OUTDOOR WATER SAVINGS

Alliance for Water Efficiency

Landscape Transformation:

Assessment of Water Utility Programs and Market Readiness Evaluation

Executive Summary

January 2019

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The Alliance for Water Efficiency launched its Outdoor Water Savings Research Initiative in 2015 to identify and clarify what programs, practices, and irrigation technologies can support effective utility-driven outdoor water efficiency programs. AWE believes that to achieve a world in which communities, businesses, and ecosystems have the water they need to thrive, homeowners and businesses must be smart water users – indoors and outdoors.

Program Collaborators

Research Team

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Introduction

A beautiful landscape has been a source of pride and economic status for homeowners for centuries. Yet a historical preference for lush, green lawns has resulted in a prevalence of high-water use landscapes, even in communities facing water supply challenges. Most homeowners use 30 percent to 60 percent of their water outdoors, depending on the region and climate - with as much as 50 percent wasted.[1]

In an era of worsening water scarcity and droughts, we can no longer afford to promote traditional high-water use landscape designs that don't support resilient communities or reflect changing climates.

We must recognize the beauty and value of ***sustainable landscapes***, which enable homeowners to express themselves through their properties, and utilize designs and products that use water efficiently and support healthy watersheds. Yard-by-yard, it's time to transform our landscapes.

Landscape Transformation

Landscape transformation is the act of customers transitioning from traditional high-water use landscape designs and products to water-efficient and sustainable landscapes, reducing the irrigation water requirement and outdoor water use. Utility-sponsored Landscape Transformation programs may include:

- Rebates for efficient irrigation technologies
- Free distribution of mulch
- Turf removal and replacement
- Water-wise re-landscaping
- Customer site audits

Sustainable Landscapes

Sustainable Landscapes are defined as landscapes that feature climate-appropriate landscape design and efficient technologies, and are maintained through efficient irrigation practices to support homeowner goals, community water objectives, and healthy watersheds.

Sustainable landscapes are a proven strategy to help achieve water security.

AWE's research proves that utility-sponsored programs to promote sustainable landscapes save water. Water savings are achieved by a diverse set of ***landscape transformation*** programs and measures. These are water savings that help reduce a community's peak demand for water and reduce long-term costs. Even better, these savings increase over time as homeowners grow to appreciate their new water-efficient landscapes and want to do more.

Just as important – homeowners agree and are ready for change.

AWE's evaluation of customer motivations for landscape transformation revealed that the emotional connection we have with our outdoor spaces is not in conflict with a more sustainable approach to landscapes. People are open to transforming their landscapes and want to be smart water users. And with support from water providers, government agencies, irrigation industry players, and landscape professionals, they achieve beautiful, water-efficient landscapes they can feel proud of.

[1] U.S. Environmental Protection Agency. (2013). Water-Smart Landscapes. Retrieved from https://www.epa.gov/watersense/water-smart-landscape-design.

ABOUT THE RESEARCH

AWE's Landscape Transformation study, conducted over a two-year period, represents the most expansive and diverse assessment of outdoor water efficiency programs to date. The research was made possible through a cross-sector and collaborative effort, with data and funding provided by municipalities and industry organizations in the United States and Canada.

Project Collaborators

Austin Water Utility (TX)
California American Water (CA)
California Urban Water Agencies (CA)
City of Fort Collins (CO)
City of Guelph (Ontario, Canada)
City of Petaluma (CA)
City of Sacramento (CA)
City of San Diego (CA)
City of Santa Rosa (CA)
City of Seattle (WA)
Metropolitan Water District of Southern California (CA)
North Marin Municipal Water District (CA)
Region of Peel (Ontario, Canada)
San Diego County Water Authority (CA)
Sonoma County Water Agency (CA)
Southern Nevada Water Authority (NV)
The Scotts Miracle-Gro Foundation (OH)

AWE's Landscape Transformation study consisted of two parts: an **Impact Analysis** and a **Process Evaluation**. The **Impact Analysis** examined various extant Landscape Transformation programs to provide new empirical data on their effectiveness. The **Process Evaluation** included surveys with homeowners and supply chain participants, as well as analysis of industry reports and of market segmentation, to assess attitudes around water-efficient landscapes.

