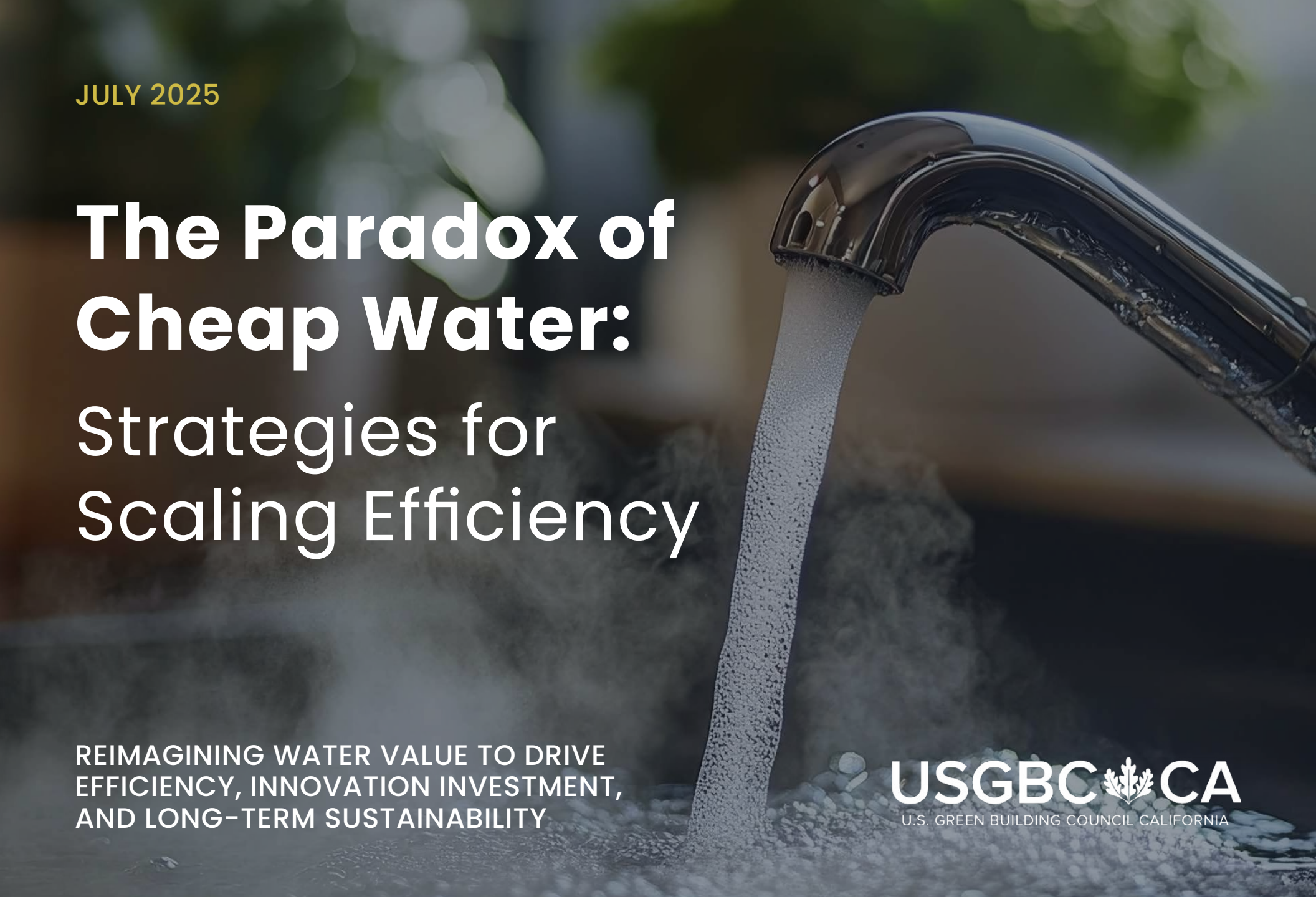

JULY 2025

The Paradox of Cheap Water:

Strategies for Scaling Efficiency

REIMAGINING WATER VALUE TO DRIVE EFFICIENCY, INNOVATION INVESTMENT, AND LONG-TERM SUSTAINABILITY

USGBC CA
U.S. GREEN BUILDING COUNCIL CALIFORNIA

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Executive Summary

In this paper, we strive to highlight a critical challenge in water management: while water is essential for life and economic growth, it remains significantly undervalued. This disconnection between water's low price and its true cost undermines conservation, discourages innovation, and puts long-term sustainability at risk, particularly in an era of accelerating climate change, population growth, and aging infrastructure.

This report reveals how the current utility business model, reliant on volume-based revenue, creates a paradox. When conservation succeeds, revenue declines, but fixed operational costs remain. Combined with a fragmented utility landscape—comprising over 52,000 independent water systems nationwide—this model hinders progress and creates systemic barriers to scaling efficiency, especially in water-stressed regions where growth is constrained by limited water supply.

Despite these challenges, innovative solutions are emerging. The 50 Liter Home Los Angeles Pilot Project, led by the World Business Council for Sustainable Development (WBCSD), USGBC-California, and a suite of global partners, has demonstrated that households can reduce indoor water use by over 50% without sacrificing comfort or convenience. These results underscore the power of integrated technologies, behavioral engagement, and public-private collaboration in driving meaningful change.

To transform the water sector and accelerate efficiency at scale, we outline a strategic roadmap with four key pillars:

1. Drive Change Through Collaboration

Leverage partnerships across water, energy, housing, and manufacturing to develop stacked incentives, scale whole-home retrofits, and pilot community-based conservation models.

2. Innovative Strategies for Funding

Adapt proven financing models from the energy sector and other infrastructure—including municipal bonds, budget-based rate structures, and market-based incentives—to fund water efficiency as a long-term capital investment.

3. Promote State and Federal Standards

Advocate for updated efficiency codes and retrofit mandates, building on frameworks like California's "Making Water Conservation a Way of Life" and the legacy of the federal Energy Policy Act of 1992.

