URBAN WATER AND LAND USE:

INTERSECTIONS AND OPPORTUNITIES

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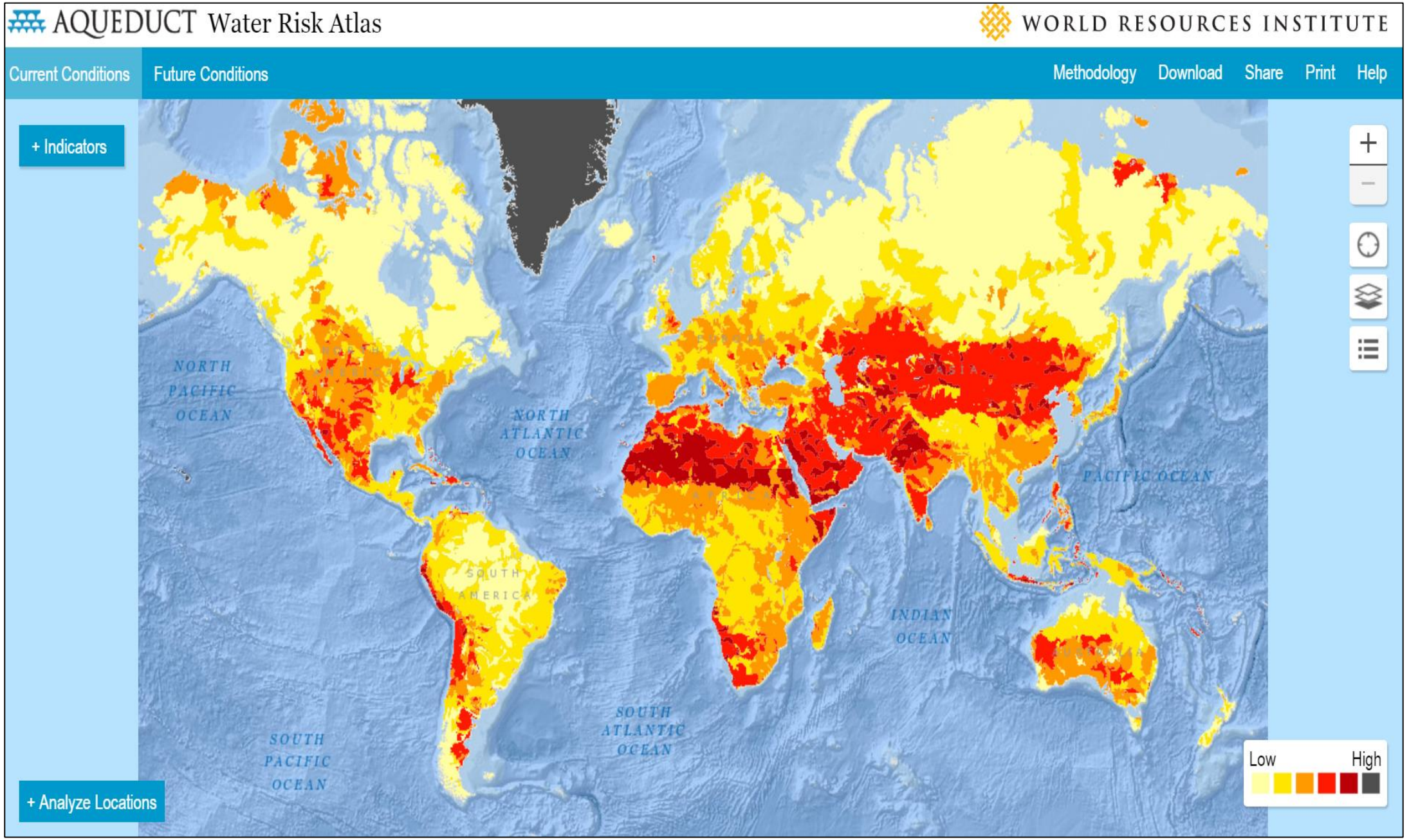
President and CEO

Alliance *for* Water Efficiency

AWE: A VOICE FOR WATER EFFICIENCY

- Our mission is to promote an efficient and sustainable water future
- **500+** member organizations in **200** watersheds delivering water to **50 million** water users
- A unique network and forum for collaboration around research, policy, information sharing, education, and stakeholder engagement
- Our main focus is USA and Canada, but we work in other countries as well



Source: https://www.wri.org/our-work/project/aqueduct

The United Nations Population Division estimates that **55%** of the world's population currently lives in urban areas. This number will grow to **68%** by 2050.

WHY WATER EFFICIENCY?

PLANNING FOR THE FUTURE

- **Drought**: immediate savings during scarcity.
- **Planning**: lessens gap between growing demand and dwindling water supply.
- **Environmental**: provides base flows for streams and wetlands, sustainable groundwater.
- **Energy**: reduces need for electricity, with resulting reduction in greenhouse gases.
- **Economic**: avoids higher expenses for supply or treatment.