Basic information about the research and key findings are presented in this summary. The complete results are compiled into two separate final reports, available at www.allianceforwaterefficiency.org.

Photo credit: Vicki Anderson

Impact Analysis: Overview

The Impact Analysis involved conducting new empirical research on Landscape Transformation programs in diverse geographies and climates, and with varying program design. Savings for a specific program or type of program will vary widely based on pre-program participant use, weather characteristics such as precipitation and evapotranspiration, incentive levels, customer support, and rules and requirements. The research sought to determine the range and type of water savings that can be expected from Landscape Transformation programs with a variety of efficiency measures, including:

Rebates for efficient irrigation technology

Free distribution of mulch

Customer site audits

Turf removal and replacement

Impact Analysis: Key Findings

Landscape Transformation programs analyzed in diverse geographies and climates all produced water savings.

This study reviewed utilities that vary in geography, population, and climate, but all offer landscape transformation programs that get results.

Landscape Transformation programs of all kinds achieved water savings.

From financial incentives for removing turf, to rebates on efficient irrigation fixtures, to individualized site consultations, to free provision of mulch, all programs were effective at reducing landscape water use.

City of Guelph

Population served: 131,000
Average annual precipitation: 33.0 inches
Program type: Customer site audits
Average participant savings: 6.9 percent

Austin Water Utility

Population served: 928,000
Average annual precipitation: 32.1 inches
Program type: Turf removal and replacement
Average participant savings: 18.9 percent

City of Sacramento

Population served: 480,000
Average annual precipitation: 17.0 inches
Program type: Turf removal and replacement
Average participant savings: 29.6 percent

City of Petaluma

Population served: 60,200
Average annual precipitation: 25.0 inches
Program type: Free distribution of mulch
Average participant savings: 13.3 percent

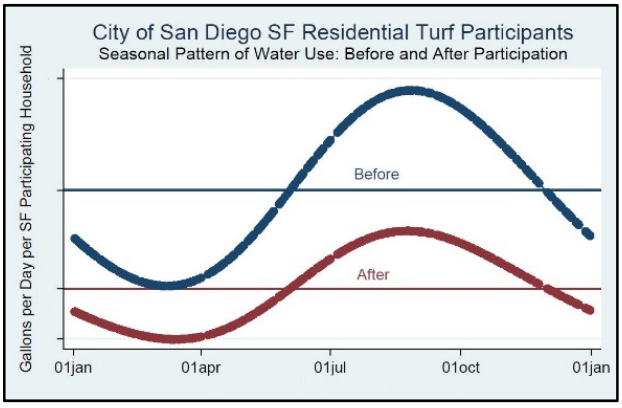
Across programs analyzed, the average participant savings for single family customers ranged from a **7 percent reduction in water use up to 39 percent.**

Landscape Transformation programs reduced peak demand in participating utilities.

Reducing peak demand eases the burden on the water system, requiring less system capacity to fulfill the water need at peak times. This ultimately helps delay or avoid investments in additional water infrastructure, keeping costs down for customers.

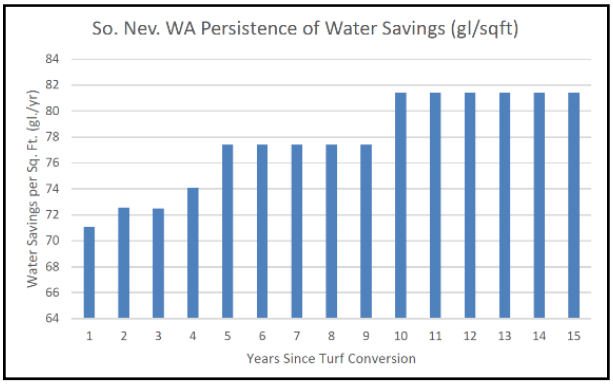
City of San Diego

Population served: 1,378,000
Average annual precipitation: 10.0 inches
Program type: Turf removal and replacement
Average participant savings: 33.2 percent



The water savings achieved not only persisted after the first year; they increased with time.