4. Shift Public Perception of Water's Value

Reframe water as a finite, high-value resource through transparent pricing, smart technology, education campaigns, and contractor engagement.

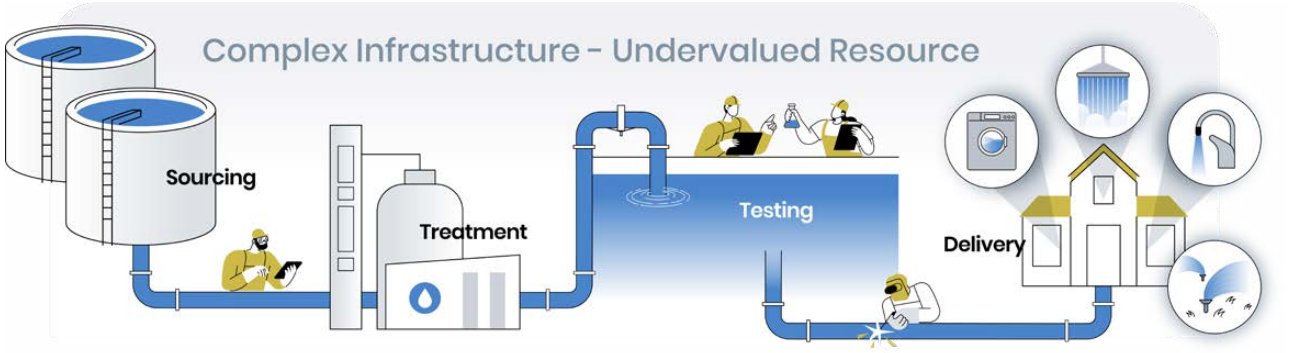
Together, these strategies present a clear call to action: to modernize our relationship with water by aligning economic signals with sustainability goals. By investing in innovation, reimagining regulatory frameworks, and empowering communities, we can close the growing water infrastructure funding gap—projected to reach $194 billion by 2030—and secure a more resilient, equitable, and efficient water future for all.

Introduction

Water is one of the most undervalued resources in the United States—if not the world. **In many regions, the price consumers pay covers only a fraction of the true cost of delivering clean water, especially when accounting for aging infrastructure and the long-term investments needed to maintain it.** While access to safe drinking water is considered a fundamental right, the significant upstream costs—from sourcing and treatment to delivery—are often overlooked by the industry and largely invisible to consumers.

This disconnect between cost and value leads to a dangerous misconception that water is abundant and inexpensive, when in fact it is both limited and essential. As populations grow and climate conditions shift, communities face increasing pressure on water supplies that cannot be taken for granted. **The low price of water undermines its perceived importance and discourages investment in technologies and practices that promote conservation.** This creates a troubling paradox; despite widespread recognition by utilities and policymakers of the urgent need to conserve, the economic signals tell a different story.

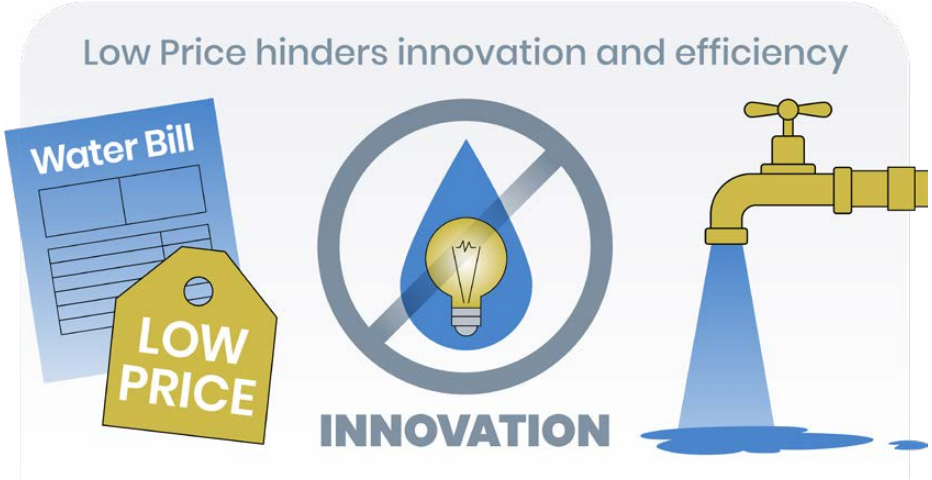
Compounding this issue is the lack of visibility into the energy required to move water into homes, distribute it within buildings, and process it as wastewater. These hidden costs—especially those tied to heating water for daily use—are rarely acknowledged or reflected in pricing, further distancing users from the true environmental and financial impact of their consumption.



The low price of water discourages investment in water-saving technologies and innovation.

We've seen how economic signals can drive innovation. When gas prices soared in the early 2000s, the auto industry responded with groundbreaking fuel-efficient vehicles. But in the case of water, artificially low prices have stifled similar progress. Unlike fuel, however, water is not optional—it is vital for every aspect of life, from hygiene and sanitation to food production and firefighting.

Despite this, **utilities often face resistance when proposing rate increases, leaving them without the resources needed to modernize infrastructure or promote conservation programs.** This financial constraint is especially problematic in regions facing persistent water stress—not just from drought, but from deeper systemic issues. These include overdrawn groundwater basins, diminished snowpack due to climate change, and rising competition among urban, agricultural, and environmental water users. Water quality concerns—such as contamination from industrial runoff or naturally occurring pollutants—add further complexity, while aging infrastructure strains system reliability and increases the risk of service disruptions.



In this landscape, **utilities must do more with less—ensuring reliable water service while navigating climate uncertainty,** managing scarce resources, and educating the public about the importance of conservation. Addressing these challenges requires a shift in how we value water not just economically, but socially and environmentally as well.

Now is the time for a holistic approach—one that **unites industries, public and private partners, and consumers to drive behavioral change while enhancing user experience.** By working together, we can preserve our way of life for future generations while ensuring a sustainable water future.