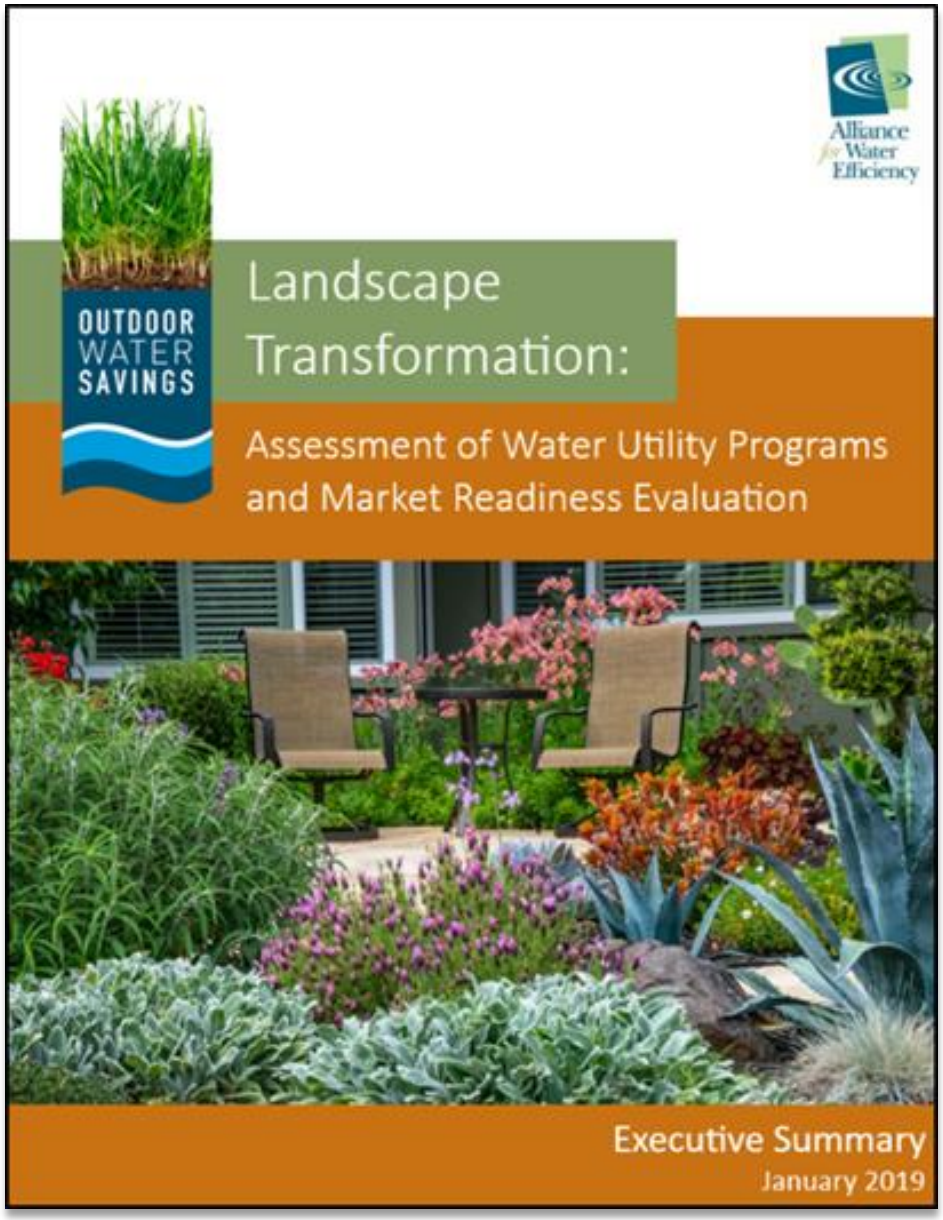
- Sustainable urban water planning usually means sustainable landscape planning, especially in the West

WHY WATER EFFICIENCY?

OUTDOOR WATER USE

- Our urban landscapes often require lots of water: most homeowners use 30 to 60 percent of their water outdoors, depending on region and climate, and up to **50 percent** of water used outdoors may be wasted.
- AWE has conducted extensive research on efficient outdoor water use for years
    1. Peak Demand Management
    2. Landscape Transformation
    3. Effectiveness of Drought Restrictions

TRANSFORMING LANDSCAPES



LANDSCAPE TRANSFORMATION

1. **Impact Analysis: Landscape Program Water Savings**
   - What range of water savings can be expected from reducing landscape water requirements?