Persistence and growth of water savings observed amongst programs with sufficient data for analysis indicates that program implementation costs will be recouped with time.



Southern Nevada Water Authority

Population served: 2,100,000
Average annual precipitation: 4.2 inches
Program type: Turf removal and replacement
Average participant savings:
First 10 years: 71 gallons per square foot

The average participant in San Diego County Water Authority's Sustainable Landscapes Program saved approximately 42,000 gallons annually—**enough water to meet the needs of a four person household in San Diego for nearly 100 days.**[2]

[2] Savings for the San Diego County Water Authority's Sustainable Landscapes Program averaged 40.1 gallons per square foot per year, and the average participant replaced 1,046 square feet. According to the San Diego County Water Authority website, "The current average household of four uses about 447 gallons per day." Source: San Diego County Water Authority. Dashboard of Key Indicators: Per Capita Water Use. Accessed February 4, 2019. https://www.sdcwa.org/dashboard/percapita-water-use/2017/

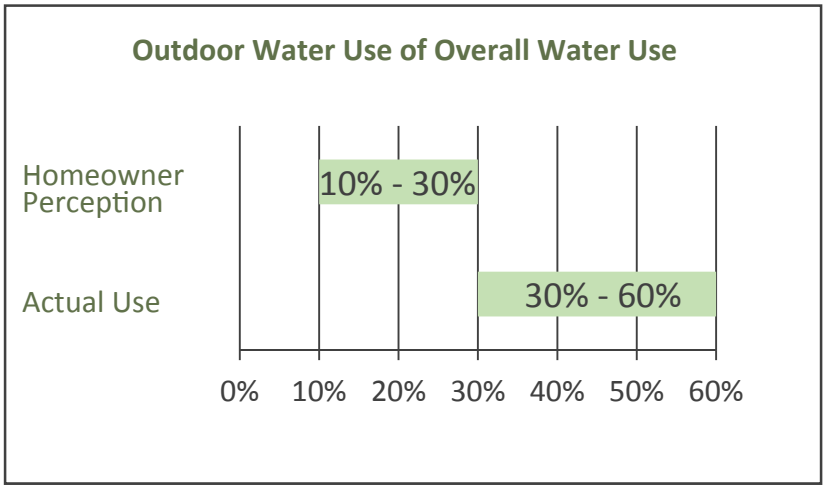
Process Evaluation: Overview

The Process Evaluation portion of the research included customer surveys, interviews with supply chain participants, analysis of industry reports, and a market segmentation analysis. AWE surveyed 3,390 water customers across the United States and Canada. Of these respondents, 1,655 had participated in a landscape transformation program. The survey sought to understand customer reasons, rationales, and motivations for landscape transformation.

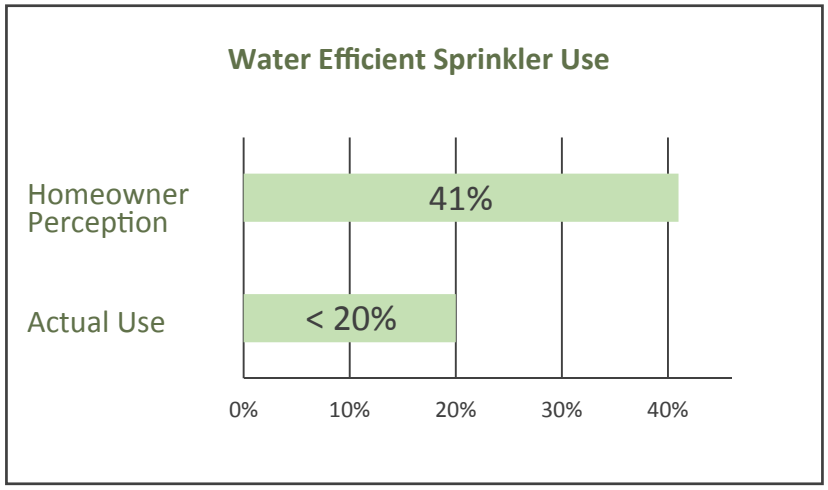
Process Evaluation: Key Findings

Homeowners are Generally Disconnected from their Outdoor Water Use

More than half of homeowners believe they use 10-30 percent of their overall water outdoors. In fact, most homeowners use 30 to 60 percent of their water outdoors, depending on the region and climate. In addition, as much as 50 percent of water used outdoors is wasted due to evaporation, inefficient or broken equipment, and overwatering.[1]



Homeowners also think they are already efficient outdoor water users. 41 percent responded they already owned water-efficient sprinklers; but industry manufacturers report that less than 20 percent of sprinkler head sales are for efficient models.