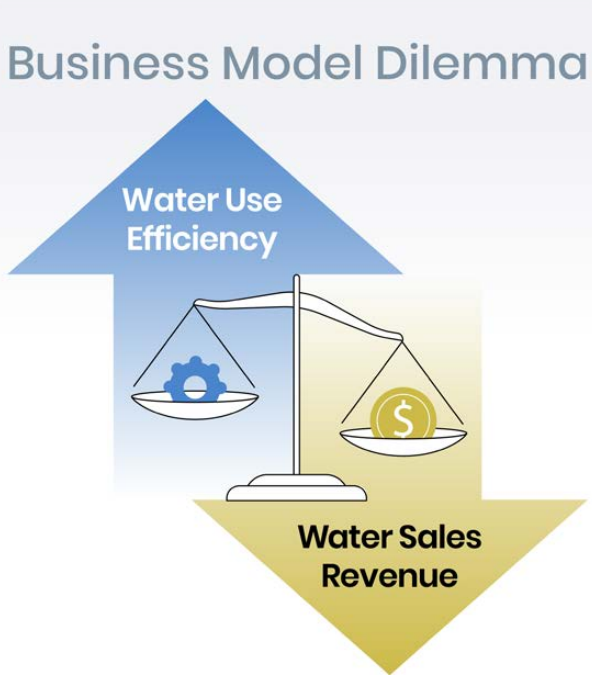
> *Water utilities are also underfunded. As critical water infrastructure ages, maintenance expenditures go up. Rising user costs… have been unable to close the funding gap… the US water utility sector faced an estimated $110 billion annual funding gap in 2024… By 2030, this gap could increase to approximately $194 billion.*
>
> **— McKinsey & Company, 2023, Water Resilience: Closing the Funding Gap for Utilities**

The Business Model Dilemma

Water agencies typically depend on selling water by volume to cover both their operational and fixed costs. When conservation efforts work and customers use less water, agencies' revenue falls more quickly than their expenses because reduced water usage has little immediate impact on the cost of maintaining aging water treatment and distribution infrastructure. To cover these costs, agencies need to raise rates, but doing so can spark public backlash, making it challenging to balance financial stability with keeping water affordable.

Lowering per-person water use while improving the customer experience helps people see the everyday value of water efficiency, making long-term conservation more sustainable. When efficiency becomes an easy and integrated part of daily life, utilities can avoid costly infrastructure upgrades, keep utility rates stable, and ease the financial pressure on families already dealing with rising costs.

Water agencies' volume-based revenue model creates a paradox: conservation reduces income, but fixed costs remain unchanged.



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A Fragmented Industry and Its Challenges

Compounding the problem is the fragmented nature of the U.S. water utility industry. With over 52,000 community water systems operating independently—each with its own priorities, policies, and resource constraints—broad, coordinated action remains difficult. **Fewer than 200 utilities have active conservation programs, highlighting the urgent need for greater collaboration across all utilities,** including partnerships with energy utilities experienced in implementing successful conservation initiatives. This lack of coordination hampers system-wide innovation and makes it even harder to secure consistent funding for long-term conservation efforts.

A Roadblock for Growth in Water-Stressed Areas

This fragmented water management system not only stifles innovation but also exacerbates challenges in water-scarce regions, where shortages pose a direct threat to economic growth and development. The impact extends beyond utilities and consumers—**water scarcity is a critical barrier to the home-building sector, especially in fast-growing regions** worldwide where the need to conserve, reuse, or offset water use has become more urgent than ever.

A United Kingdom report, The Case for Water Smart Housing, highlights how limited water supplies are constraining new housing development. The analysis estimates that **a 30% improvement in water efficiency could enable 43% more homes to be built in high-demand regions.** This finding underscores the vital role of innovative water-saving technologies and conservation strategies in unlocking housing potential and extending scarce water resources.

If developers aim to continue building in water-stressed regions and beyond, they must seek more water offsets to secure sustainable development. The report further reveals that failure to address this issue could have severe economic consequences, with the UK facing a potential £25 billion loss due to the inability to construct new homes in water-scarce regions.

Viable solutions exist to overcome these challenges. **By taking a holistic approach that integrates whole-home water use, consumer behavior, and innovative water efficiency strategies, we can drive meaningful change.** When stakeholders collaborate and prioritize both sustainability and user experience, we can scale impactful water efficiency initiatives and ensure continued growth in the housing sector while preserving vital water resources.

Source: Council on Foreign Relations https://www.cfr.org/backgrounder/water-stress-global-problem-thats-getting-worse

What We've Learned from the 50 Liter Home – Los Angeles Pilot

The 50 Liter Home Coalition (50L Home) - convened by the World Business Council for Sustainable Development (WBCSD), the World Economic Forum (WEF), and the U.S. Green Building Council California (USGBC-CA), initiated a two-year pilot program in Los Angeles to demonstrate the feasibility of **achieving an ambitious target of just 50 liters (13 gallons) of indoor water use per person per day while creating an irresistible living experience** for residents.

Los Angeles Pilot

The project features state-of-the-art water-saving showerheads, faucets, dual-flush toilets, next-generation washers, as well as eco-friendly consumable products and innovative water reuse solutions.

50L HOME

Kitchen

Ultra efficient kitchen faucet **1.0 gpm**

Dishwasher with Smart Boost and Lux Care

Bathroom

Ultra efficient showerhead **1.25 gpm**

Dual flush toilet **1.0/0.8 gpf**

Shower booster (on/off button)

Faucet mister

Ultra efficient faucet **0.5 gpm**

Recirculating shower and autodiverter

Laundry Room

Perfect Steam Washer and Dryer with LuxCare Plus Wash and SmartBoost

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Traditionally, water efficiency efforts have focused on replacing individual low-flow appliances -- such as upgrading from a 1.6 gallon per flush (GPF) toilet to a 1.0 GPF toilet -- which have achieved measurable savings but often fall short of driving widespread consumer awareness and engagement. Scaling efficiency beyond these initial gains has been seen as cost-prohibitive for water agencies, as incremental improvements rarely justify the investment in large-scale programs.

