WaterSense-AWE Webinar Recap

Landscape Transformation Case Studies

TODAY'S SPEAKERS	ORIGINAL DATE: MARCH 12, 2020
• **Mary Ann Dickinson** – President and CEO, Alliance for Water Efficiency • **Christopher Charles** – Conservation Program Specialist, Austin Water, TX • **Toby Bickmore** – Southern Nevada Water Authority, NV • **Katie Collins** – Fort Collins Utilities, CO • **Kathy Nguyen** – Cobb County Water System, GA	WaterSense Webinars Webinar Slides on AWE Website

WEBINAR SUMMARY

In the introduction, Ms. Dickinson provided some background on the Alliance for Water Efficiency's (AWE's) Landscape Transformation Study. The study involved an impact analysis of savings and a process evaluation of customer motivations. The report material is posted on the AWE website (https://www.allianceforwaterefficiency.org/impact/our-work/landscape-transformation-assessment-water-utility-programs-and-market-readiness). Studies in AWE's outdoor water savings research effort include a peak demand study, landscape transformation, and drought restrictions. The Utility Program Guide is now available and targets utilities just getting started with a landscape transformation program on how to best design the program and most effectively reach out to their customers.

CASE STUDY: AUSTIN WATER CONSERVATION DEPARTMENT

Austin Water made revisions to their "WaterWise Landscape Rebate Program" in 2018. Their incentive program offers $35 for every 100 square feet of turfgrass converted to a WaterWise landscape. To meet the requirements, the customer must originally have at least 75 percent healthy turfgrass, cap-off automatic irrigation or convert to drip irrigation in the conversion area, use 2 to 3 inches of hardwood mulch in their native plant beds, and incorporate one inch of compost into six inches of existing soil.

New WaterSense Materials at https://www.epa.gov/watersense

- Relieve Pressure and Reduce Water Wast From Spray Sprinklers
- Sprinkler Body Case Study by Oklahoma City
- Sprinkler Spruce-Up website, brochure, and graphics

During the following two years of the program, they found that customers commonly did not want to include landscape fabric in their landscape, adding compost was complex for many customers, and that several applicants asked to convert entirely to gravel or artificial turf. Additionally, they came across situations where some homes initially did not have an irrigation system and after they completed the transformation, irrigation was installed and caused an unavoidable increase in irrigation water use. To address these issues, they added a requirement that no new irrigation systems be installed in the conversion area. They also removed the landscape fabric and compost requirements because the mulch requirement was sufficient. They also found success by allowing the do-it-yourself homeowners more time to complete the program and do installations in sections.

CASE STUDY: SOUTHERN NEVADA WATER AUTHORITY

During the Xeriscape Conversion Study in the 1990's, SNWA found that lawns used 73 gallons per square foot annually compared to only 17 gallons per square foot annually with a water smart landscape. During the early years of their program, new construction was increasing rapidly, and of every 1 home that was converted to a water smart landscape, there were 28 new homes built with lawns. Between 2004 and 2007 they were able to develop drought restrictions to front lawns that eliminated the installation of front yard grass in new construction.

Their landscape transformation program is available to commercial and residential landscapes. Their rebate starts at $3 per square foot for the first 10,000 square feet and then reduces to $1.50 per square foot up to a maximum rebate of $500,000. They require that there be at least 50 percent living plant cover to reduce the heat island effect. For landscapes that use irrigation, the irrigation should include low-flow drip irrigation. So far, the program has successfully converted 193 million square feet of grass and saved 130 billion gallons of water.

CASE STUDY: CITY OF FORT COLLINS

The City of Fort Collins started providing Design Clinics in 2010, expanded to the XDAP program in 2014, and by 2016 developed the Xeriscape Incentive Program (XIP). The XIP is an educational rebate program. Participants in the program must first complete a training class before they can qualify for the rebate. The program offers participants the chance to transform both the front yard and the backyard with the added flexibility of using a landscape professional.