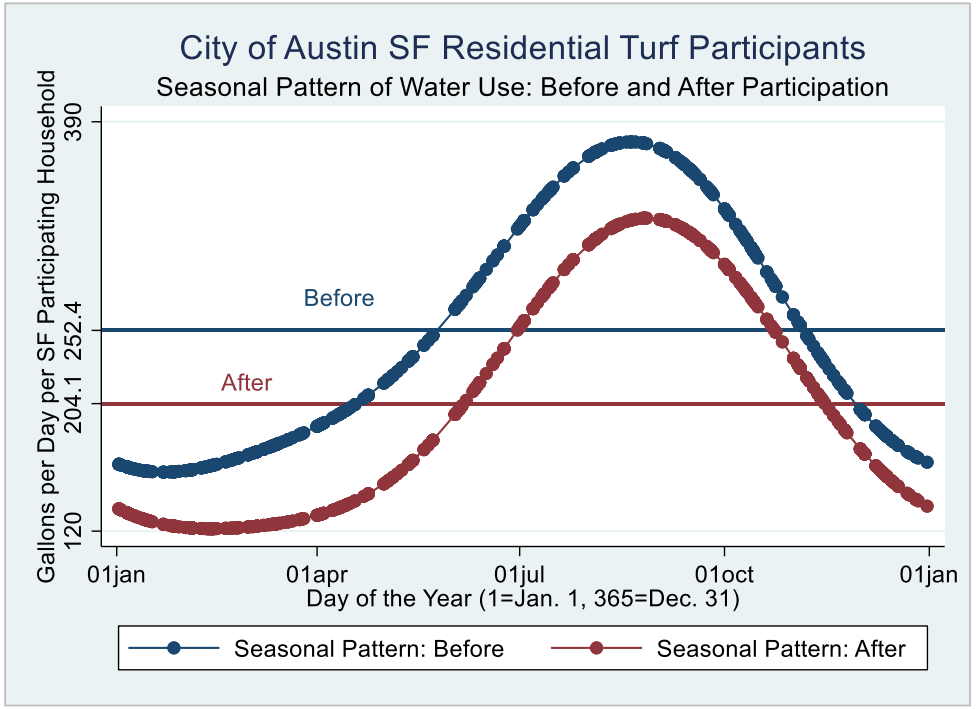
2. **Process Evaluation: Customer Motivations and Market Readiness**
   - What motivates people to change their landscape and irrigation practices to reduce the overall water requirement and usage?
   - What are the reasons and rationale for their landscape choices?
   - What barriers exist to landscape transformation and to utility-sponsored programs?

LANDSCAPE TRANSFORMATION: **IMPACT ANALYSIS**

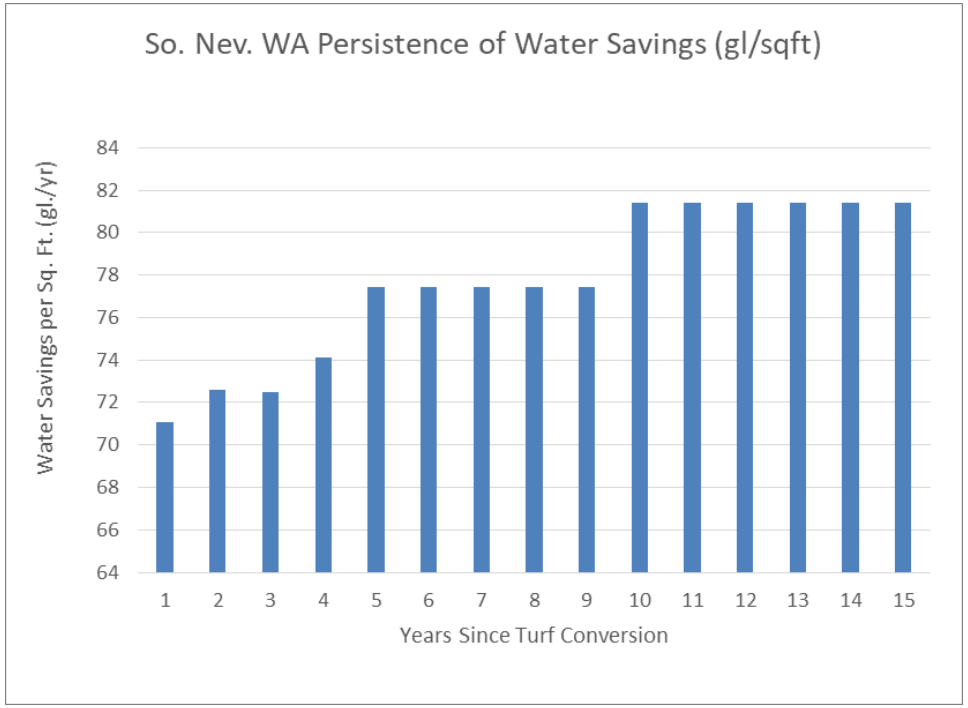
- Evaluated savings of nine landscape transformation programs from diverse geographies and climates; described fourteen diverse programs, divided into four categories:
    1. Rebates for efficient irrigation technology
    2. Free distribution of mulch
    3. Customer site audits and education
    4. Turf removal and re-landscaping
- All programs, of every type, generated meaningful water savings
- Average participant water savings ranged from 7 percent (Outreach & Support) to 39 percent (Cash for Grass)