Homeowners are Ready for a New Type of Landscape Ideal

They are becoming more aware of the existence of water-efficient landscape options and more open to change.

79 percent of homeowners were dissatisfied or only somewhat satisfied with their current landscaping.

69 percent of homeowners have considered changing their landscapes to reduce water use.

55 percent of homeowners indicated they'd prefer to remove part or all of their lawn.

60 percent knew a neighbor or friend that had put in alternative landscaping, and **85 percent** like the new look or feel neutral about it.

They want landscapes that are beautiful, easy, and water-efficient.

Low water use was one of the most commonly selected landscape attributes - just behind beauty and easy care – indicating increasing awareness of water challenges.

55%
of respondents identified **beauty and appearance** as one of their top three landscape aspects.

48%
of respondents identified **easy care** as one of their top three landscape aspects.

42%
of respondents identified **low water use** as one of their top three landscape aspects.

Homeowners believe that beautiful landscapes contain a variety of features.

87 percent of respondents would like trees and shrubs as a part of their landscape.

79 percent of respondents would like flowers as a part of their landscape.

73 percent of respondents would like entertaining space as a part of their landscape.

69 percent of respondents would like lawn as a part of their landscape.

Homeowners Need Help to Transform their Landscapes –

78 percent of homeowners take care of their own lawn, and 85 percent believe they would need moderate to full assistance to change out their landscape.

They have a variety of concerns about landscape transformation programs.

52%
Cost of changing out some or all of their lawn

30%
Final look of the landscape

21%
Difficulty of making changes

They believe they will need help with a variety of landscape aspects.

39%
Landscape design

24%
Implementation, such as lawn removal

10%
Installing irrigation

They would be more willing to undertake landscape transformation programs if they had incentives.

45%
Monetary incentive

22%
Help with plant selection and layout

– And When They Do, They're Pleased with Them!

91% Are satisfied or very satisfied with new landscape

85% Thought the conversion was worth the investment

63% Would not do anything differently

Barriers to Landscape Transformation

Landscape transformation in the single-family market is still evolving and has been slow to progress.

There is growing awareness of the beauty and value of sustainable landscapes, but yards are being transformed at a rate that is far from desirable. Removing barriers – for customers, water agencies, manufacturers, and contractors – can help accelerate the market shift to a new standard of preference. AWE's review of the programs and customer responses revealed four major categories of barriers:

Customers

- High costs
- Lack of knowledge
- Misperceptions of outdoor usage
- Worries about new look
- Ease of lawn maintenance
- Indifference to the offer

Programs

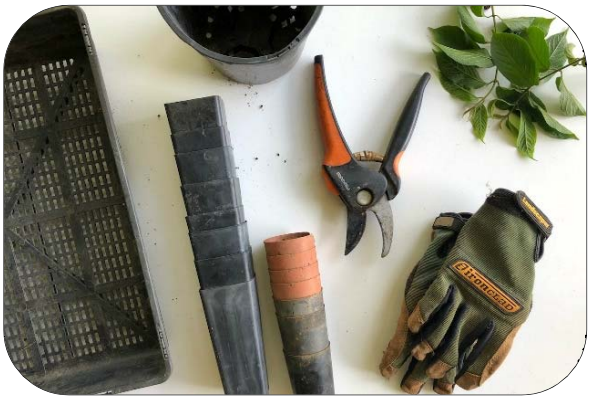
- Numerous or complicated requirements
- Low financial incentives
- Complex process
- Low customer response

Supply Chain

- Efficient products hard to identify
- Limited testing, certifications, labeling
- Product performance issues
- Plant availability

Contractors

- Specific knowledge base needed to support sustainable landscapes
- Unclear business case to drive service for small residential clients



Path Forward and Recommendations

The landscape transformation process has challenged the water industry far beyond that of indoor residential efficiency. Specific strategies can help water providers design effective programs, identify opportunities to improve the supply chain, and optimize the entire water industry to support the shift towards efficient landscapes.