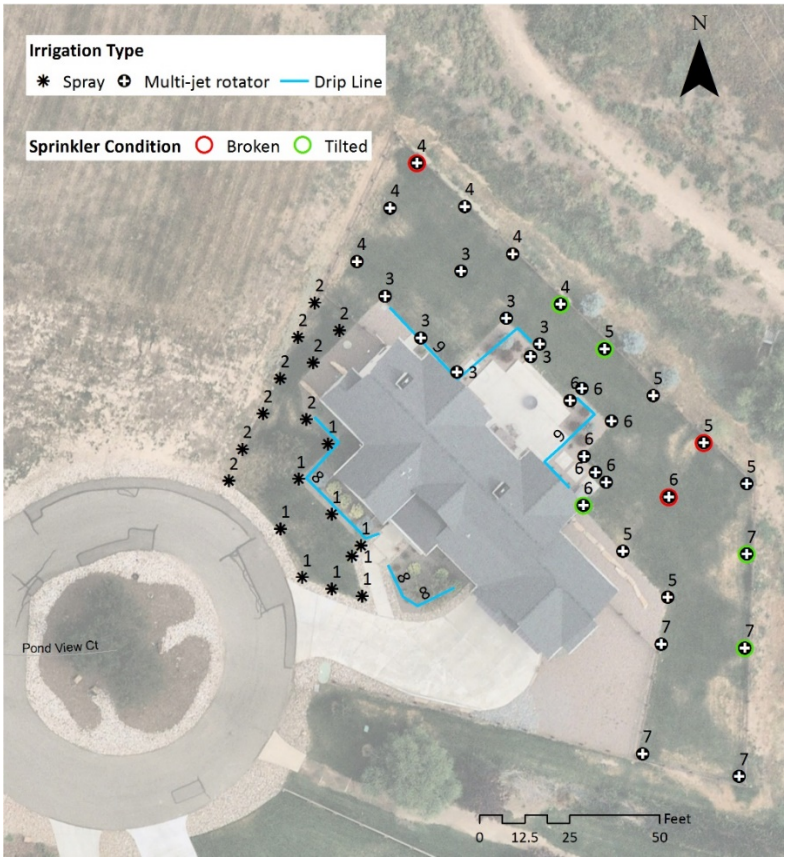
Participants in XIP start with a landscape evaluation for eligibility that looks for areas of water waste. After the evaluation, the customer will attend a two-hour class, officially enroll in XIP, have one-to-one meetings with staff, and submit designs for approval. In the final stages the customer will install the landscape and submit the final application to receive their rebate. Since 2016 they have completed 167 projects with an estimated annual water savings of 2.8 million gallons.

CASE STUDY: COBB COUNTY

In 2006, Cobb County found that water use was up by 20 percent causing water bills to be up nearly 300 percent. Landscapes were causing significant water use and overwatering the landscape became the primary cause of plant mortality. To reduce confusion about watering needs, they targeted the top 20 percent of water users and created a simple message – "Your yard needs one inch of water per week". Along with a recognizable logo, they provided tools and information to assist customers in maintaining a beautiful, cost effective yard.

The goal of the "Give them an inch, grow a yard" campaign was to achieve a two percent reduction in peak water use per year. The program gained 22 irrigation and landscape partners that carried materials and gave them away to clients. Along with partner communities, they were able to distribute a consistent and simple, actionable message. They found that even after the sunset of the official program, the message worked; customers realized their yards were not going to die if they did not water every day.