LANDSCAPE TRANSFORMATION: **IMPACT ANALYSIS**

- Landscape programs effectively reduced peak demand



- Water savings were observed to persist and increase over time



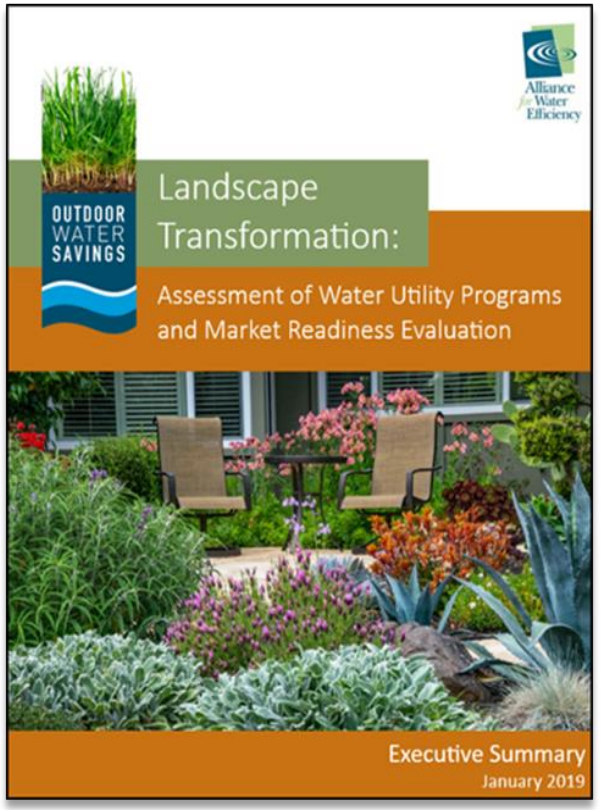
LANDSCAPE TRANSFORMATION: **PROCESS EVALUATION**

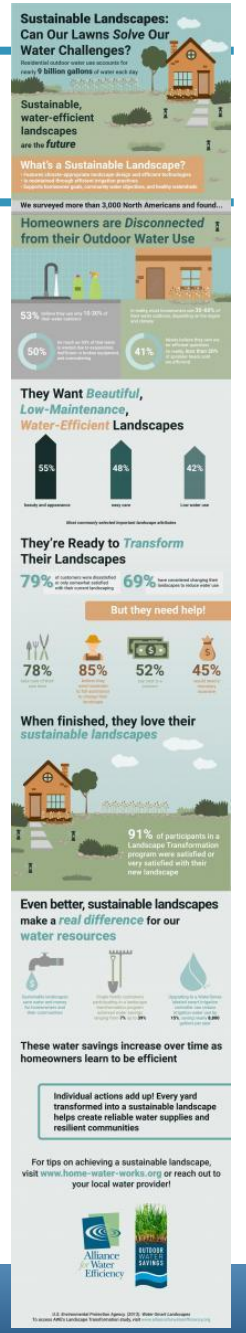
- AWE surveyed 3,390 water customers across the United States and Canada. 1,655 participated in a landscape transformation program.
- Consumers are generally disconnected from their outdoor water use
- Consumers are looking to their water providers to help them make changes
  - **85 percent believe they need moderate to full assistance to change out their landscape**
  - 45 percent will need a financial incentive
- When they do transform their landscapes, they're pleased with the results
  - **91 percent were satisfied or very satisfied with their new landscape**
  - 85 percent thought the conversion was worth the investment

LANDSCAPE TRANSFORMATION: **HOW TO ACCESS THE INFORMATION**

- Executive Summary available for free download
- Summary Analytics and Market Analysis Reports available for free download
- Infographic available for free download on "Sustainable Landscapes: Can our Lawns Solve Our Water Challenges?"
- Full study materials with case studies available for AWE members only
- Visit the AWE website at

www.allianceforwaterefficiency.org/impact/our-work/landscape-transformation-assessment-water-utility-programs-and-market-readiness