Outdoors, climate-adapted landscaping and smart irrigation systems have demonstrated proven water savings, yet high upfront costs and inconsistent maintenance have limited their scalability and long-term impact. To move the needle on efficiency, we need better consumer education and greater transparency around real-time water use, helping individuals understand which behaviors drive consumption and how they can reduce their use effectively.

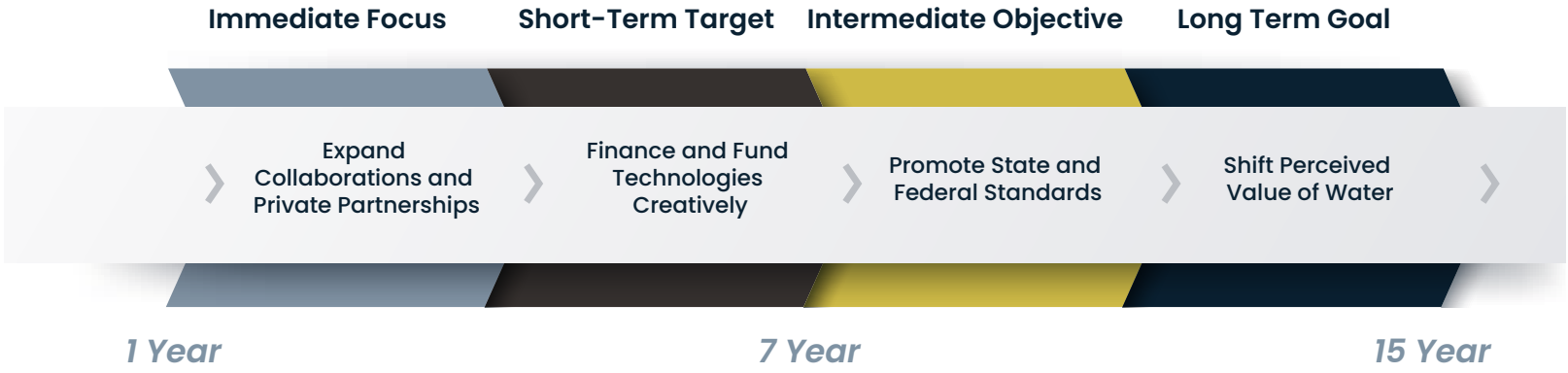
The 50L Home pilot in Los Angeles, however, is revealing transformative insights. By outfitting homes with innovative, appealing products and appliances provided by partners like Electrolux Group, IKEA, Kohler, and Procter & Gamble - **we've achieved indoor water use of just 87 liters (23 gallons) per person per day. That is 21% less water use than the control group and 50% lower than the Los Angeles average.**

A key learning from the pilot is that a comprehensive, integrated approach can achieve significant water and energy reductions. For instance, pairing consumables like dish soap spray with an efficient dishwasher showcased dramatic reductions in both water and hot water use—up to 44% from kitchen faucets—while delivering a superior experience for users. State-of-the-art washing machines and dryers, combined with cold water detergent, have achieved a 54% reduction in hot water use for laundry, underscoring the effectiveness of these integrated solutions with proper consumer education and engagement. Real-time water use monitoring technology is becoming increasingly accessible, which, when combined with resident feedback, proves that 50-80L (13 - 21 gallons) ranges are achievable indoors while enhancing quality of life.

What's Next for Water: A Strategic Roadmap

The chart below illustrates a strategic progression for advancing water efficiency through a combination of approaches. First, **collaborations and public private partnerships require no regulatory or policy changes, enabling quick implementation and replication.** Building on this, creative financing and funding mechanisms—many successfully applied in the energy efficiency sector—can be adapted within a few years to further support water efficiency technologies.

The next step involves the more complex and time-intensive process of enacting and promoting state and federal standards, which could take years to achieve especially in light of the current U.S. political climate. Together, these strategies have the potential to transform the public's perception of water's value, fostering a sustainable and thriving market that drives long-term water efficiency.



