawn conversion, as well as employee engagement in sheet mulching workshops and installations; 3) community readiness and ownership, low income households readiness and interest in greywater installations.</p>
July- September 2013	<p>Program implementation will start by holding workshops and trainings throughout the community. During this phase, Daily Acts will provide hands-on education, skills-building and support for the installation 15 greywater systems with targeted outreach to low-income households.</p> <p>Blue Planet Network will train and equip all partners to monitor and report on major project actions and milestones. This data will be followed on Blue Planet Network’s online project tracking and reporting platform.</p>
October – December 2013	<p>During this period, Daily Acts will facilitate one business Lawn Transformation; and one school rainwater system or lawn transformation. Workshops and trainings will be provided to engage employees, community members and the student body and school administration accordingly. Additionally, Blue Planet Network will work with local health organizations to provide training on water and health and engage water filtration companies to supply in-kind equipment.</p>



**January – February
2014**

Blue Planet Network will work with its partners to conduct thorough evaluation reports on all outcomes.

Program Partnerships / Alliances

Blue Planet Network (Lead Partner of Program, Tracking and Monitoring System)

Blue Planet Network is an award-winning 501(c)(3) nonprofit headquartered in Silicon Valley. Blue Planet Network enables nonprofits with tools and services to increase the impact of their water programs for people around the world. Blue Planet Network will take the lead in the Bay Area H2O program partnership, and in the planning, tracking, monitoring and evaluation of the program.

Daily Acts (Program Implementer)

Daily Acts approach is transformative action and education that builds practical models and a skilled, engaged, eco-literate citizenry. With over 12 years of proven success building sustainability locally and regionally with programs and models integrating food, water, energy, waste, transport and community, Daily Acts work transforms communities and builds a robust sustainability movement throughout society, with low-tech, low-cost, nature-sourced, people-powered, accessible solutions.

At the forefront of the water reuse revolution, Daily Acts installed the first permitted grey water system in Sonoma County and participated in the creation and passing of California Greywater Law AB1258, facilitating greater reuse of gray water in California by allowing for non-permitted laundry-to-landscape systems and increased access to greywater systems overall.

In its first year, Daily Acts 100 Greywater Challenge registered 95 new greywater systems, confirmed 41 complete, trained 6 new greywater installation trainers, and hosted the largest laundry-to-landscape installation workshop on record in the country.

The Sonoma County Department of Health Services and the Sonoma County Water Agency will play a supportive role upon request from program partners.

Project Cost and Water Savings

Project Cost

The pilot project is estimated to cost approximately \$25,000. Based on first year results, a three-year plan will be designed to leverage outcomes and scale innovations to reach more communities through California. Costs include program development, baseline surveys, workshops & community trainings, equipment and installation, and project monitoring and evaluation.



Water Savings

Water savings estimates are based on two generally accepted calculations: 1) water savings from converting from turf to low-water use landscaping is approximately 25 gallons of water for every square foot of area replaced with low-water use plants on drip irrigation systems. For household greywater systems, the estimated daily savings is 26.4 gallons; this calculates to an estimated 6,400 gallons (assuming 8 months of irrigation) annual savings per household.

Year 1 (Pilot)	Project Cost	Total Estimated Water Savings (in gallons)
15 Residential Greywater systems	\$11,000	96,000
1 Business Lawn transformation (Avg. 2,500 Sq. Ft)	\$7,000	62,500
1 School lawn transformation (Avg. 2,500 Sq. Ft)	\$7,000	62,500
CleanTech	In-kind	n/a
TOTAL	\$25,000	221,000