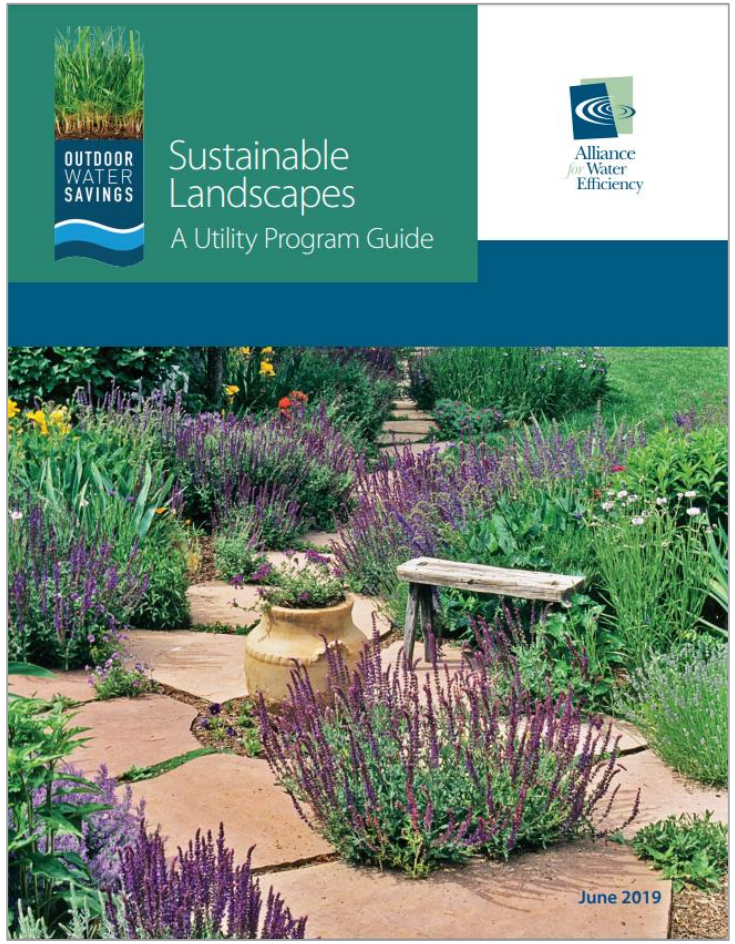




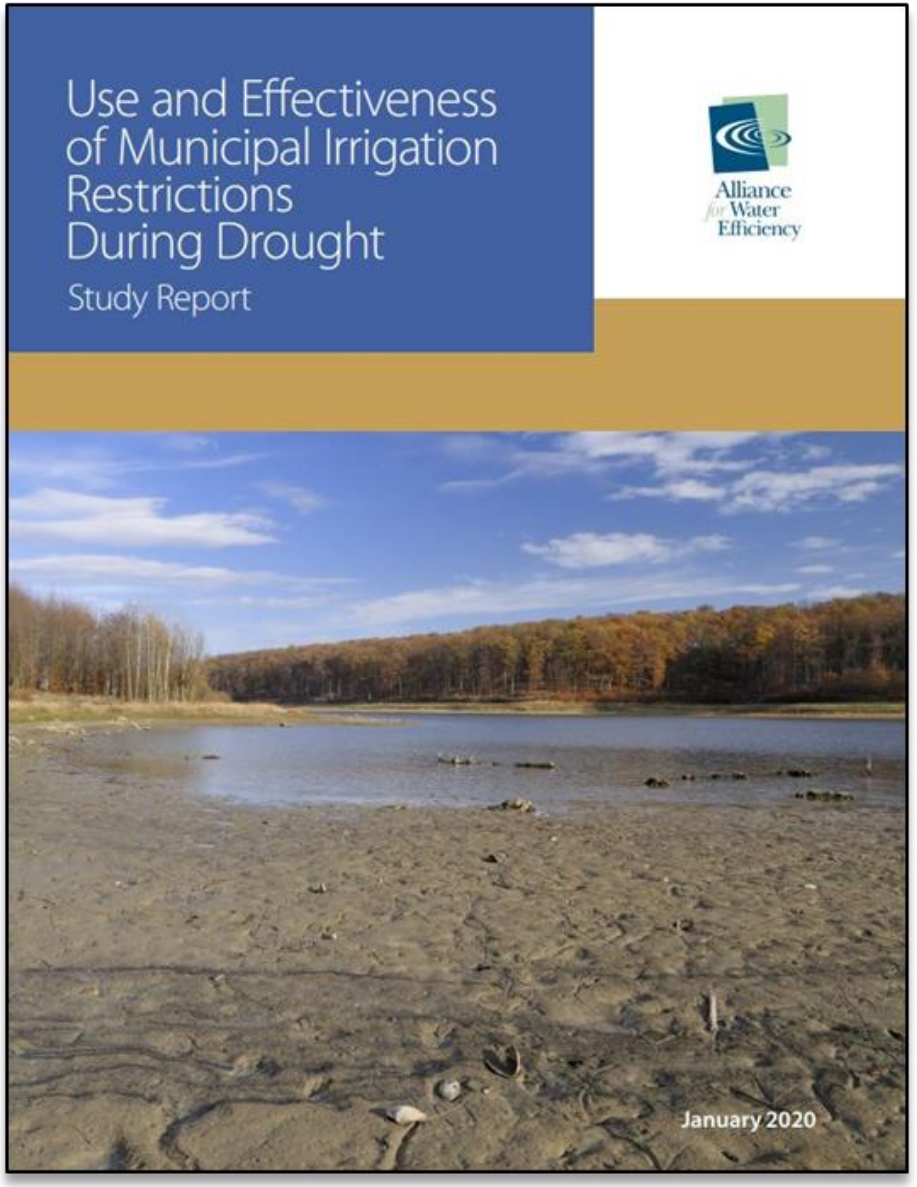
SUSTAINABLE LANDSCAPES: A UTILITY PROGRAM GUIDE

- Landscape transformation study found that customers want help from their utilities, so this guide is targeted to utilities just getting started or those enhancing existing programs
- Organized into two sections:
  1. General considerations
  2. Considerations for specific types of outdoor landscape programs
- Features program examples with lessons learned

www.allianceforwaterefficiency.org/impact/our-work/sustainable-landscapes-utility-program-guide



EFFECTIVE DROUGHT RESTRICTIONS



USE AND EFFECTIVENESS OF MUNICIPAL WATER IRRIGATION RESTRICTIONS DURING DROUGHT: **STUDY QUESTIONS**

1. What are the different forms of mandatory and voluntary irrigation restrictions typically implemented by North American water providers?
2. How do mandatory and voluntary irrigation restrictions vary across water providers?
3. What demand reduction impacts can be achieved through different levels of mandatory and voluntary irrigation restrictions?
4. During times of drought, what can water providers to do maximize outdoor irrigation demand reductions?
5. How does media coverage impact drought response, and what are the comparative impacts of local vs. state and regional drought messaging?
6. What is the longevity of demand reductions during and after a drought?

USE AND EFFECTIVENESS OF MUNICIPAL WATER IRRIGATION RESTRICTIONS DURING DROUGHT: **CASE STUDIES**

- **Arizona**
  - AMWUA, Central AZ (19 of last 25 years in drought)
  - By and large, drought restrictions have not been necessary
- **Nevada**
  - Southern Nevada Water Authority (Colorado Basin in drought last 19 years)
  - Irrigation restrictions first instituted in 2003, made permanent in 2009 (SNWA)
- **Texas**
  - Many drought episodes (1950-57; 1999-2002; 2010-2015)
  - Many utilities have had to deploy drought restrictions
- **California**
  - Many drought episodes (1976-77; 1987-1992; 2007-2009; 2012-2017)
  - Many utilities have had to deploy drought restrictions

USE AND EFFECTIVENESS OF MUNICIPAL WATER IRRIGATION RESTRICTIONS DURING DROUGHT: **RECOMMENDATIONS BEFORE DROUGHT OR WATER SHORTAGE**

- All shortage conditions are different.
  - Monitor conditions closely leading up to and during a drought.
  - Be prepared to respond to shortage emergencies (e.g., natural disaster).
- Effective outreach and messaging programs must be update and as real-time as possible to help educate residents about emerging drought conditions