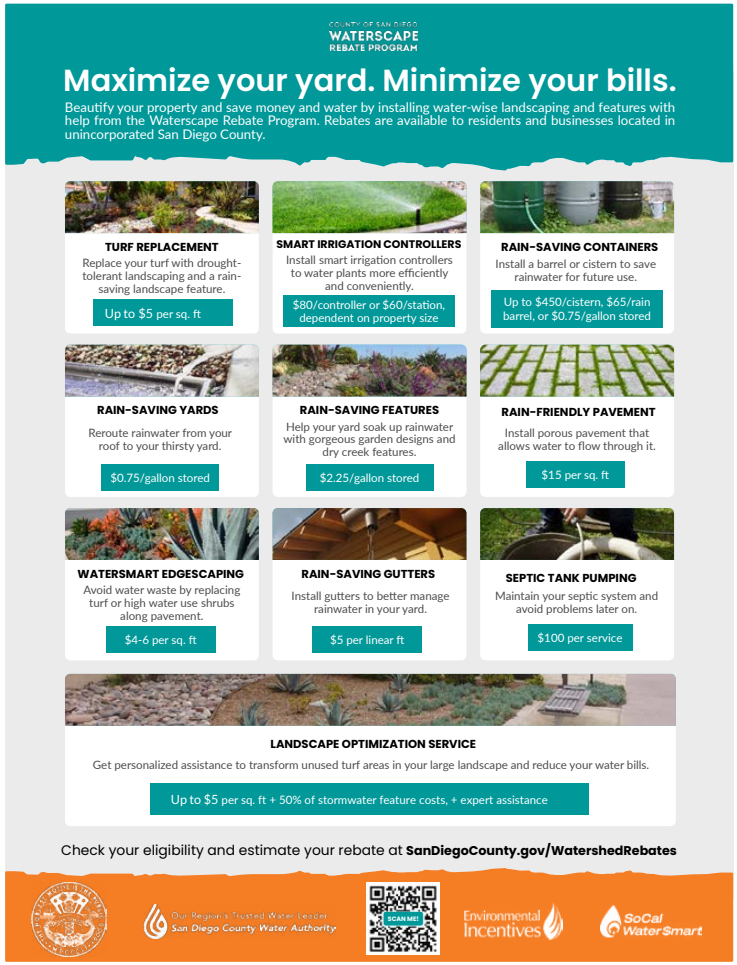
Drive Change Through Collaboration

The fastest progress will come from collaborations. To unlock the full potential of water efficiency, it is crucial for utilities, manufacturers, policymakers, and communities to work together. By uniting goals, pooling resources, and coordinating strategies, stakeholders can maximize the effectiveness of conservation efforts and pave the way for a sustainable water future.

1. Leverage Stacked Incentives and Joint Programs:

- **Collaboration between multiple utilities allows for the development of "stacked incentives,"** where multiple funding sources (e.g., combining water utility and storm water incentives, state grants, or tax benefits) are combined to maximize cost-effectiveness. Then education is needed to convey these benefits to contractors and consumers so they are actually leveraged. Manufacturers and community leaders can help with this.
- **Joint programs can enhance the attractiveness of water efficiency upgrades by appealing to multiple audiences, making them more affordable and accessible.** For instance, can we create drought response programs that pair consumables with efficient fixtures and appliances? Can we look at increased water reuse opportunities, from landscape to recirculation within the home? Can we be more creative about rainwater capture and community water opportunities (similar to community power)? There are case studies of success with many different approaches, but we need to focus on scaling.

SAN DIEGO WATERSCAPE PROGRAM:
A Model for Coordinated Funding and Multi-Benefit Outcomes



> *San Diego County's Waterscape Rebate Program demonstrates the value of cross-sector collaboration by stacking incentives from multiple agencies to promote sustainable landscaping, saving over 1.27 million gallons of water annually and treating runoff from more than 250,000 square feet of impermeable surfaces. This model not only improves water efficiency but also addresses stormwater and energy goals through coordinated funding and implementation strategies.*
>
> **— Alliance for Water Efficiency. Stacked Incentives: A Research Paper on Co-Funding Multi-Benefit Projects. 2022**

2. Offer Whole Home Retrofit Incentives:

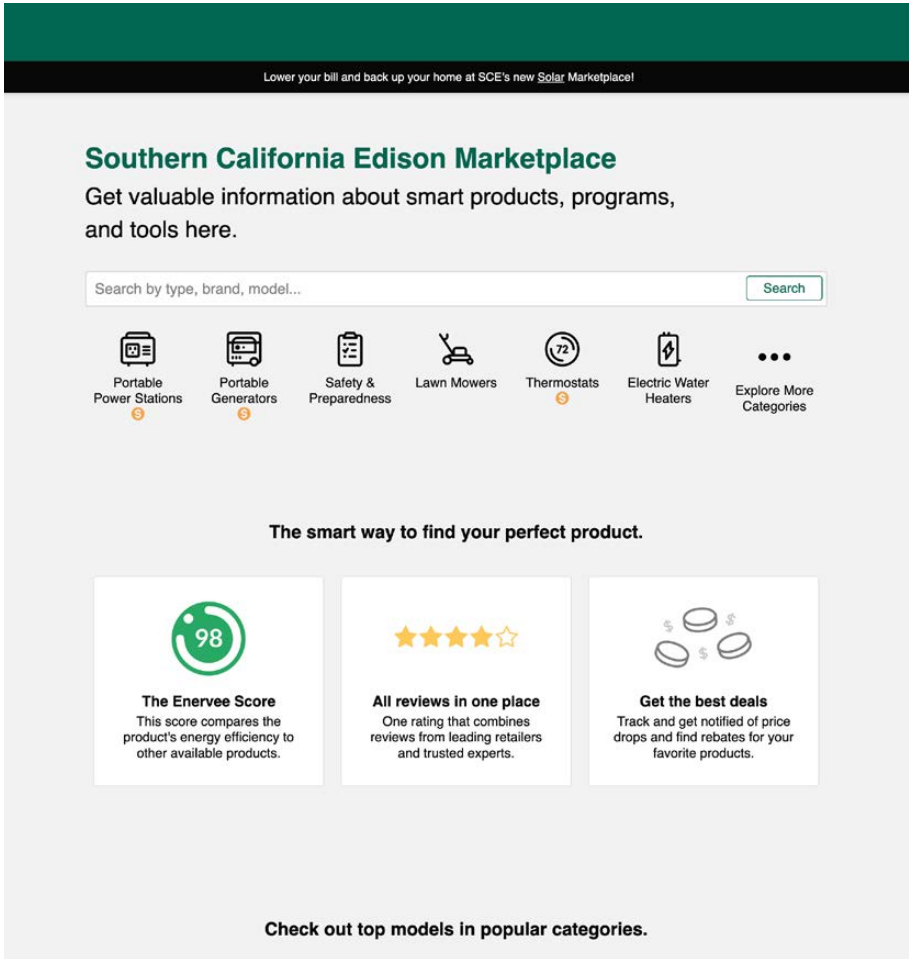
- Whole-home retrofit programs can provide comprehensive incentives to transform entire households with water-saving technologies. By targeting homes holistically rather than piecemeal, these initiatives achieve deeper savings, streamline upgrades, and elevate the resident experience. One of the main benefits is much **higher consumer awareness of what actions can reduce water use and how those actions are connected.**
- Incentives could take the form of tiered rebates, on-bill financing, percentage of savings contracts, or low-interest loans tailored to maximize participation and impact.