Webinar Questions	Responses
Were properties currently managing their landscapes within their existing water budgets?	**Fort Collins:** We do not have or establish baseline water budgets for each property pre-project. **Southern Nevada Water Authority (SNWA):** We don't use water budgets, but to determine our water savings we evaluate a property's consumption for two years before and two years after a conversion. For SNWA SF Res conversions, the average cost of a conversion is around $5.50 so our rebate of $3 pays a little over half the cost. We have not done a cross consumption analysis of conversion properties with those with smart controllers. **Austin Water:** Properties did not have a water budget. We will be working with water budgets for the commercial sector next year. Rebates seem to cover 5 to 10 percent of the project when a contractor does the work and 15 to 20 percent when the applicant does the work themselves. We have not looked at weather in the past, because the weather is so erratic here in Central Texas. We will be running some reports on weather in the Fall.
Was there any identification of the water budgets prior to and post landscape modifications?	**Fort Collins:** We track historical water use pre-project and two to three years post-project, but they aren't tied to a budget. What it's looking like is water savings is coming from not only the landscape change, but behavior change in the form of irrigation scheduling on existing/remaining parts of the landscape.
Do you know what an average percent of the total cost of a project is the rebate dollars?	**Fort Collins:** Sometimes DIY customers end up spending exactly the amount they get back in rebates. We can't pay them more than what they spent on the project. On average, DIY projects cost the customer approximately $2.50 per square foot, while projects that contract with a professional the entire way through are closer to average $7 per square foot. Our rebate is $0.75 per square foot up to 1,000 square feet. In 2019, we supported a total of 81,169 square feet (57,429 of which were rebated at $0.75 per square foot) with $43,017. Participants spent a total reported $202,940 on project installation.
Were weather-based controllers part of the conversion projects?	**Fort Collins:** We don't specifically track whether weather-based controllers are a part of each project. Customers are eligible to take advantage of sprinkler equipment rebates (including those for smart controllers; see www.fcgov.com/sprinklerrebates) in addition to the XIP rebate.

How do you validate that compost was tilled into the soil?	**Fort Collins:** At final inspection, we do a visual check to see that compost was incorporated into the soil. We do not require a blanket treatment of compost to the site, rather encourage spot treatment of planting holes dug two to three times the diameter of the plant. Customers also have to fill out a notarized soil amendment certificate to certify that they have installed soil amendment. Customers can bypass this requirement if they get a soil test report that states no amendment is necessary, by providing a soil test sample to a lab.
Can we see an example of the XIP Basics zone map provided to customers?	**Fort Collins:** My assumption is this question is referring to the sprinkler audit irrigation maps: 
How many staff members are on the SNWA turf audit team? Do they hold any specific certifications?	**SNWA:** We have five full time staff and four interns that work 25 hours per week each. We make sure that all our field staff have the IA Certified Landscape Irrigation Auditor certification.

Did I hear that you don't allow trees? If so, why?	**Fort Collins:** We are all about supporting the urban canopy and reduced energy costs, so while we don't discourage the use of trees in the new landscape, we don't rebate the area where a new tree was planted. Trees use a lot of water in our landscapes, so the more trees that are planted in the new landscape, the more likely water savings won't be achieved. It ends up being somewhat of a moot point in some cases where trees are installed in the end, but that's the way we do it.
For projects with existing irrigation systems, do you require a new irrigation design that reflects landscape conversions?	**Fort Collins:** We do require irrigation plans for both the existing and new irrigation plan. We ask the customer to show how and where irrigation changes are happening, and we make suggestions from there if spaces aren't appropriately zoned, if there's mixed equipment, if there are concerns with capping heads that would lead to free damage, etc. **Cobb County:** We did not require it, but we did review their systems and we did give them suggested changes to their systems **SNWA:** We require the spray system to be removed and replaced with a new drip system, or they can install retrofit heads to the existing pipes from the spray system. **Austin Water:** We visually inspect that the irrigation is modified. We do not require an updated irrigation design.
Regarding the "Give Them an Inch, Grow a Yard" program, how did you know they were specifically heavy outdoor water use customers? Do you have separate indoor/outdoor meters?	**Cobb County:** We did a year-long usage study before implementing our conservation rate change that looked at water usage over a multi-year history and were able to isolate patterns that established a usage pattern that indicated outdoor seasonal usage. We were able to isolate accounts and determine that about 5 percent of our customers were driving 62 percent of our seasonal peak usage. We therefore targeted that 5 percent of customers for the program. We did not have irrigation meters for residents at that time.
Fort Collins, please provide references on water use of plants.	**Fort Collins:** Please see our Xeriscape Incentive Program plant list for water requirements and hydrozones: www.fcgov.com/utilities/residential/conserve/water-efficiency/xeriscape/incentive-program/materials/