- Design specific measures for reducing short-term demand, and provide residents the resources needed to help them reduce demand in a more direct and permanent manner.
- Adopt surcharges without delay.
  - Increasing rates is often the most effective tool for achieving water savings. In addition, it may be useful to be flexible regarding when and how drought surcharges are separately adopted as part of a multi-layered approach to drought-stage declaration.
- Adapt the response as necessary. Water providers should be prepared to respond as required to changes in conditions.

USE AND EFFECTIVENESS OF MUNICIPAL WATER IRRIGATION RESTRICTIONS DURING DROUGHT: **RECOMMENDATIONS DURING DROUGHT OR WATER SHORTAGE**

- Prepare or seek to update your water shortage contingency plan (consider multiple scenarios).
- Plan should include response stages with action to achieve targeted savings, messaging, and enforcement, and which reflects local conditions and values.
  - The design of day-of-week restrictions should be specific to the region.
  - The tighter the level of irrigation restrictions, the greater the savings, especially during summer months when irrigation is typically at its highest.
  - Mandatory conservation measures were found to generates statistically significant savings, where voluntary measures did not.
- Prepare and pass ordinances necessary to implement and enforce the plan when the time comes.
  - Actions enforceable on non-compliant customers need to target water waste, such as irrigation runoff and excessive use.
- Educate the community.
  - In this study, statistically significant savings were only detected in the presence of effective and persistent messaging and enforcement programs.

USE AND EFFECTIVENESS OF MUNICIPAL WATER IRRIGATION RESTRICTIONS DURING DROUGHT: **RECOMMENDATIONS AFTER DROUGHT OR WATER SHORTAGE**

- Publicly announce and clearly communicate to the public the end of the drought or shortage event and the lifting of restrictions.
- Lift any surcharges imposed promptly.
- Thank the community for participation and compliance.
- Monitor on-going demand trends
  - Watch overall total production, gallons per capita per day and also demand per sector (gpd/account)
  - Don't be surprised if demand doesn't fully rebound.
  - Because of ongoing long-term efficiency investments, demands can rebound toward a long-term downward trendline, not back to pre-shortage levels.