3. Public-Private Partnerships:

- Private companies have a critical role to play in advancing water efficiency efforts, as product manufacturers stand to benefit from promoting water-efficient technologies, which drive market demand for low-flow fixtures, efficient irrigation systems, and recycled water solutions. **Through collaborative marketing campaigns and co-developed education and community engagement programs, manufacturers and utilities can work together to accelerate the adoption of these innovations,** creating mutual benefits for both industries.
- Programs like the 50 Liter Home Coalition and corporate water stewardship initiatives demonstrate the power of cross-sector collaboration. These partnerships bring together governments, corporations, utilities, and NGOs to pilot and scale innovative, water efficiency solutions and support sustainable practices across the supply chain. They serve as models for how the public and private sectors can jointly develop and fund programs that reduce water use while maintaining comfort, convenience, and livability.
- **Educating contractors to understand the connection between behavior, water use, and the energy-water nexus is essential,** as they play a pivotal role in influencing consumer decisions during home retrofits and new construction. By equipping contractors with the right knowledge and tools, they can effectively educate homeowners and developers, driving long-term behavior change and encouraging the adoption of efficient technologies and practices at critical decision-making points.

4. Water Use Efficiency Product Marketplace

- Utility marketplaces provide a centralized platform for the water efficiency industry, connecting customers to water-saving products through an online catalog, often with rebates or discounts. This streamlined access, supported by services like product reviews, program enrollment, and vetted contractor installations, makes them a scalable solution for driving water efficiency.
- These marketplaces foster collaboration between utilities and third-party providers, leveraging private expertise for product curation, logistics, and marketing. A study for PG&E found marketplace programs delivered energy savings far below traditional utility program cost.



5. Cross-Sector Collaboration for Policy and Innovation:

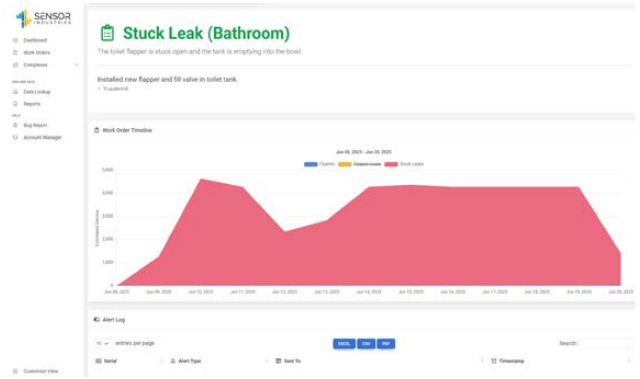
- **Policymakers can further enhance collaboration by incentivizing utilities and manufacturers to work together** on federal or regional water efficiency standards and creative financing structures.
- Leveraging diverse expertise—from tech startups to large corporations—can create tailored approaches that address local water challenges in a distinct and inventive way. **Agencies and municipalities should create the space for convening these groups,** provide avenues for input, and take that input seriously.

Public-Private Partnership Success

The 50 Liter Home Coalition is a standout example of a successful public-private partnership driving water efficiency innovation. Convened by the World Business Council for Sustainable Development and supported by partners like Procter & Gamble, Electrolux, Kohler, IKEA, and local government agencies in Los Angeles, the coalition set out to prove that households can thrive on just 50 liters of water per person per day. Through collaboration, they deployed cutting-edge appliances, behavioral tools, and monitoring technologies in pilot homes—achieving up to 50% reductions in indoor water use and notable energy savings. This initiative highlights how industry leaders and public agencies can jointly design and test scalable, user-friendly solutions that make efficiency both desirable and achievable.

Collaborating for Conservation: A New Model for Affordable Housing

A groundbreaking pilot led by the California Water Action Collaborative (CWAC)—whose members include organizations such as Procter & Gamble, Kohler, The Nature Conservancy, WWF, Google, Apple, Nestlé, PepsiCo, and more—in partnership with the Pacific Institute, Housing Authority of the City of Los Angeles, Los Angeles Department of Water and Power, Metropolitan Water District of Southern California, Los Angeles Better Buildings Challenge, and Sensor Industries, demonstrated how smart leak detection technology can drive meaningful savings in affordable housing.



With sensors from Sensor Industries installed across five multifamily properties, the team found that **40% of units had significant leaks**—including one wasting over 200 gallons per day. Targeted, low-cost repairs led to **average savings of 12,000 gallons per unit annually**. This cross-sector effort shows how **technology + collaboration** can deliver:

- **Lower utility bills** for low-income households
- **Preserved housing stock** through early leak detection
- **Water and energy savings** for cities and utilities

By aligning public agencies, building owners, and tech innovators, the project models an equity-driven, scalable solution for advancing water efficiency—without waiting for costly infrastructure upgrades.

Source: Pacific Institute, "*Saving Water, Time, and Money by Fixing Leaks in Affordable Housing*" (2024)

Innovative Strategies for Funding Water Efficiency Initiatives

Funding water efficiency initiatives requires innovative approaches that balance long-term sustainability with financial feasibility. The following are promising pathways to support and scale water efficiency initiatives:

1. Debt Financing Through Municipal or Utility Bonds

Municipal bonds, even specific community-focused bonds, often tax-free, present an effective mechanism to finance water efficiency initiatives. Energy utilities frequently use debt financing to fund efficiency projects, and water utilities can adopt the same strategy. Through debt financing, utilities can pass costs directly to ratepayers in small, manageable increments over time. These funds can be used to:

- Retrofit inefficient appliances, fixtures, irrigation systems, and landscapes to water-conserving options.
- Implement comprehensive outreach and education campaigns to promote water-saving practices.
- **Build a skilled workforce capable of supporting water efficiency initiatives.** This is especially important as there is a need for more holistic training for contractors in addressing whole-home water use.