Program Recommendations

Improve Programs through Big Data and Analytics	Correct Misperceptions about Status	Address Emotions	Correct Misperceptions about Water Usage
The use of big data and analytics can help target customers with a higher degree of success and personalize the experience.	Water providers can craft imagery and messages communicating that sustainable landscapes are "in" and are today's status symbol of success and beauty.	Water providers should tap into messaging that inspires an emotional connection and response.	Over half of the customers surveyed incorrectly believe that they use more water indoors, than outdoors.

Educate the Customer, Right from the Start	Find the Optimal Design Balance	Balance Program Requirements	Expand Program Messaging and Tailor to Different Customer Types
Introductory meetings or workshops help potential participants know what's ahead, so they can stick with a landscape transformation project.	Strive for equilibrium between incentive levels, services and requirement stringency.	Strict requirements lower participation.	Programs must have multiple messages in order to reach and appeal to a broader range of customers.

Supply Chain Recommendations

Connect better with the water efficiency industry (and vice versa).	Create additional testing and certification standards beyond smart controllers.	Improve plant availability at nurseries and stores.

Industry Recommendations

Lead with technology – data-driven insights and better customer engagement.	Consider industry initiative to produce an online landscape design software tool.	Make the shift to big data and predictive analytics to personalize customer experience.

Final Observations

After successfully reducing indoor water use, communities may hesitate to take the next step because residential outdoor urban water use is much more complicated to tackle. Unlike indoor use, which is governed by fixtures using no more and no less than the standard flow, outdoor water use varies greatly across regions, communities, and even neighborhoods. It depends on the climate, is sensitive to weather, and can change significantly depending on the season. Utility-driven programs are often complex and labor-intensive, requiring comprehensive customer support programs. Securing sufficient customer participation requires untangling deep-rooted cultural issues tied to our love affair with thirsty lawns and building an appreciation for more diverse landscapes.

AWE's Landscape Transformation study definitively proves that the landscape transformation programs implemented to date are both effective at reducing outdoor water use and desirable for homeowners. Thanks to the efforts made by participant water providers and their staff, these programs produced meaningful savings that made their communities more resilient.

As water resources are depleted due to population growth, climate change, and other drivers, these are promising findings. Given that we use more than 9 billion gallons per day on residential landscapes,[3] there is an imperative to do more and to optimize the outcomes of these kinds of programs. By transforming our landscapes, we can fully harness the potential of outdoor water savings as a mostly untapped water supply source, and avoid more costly options and infrastructure.

Fortunately, these findings offer critical insights for all the stakeholders who must be involved in landscape transformation. Utilities can lean on this research to justify investments in landscape transformation, and design thoughtful, comprehensive programs and messaging that appeal to their customers' desired attributes and needs. Technology manufacturers and supply chain players, ranging from big box home improvement stores and nurseries to landscape professionals, can begin to address some of the challenges that are currently slowing down landscape transformation programs. They can collaborate to scale up smart technologies, and help to educate customers directly. Perhaps most importantly, this research provides a platform for these stakeholders to come together and engage in more regular and open dialogue.

Landscape transformation programs are helping change the paradigm of the outdoor landscape from lawn-centric to a more holistic view that includes site-appropriate plantings and efficient irrigation systems. Homeowners who install beautiful, water-efficient landscapes are leading the way for their neighbors to do the same, a domino effect that has benefits for the entire community. Communities that invest in these programs will see growing returns that help secure long-term water supplies, support local economies, and boost watershed health.

[3] U.S. Environmental Protection Agency. (2017). Outdoors. Retrieved from https://www.epa.gov/watersense/outdoors.