USE AND EFFECTIVENESS OF MUNICIPAL WATER IRRIGATION RESTRICTIONS DURING DROUGHT: **HOW TO ACCESS THE INFORMATION**

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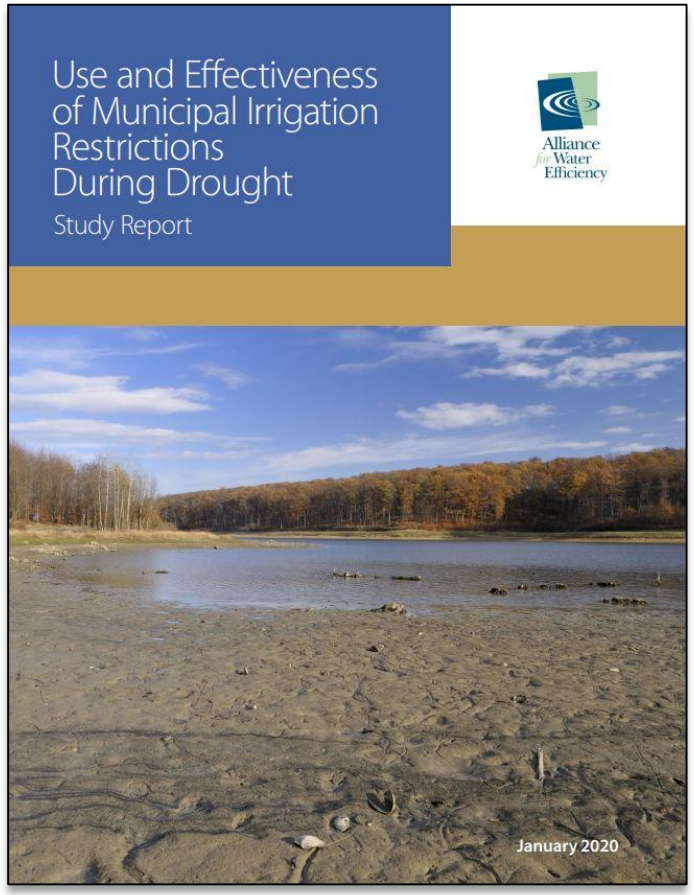


WHY WATER EFFICIENCY?

WATER NEUTRAL DEVELOPMENT

- Many cities already challenged to meet customer demands for water.
- Growing population and certain economic growth will place even more pressure in arid and water-short areas.
- Water suppliers reluctant to be involved in land use planning.
- Customers concerned about new development under restrictions.

NET BLUE: SUPPORTING WATER-NEUTRAL GROWTH

- National model template ordinance that can be tailored to create a customized water demand offset strategy
- Worked with 7 partner cities across the country to develop approach
- Although applicable nationally, perfect for western water issues
- Voluntary adoption on a community or county basis
- Bozeman, Montana currently working on piloting the approach
- Offsets can include outdoor as well as indoor conservation measures
- Rainwater harvesting is an offset option
- Stormwater capture is an offset option