> *Water efficiency projects can and should be treated as capital investments—just like pipes and pumps—because they provide long-term benefits, reduce system demands, and extend infrastructure life.*
>
> **— Ed Harrington, Debt Funding for Water Conservation Programs, WaterNow Alliance (2017)**

2. Changing Rate Structures to Encourage Efficiency and Cover Fixed Costs

Budget-based rates are an innovative approach to water pricing that allocate a personalized "water budget" to each customer, tailored to their specific needs and characteristics. This model typically combines a fixed service charge with tiered volumetric rates that increase as usage exceeds the assigned budget. These progressive tiers send a strong price signal to encourage efficient water use, while the fixed charge helps utilities recover essential operating costs—supporting both conservation goals and financial stability.

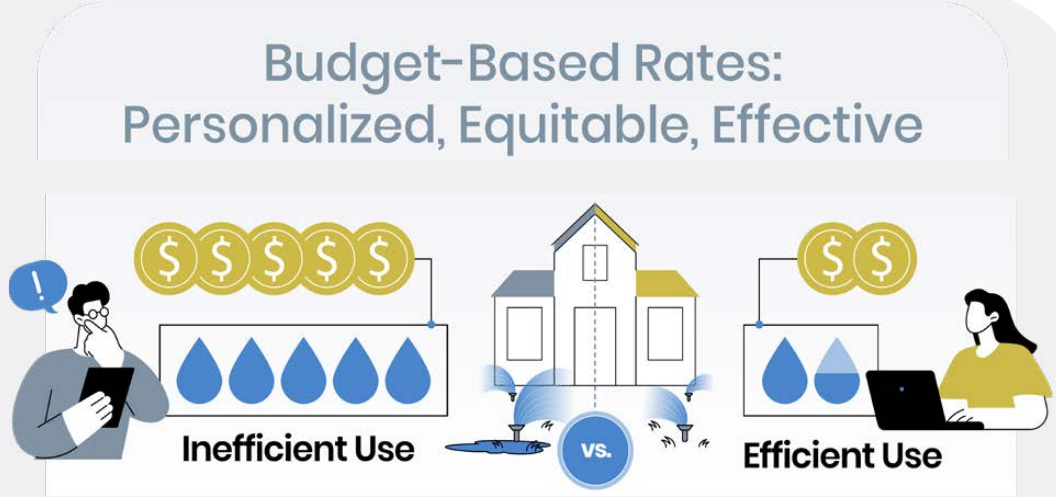
Water budgets are generally calculated using objective criteria such as household size, irrigated landscape area, and regional climate conditions. **By aligning allowable water use with these individual factors, budget-based rates offer a more equitable alternative to one-size-fits-all pricing.** A household with more occupants or larger outdoor needs receives a larger budget, but all customers are still incentivized to use water efficiently within their tailored allowance.

Customers who stay within their budget pay the lowest rate tier, while those who exceed it are charged progressively higher rates. This not only rewards conservation but also raises awareness of how daily behaviors impact water bills. In effect, the water bill becomes an ongoing communication tool—helping customers track usage, identify waste, and adjust accordingly.

For utilities, budget-based pricing also provides a more resilient financial model. Traditional volume-based rate structures often undermine revenue stability, especially when successful conservation efforts reduce overall consumption. By clearly distinguishing between fixed charges and variable usage, budget-based rates ensure more predictable revenue recovery—even in periods of reduced demand.

Source: Canva

This approach also enables more targeted efficiency programs. High-usage customers can be flagged for support, such as smart irrigation upgrades, home water audits, or leak detection services. Meanwhile, efficient users may qualify for rewards like bill credits or incentive bonuses. When paired with digital dashboards, usage alerts, or peer comparisons, these programs drive long-term engagement and behavioral change.



Utilities that have adopted budget-based rates consistently report measurable water savings, improved customer satisfaction, and stronger long-term financial health. In an era of increasing water scarcity and fiscal pressure, this pricing structure offers a powerful, adaptable strategy for aligning conservation, equity, and utility resilience.

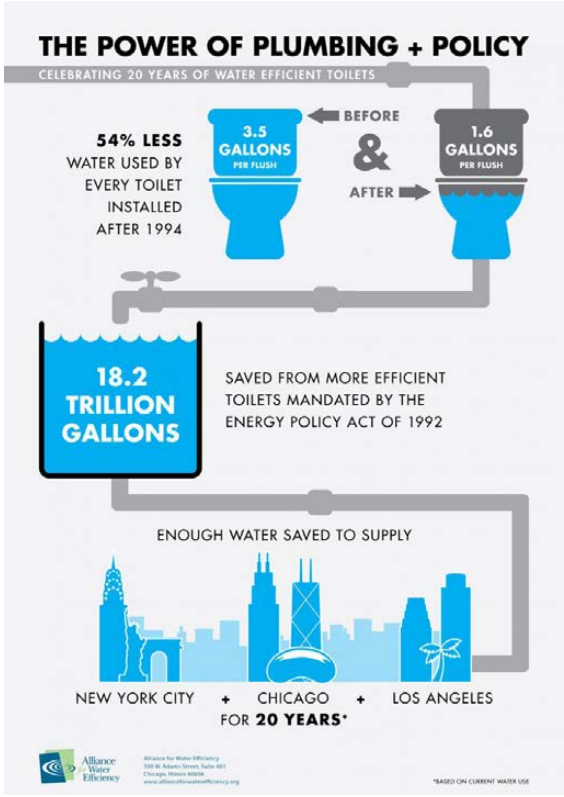
Promote State and Federal Standards

The importance of federal standards for water efficiency cannot be overstated. The Energy Policy Act (EPAct) of 1992 is a landmark federal law in the U.S. that established water efficiency standards for plumbing fixtures. This act was pivotal in reducing water consumption across the country and promoting the development and adoption of water-efficient products.

However, federal standards alone are not enough and are under threat. **Additional standards are needed at all levels of government to address local and regional water challenges**. For example, California's "Making Conservation a Way of Life" framework sets aggressive residential and irrigation standards for retail water agencies, representing some of the strongest water efficiency regulations in the country. While these standards could spur innovation and drive measurable conservation, they lack the financial mechanisms to support widespread implementation, highlighting the need for creative funding solutions.

