PROJECT BRIEF

Outdoor Water Savings Research Initiative Phase 3

Evaluating & Optimizing Large-Scale Landscape Irrigation Management and Transformation Strategies

Large-scale Landscape Strategies	
Large-scale landscapes = commercial, industrial and institutional (CII) property landscapes including municipal properties, multi-family and/or HOA common spaces.	
Landscape transformation programs:	**Irrigation optimization programs:**
Often called "cash for grass" or xeriscape programs Designed to replace high water requirement landscapes with low or no water requirement landscapes.	Irrigation audits, landscape water budgets, technology or equipment incentives/rebates, report services, repair/upgrade services, and more. Not designed to change the landscape, but to irrigate the existing landscape efficiently.

Opportunity:

- Research is needed to help utilities quantify water use and water savings from large-scale landscape transformations and irrigation optimization strategies.
- Utilities want to optimize water used on landscapes to save water, reduce peak demands, reduce run-off, protect water quality, maintain beneficial landscapes, and more.
- Utilities are testing irrigation management strategies like requiring dedicated irrigation meters, direct repair/upgrade services, landscape water budget programs, watering schedules, incentivizing advanced smart irrigation technologies, auditing requirements, and more.
- Further, many utilities are considering or actively investing in large-scale landscape transformation programs. States have allocated additional funding for turf replacement programs, 30 cities in the Colorado River Basin signed an MOU to reduce non-essential turfgrass by 30%, and some have banned irrigation of non-essential turf.
- Optimizing water use on large-scale landscapes can generate significant savings. Variation in savings is expected across climates and by program design. By doing this work across multiple utilities, it greatly expands the body of knowledge and creates more widely useful results.

Challenge:

- There is no comprehensive published research about water savings from large-scale landscape and irrigation optimization strategies.
- It is predicted that water savings will be different from residential programs – but by how much?
- Large-scale landscapes have different functions and are managed differently than single-family residential landscapes. There are multiple stakeholders involved, like property owners, property managers, landscape and irrigation contractors, and the occupants/users of the landscapes.

Research Questions
- How are utilities designing and implementing programs and services to either transform large-scale landscapes and/or optimize water use on large-scale landscapes?
- How effective are these programs, what drives differences across programs, and what factors might improve participation and water savings?
- How are these strategies achieving multiple benefits like offering pollinator habitat, mitigating urban heat, providing public education, stormwater capture, etc.?
- What resources are involved from both the agency and the participating customers including monetary expenses, time, and skilled contractors (irrigation and landscapers)?
- What ordinances, rules, or policies enable or enhance these programs? Conversely, what are the potential negative outcomes of such ordinances, rules, and policies on the programs.

Expected Deliverables

Water Use Analysis and Evaluation Report:
- Analyze water use impacts for a subset of irrigation optimization strategies across multiple utilities and climates.
- Analyze water use impacts for relatively similar large-scale landscape transformation programs across multiple utilities and climates.
- Market readiness assessment for large-scale landscape transformations.

Guidance:
- Demonstrate differences across program designs and what aspects may increase participation and water savings.
- Provide examples of complementary or enabling ordinances, service rules, policies, and technologies.

Learning and Engagement Activities:
- Cultivate a peer network to share ideas throughout and after the completion of this project.

Tasks & Proposed Budget. $345,000 with data from 12-15 participating utilities. *Some tasks and overall project cost are scalable by the number of utilities that participate.*

Task	Description	Budget
1	**Discovery and Documentation.** Gather program information including rules and requirements, design features, funding sources, levels and partners, participation, communication/outreach materials, and any additional data that is available (e.g. aerial imagery, irrigation system information, etc.). We will also gather information about related program, services, ordinances, rules or policies that are in place to help enable efficient water use.	$50,000
2	**Data Sharing, Transfer, and Clean-up.** Set up data-sharing agreements and systems. Data will be transferred, reviewed for completeness, and address any issues that will impact the analysis.	$40,000
3	**Analyze Water Savings.** Estimate water savings from a select set of irrigation optimization programs and from landscape transformation programs across multiple utilities. We will analyze water use before and after the projects, both in the context of their local weather and regulations.	$100,000
4	**Market Readiness Assessment.** Evaluate the willingness of property owners to implement large-scale transformations and what factors are important to them in	$50,000

	making these decisions. Information will be gathered from three groups: customers who have participated, customers who demonstrated interest but did not follow through, and customers who have not yet demonstrated interest.	
5	**Literature Review.** Gather and summarize literature on large-scale landscape and irrigation optimization programs, and any transferrable lessons from stormwater and green infrastructure programs. Efforts may include less formal documentation and white papers, and interviews, since there is little existing work in the formal published literature.	$15,000
6	**Peer Learning Cohort Coordination.** Coordinate regular meetings among project participants to learn and share from each other.	$5,000
7	**Report and Educational Event(s).** Create a report that captures all of the above, and host at least one educational event, like a recorded webinar or workshop.	$25,000
	Project Management	$35,000
	Contingency	$25,000
	Estimated Total	$345,000

Benefits for Participating Agencies:
- Utility Participants will have agency-specific evaluations of one or more programs, including analyses that can be used for internal and external planning, decision-making, promotions, and communications.
- Cost-effective means to get individualized technical analyses by coordinating with multiple utilities on single research effort.
- Improve the efficacy of your large-scale landscape and irrigation management programs given the climate specific to your region.
- Participate in peer learning discussions to share and learn from other agencies. Demonstrate leadership by contributing to recommendations and smart practices.
- Can serve on the PAC and better ensure your agency's perspective and issues are addressed.
- Resource to use to advocate for internal funding and/or apply for external grants.
- Early access to report findings.
- Professional development and networking.

Funding and Participation. The project and total cost are scalable by number of utility participants.

Utility Participant – The Works*	$18,500	Provide comprehensive water and program data. Individualized data analysis and evaluation. Participate in PAC and Learning Cohort.
Utility Participant - Limited*	$10,000	Provide data from a limited number of projects. Participate in PAC and Learning Cohort.
Active Sponsors	$7,500	Participate in PAC and Learning Cohort. Qualitative program information. No data analysis.
Research Supporters	$2,500	Interested in supporting project but have limited time for involvement.

*Note: AWE applied for and was awarded a $50,000 grant from the Metropolitan Water District of Southern California's Innovation Conservation Program. This grant will cover a portion of the costs for participation of 4-5 utilities from California. This research can also support work related to CA strategies related to dedicated irrigation meters and removal of "non-functional turf".

Estimated Timeline: Approximately 18 months from project kick-off. Project is expected to launch Summer 2023.