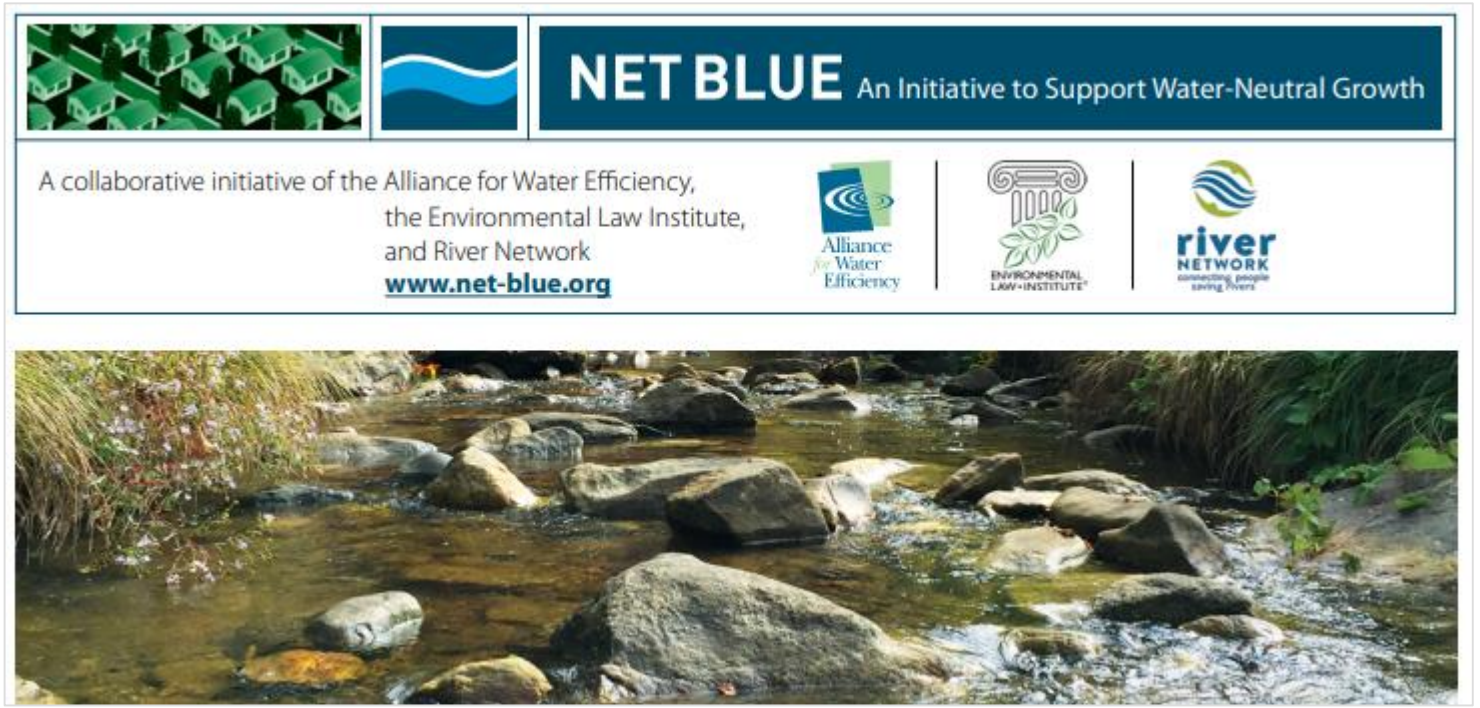
NET BLUE: SUPPORTING WATER-NEUTRAL GROWTH

Free Toolkit available at

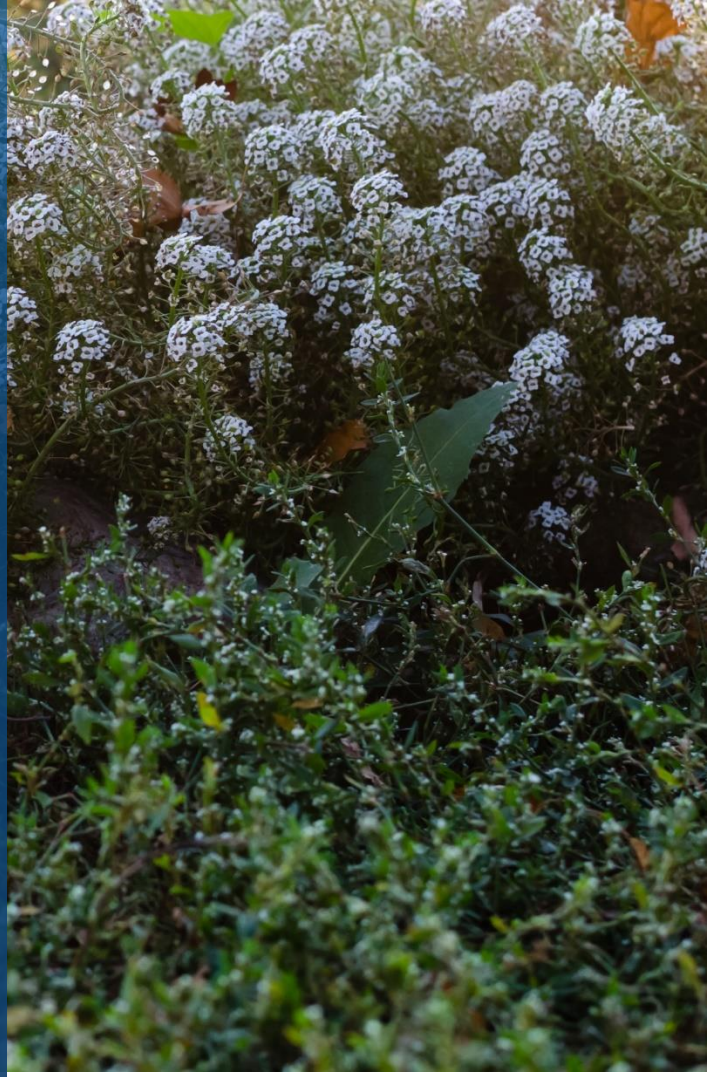
www.net-blue.org

Includes:

- Template customizable ordinance and user guide
- Offset methodology calculator and user guide
- Outreach materials



A SINGULAR VOICE AND A PLATFORM FOR WATER USE EFFICIENCY AND WATER CONSERVATION, BRINGING A CRITICAL PERSPECTIVE TO AN INCREASINGLY THIRSTY NORTH AMERICA.



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