Expanding coalitions and advocating for additional standards at both state and federal levels can help extend these benefits. For example, **new construction codes and retrofitting requirements for existing buildings could mandate higher efficiency fixtures and appliances.** By setting enforceable benchmarks and coupling them with supportive programs and funding, federal and state standards can accelerate progress toward a sustainable water future.

However, further advancing national standards or securing federal funding will likely not be possible due to the current political climate in the U.S. over the next four-plus years.



Source: Alliance for Water Efficiency https://allianceforwaterefficiency.org/20-years-energy-policy-act-18-trillion-gallons-saved-through-more-efficient-toilets/

Shift Public Perceived Value of Water

All of these efforts collectively aim to shift the public's perception of water from being a low-cost, abundant commodity to a valuable and finite resource. **Fostering collaboration, implementing innovative funding strategies, and promoting robust federal and state standards will help illustrate the true costs and benefits of water conservation, and should be paired with community outreach and education.**

Educating consumers through transparent pricing structures, such as budget-based rates, connects water use to tangible financial and environmental impacts, encouraging more responsible behaviors. Additionally, **showcasing the success of collaborative projects and private partnerships demonstrates the value of innovation and efficiency,** building public trust in these initiatives.

Additionally, **more contractor education is needed, along with incentives for performance.** Contractors, including plumbers, should be able to perform a whole home assessment or audit, evaluating fixtures, appliances, and landscape at a high level to make recommendations and bring in other contractors to do work as needed. Data shows that once consumers understand the areas where they are wasting or overusing, they will make changes as long as the payback periods make sense and the solutions are accessible.

Over time, **these strategies not only address immediate challenges in water efficiency but also lay the foundation for a cultural shift in how water is valued.** This transformation is essential for creating a sustainable market that supports long-term conservation goals while ensuring equitable access to this critical resource.

References and Supporting Documentation

1. **U.S. Environmental Protection Agency (EPA)** – WaterSense Program Overview and Market Transformation Data
   https://www.epa.gov/watersense
   Provides information on the adoption rates and effectiveness of water-efficient products across the U.S.

2. **California Department of Water Resources (DWR) and California Water Efficiency Partnership** – *Making Water Conservation a California Way of Life*
   https://water.ca.gov/Programs/Water-Use-And-Efficiency
   https://calwep.org/state-water-board-updates-proposed-framework-regulations-may-2024/
   Details regulatory frameworks for water use objectives, conservation standards, and BMP implementation.

3. **Alliance for Water Efficiency** – *Utility Water Loss Control Programs & Rate Structures*
   https://www.allianceforwaterefficiency.org
   Offers insights into rate-setting strategies and the financial impacts of conservation on utilities.

4. **Alliance for Water Efficiency**. (2014). *Building Better Water Rates for an Uncertain World: Balancing Revenue Management, Resource Efficiency, and Fiscal Sustainability*. https://allianceforwaterefficiency.org/wp-content/uploads/2014/08/AWE_Building-Better-Water-Rates-Uncertain-World_Final.pdf
   Presents guidance on designing water rate structures—such as budget-based rates—that promote conservation while maintaining utility revenue stability.

5. **Alliance for Water Efficiency**. (2022) *A Research Paper on Co-Funding Multi-Benefit Projects.* 2022.
   https://allianceforwaterefficiency.org/wp-content/uploads/2022/06/PI_StackedIncentivesFullReport_F2-516.pdf
   Highlights the effectiveness of combining funding from multiple agencies (e.g., water, energy, stormwater) to support multi-benefit conservation projects.

6. **WaterNow Alliance**. (2017) *Debt Funding for Water Conservation Programs: Overcoming Barriers to Financing On-Bill and Other Utility Investment Programs*.
   https://waternow.org/wp-content/uploads/2017/05/Ed-Harrington_GASB_Debt-Funding-for-Water-Conservation-Programs.pdf.
   Explores how municipal utilities can use debt financing to support long-term investments in conservation programs and overcome common funding barriers.

7. **Pacific Institute** – **Water Efficiency and Conservation Reports**
https://pacinst.org/publication_type/water/
In-depth studies on the role of water pricing, efficiency technologies, and resilience strategies.

8. **50 Liter Home Coalition** – *Los Angeles Pilot Findings* (2023)
https://50literhome.org
Documents results and key learnings from the Los Angeles pilot demonstrating the feasibility of ultra-low water use without sacrificing user experience.

9. **Ofwat (UK)** – *Water Efficiency and Housing Growth: How Smarter Water Use Can Unlock More Homes*
https://www.ofwat.gov.uk
Report highlighting the intersection of water availability and housing development, including projections on potential economic impacts.

10. **International Energy Agency (IEA)** – *Energy Use in Water Sector: Global Water and Energy Nexus Report*
https://www.iea.org/reports/water-energy-nexus
Useful for quantifying embedded energy in water systems and opportunities for carbon credit linkage.

11. **Lawrence Berkeley National Laboratory** – *Energy and Water Resource Nexus Reports*
https://eta.lbl.gov
Research focused on the intersection of water, energy use, and technology adoption, supporting emissions reduction and water savings.

12. **PG&E Marketplace Case Study** (2020) – *Cost Effectiveness of Online Efficiency Marketplaces*
(Internal report, available upon request or utility partner documentation)
Highlights the effectiveness of third-party efficiency marketplaces in lowering utility program costs.

13. **McKinsey & Company** – *Water Resilience: Closing the Funding Gap for Utilities* (2023)
https://www.mckinsey.com/industries/energy-and-materials/our-insights/water-resilience-closing-the-funding-gap-for-utilities
Explores the global funding gap in water infrastructure and outlines strategies utilities can use to close the gap through efficiency, digital tools, and innovative financing models.

14. **Energy Policy Act (EPAct) of 1992** – *U.S. Federal Water Efficiency Standards*
https://www.congress.gov/bill/102nd-congress/house-bill/776
Foundation for national standards on water-efficient fixtures and appliances.