SNWA, please share any info you have on low-flow-drip irrigation systems.	**SNWA:** We require a pressure regulator, filter, and all heads must be designed at 20 gallons per hour or less. We do not allow micro sprayers or bubblers.
How does SNWA quantify nonfunctional turf?	**SNWA:** For SF Residential, we determine all front yard turf as non-functional. All street commercial turf, street medians, roundabouts, and street-facing multi-family turf were also determined as non-functional.
Fort Collins, can you talk a little more about plant by number, the organization that's providing it, how it's funded, and how they developed the 15 kits?	**Fort Collins:** Resource Central works with local professional designers to put together 10 or so perennial garden kits each spring. Each kit is 15 to 30 starter plants, ranging in size from 60 to 100 square feet with 15 to 30 four-inch plants each. See www.resourcecentral.org/gardens to check out their current offerings. We have a contract with them to offer $25 discounts on the first x number of boxes. The cost to us is the cost of the discount plus a program cost per box. It ends up being a more expensive program for us but is very popular and our discounts always sell out.
Do you no longer require any mulch in the landscape?	**Fort Collins:** We do require mulch, whether rock or wood, to reduce evaporation out of the soil. Small sections may be left thin or bare for ground dwelling bees/insects. **SNWA:** We do require mulch for the SNWA program. **Austin Water:** Two to three inches of hardwood mulch is a requirement in the WaterWise Landscape Rebate Program.
Is the 14 gallons per square foot per year?	**Fort Collins:** We see an average savings, post landscape establishment, of 14 gallons per square foot per year.
Fort Collins, why not support trees? And in the example shown, why encourage the removal of the pre-existing tree?	**Fort Collins:** We are all about supporting the urban canopy and reduced energy costs, so while we don't discourage the use of trees in the new landscape, we don't rebate the area where a new tree was planted. Trees use a lot of water in our landscapes, so the more trees that are planted in the new landscape, the more likely water savings won't be achieved. It ends up being somewhat of a moot point in the end, but that's the way we do it. We do not encourage removal of trees. Often people are considering removing trees due to structural issues, being too close to the house, or whatever, and often find our program to help partner with the landscape change.

Have any of the utilities measured other benefits beyond water savings, such as improved soil health, carbon sequestration, or increased biodiversity?	**Fort Collins:** We plan to do biodiversity studies with our large commercial-scale turf conversion projects. **Cobb County:** We did not measure other benefits. **SNWA:** We have done some review of carbon sequestration, especially regarding reduced electricity associated with reduced pumping of water and lawnmower emissions, but nothing that we advertise as part of benefits of the program. **Austin Water:** We have not measured any ecological benefits. We have tried to help with biodiversity by not accepting gravel and artificial turf projects. The City of Austin signed a proclamation that the city should promote natural wildlife habitat.
Austin, why did you decide to not have compost - just because of the cost? We are considering requiring compost but no tilling.	**Austin Water:** We looked at cost and maintenance. We found that some properties only had around two inches of soil and that they couldn't till the compost in. We were also afraid the compost could get washed out with a torrential downpour if just laid on top. For us, mulch seemed the most beneficial because it acted like an insulation layer that would protect the roots from the two months of 100° weather and two weeks of freezing temperatures we get a year. Also, mulch will decompose into compost over about two years. So cost was a factor, but we didn't need to have a compost requirement if mulch was already doing the job.
Why do some utilities not allow artificial turf in a conversion program?	**Fort Collins:** We don't allow artificial turf because it often results in a reduction of biodiversity and habitat, both in and above the soil. While artificial turf is not restricted per city code, it is not an aesthetic we wish to support in the community. **SNWA:** We have supported its use since the beginning and almost 50% of residential customers utilize artificial turf in their conversion. **Austin Water:**

	Our Watershed Protection Department has shown us studies that artificial turf, over time, will get organic material clogged in it and will become impervious. Austin Energy is concerned about the heat the artificial turf absorbs. Some studies show the material to heat up to well over 100 degrees in the summer. In our department, we have seen people water their artificial turf to reduce the temperature so that their children and pets can play on it. Lastly, I cannot support a measure that decreases biodiversity in the local ecosystem since it is an initiative given to us by our city council.
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