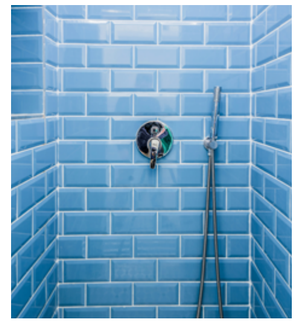
ALLIANCE FOR WATER EFFICIENCY

Advancing Sustainability through Household Consumer Products: Guidance and Insights for Estimating and Communicating Water Savings



Alliance for Water Efficiency

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Welcome

The Alliance for Water Efficiency (AWE), in close partnership with Bluerisk, created this guidance to advance our collective understanding of this important topic, while also sharing what we have learned through other practitioners in the form of a practical process for arriving to meaningful claims related to water efficient consumer products.

This publication reflects a dynamic and evolving area of work that builds upon past achievements and insights, reflecting a depth of knowledge, but it is not exhaustive or comprehensive. While the document reflects input from a subset of industry leaders who were consulted at the outset and close of this project, there is more work to be done. We hope that this Guidance serves to spark collaborative conversations, improve consistency across the consumer products industries, and ultimately lead to greater innovation in the spirit of advancing a sustainable water future.

Alliance for Water Efficiency (2025)
Advancing Sustainability through Household Consumer Products: Guidance and Insights for Estimating and Communicating Water Savings
Chicago, IL: Alliance for Water Efficiency.

ABOUT AWE

The Alliance for Water Efficiency (AWE) is a nonprofit organization dedicated to the efficient and sustainable use of water. AWE is driven by the belief that using water efficiently saves money, preserves the environment, and helps communities thrive. AWE advocates for water efficient products and programs, and provides information and assistance on water conservation efforts. AWE works with more than 500 member organizations, providing benefit to water utilities, business and industry, government agencies, environmental and energy advocates, universities, and consumers. • Chicago, IL 60606 | a4we.org | contact@a4we.org

ABOUT THE PROJECT

AWE led the writing of this guidance document utilizing their rich experience and expertise related to research best practices, water end uses, household behavior, and water efficient fixtures. Lead author Liesel Hans, Director of Programs at AWE, worked closely with AWE staff and industry experts to ensure a relevant and practical resource.

ACKNOWLEDGEMENTS

The Procter & Gamble Company supported the development of this guidance document through a grant executed by the Bonneville Environmental Foundation (BEF). Shannon Quinn (P&G) and Hannah Taphorn (P&G) participated in the development process with AWE, providing their perspective based on past experiences. P&G is a member of the Alliance for Water Efficiency. Bluerisk also supported the development of this guidance document. Paul Reig (Bluerisk) participated in the development process with AWE, providing his perspective based on past experience developing the Volumetric Water Benefit Accounting Guidance (VWBA) and other practical guidance on water management best practices in the private sector. Additional reviewers participated in enabling the authors to stay true to the intent of the guidance document. These included Ric Miles, retired from Flume, Samual Vionnet of Valuing Impact, Tobias Svanberg of IKEA, Samantha McClelland of Kohler, and Erica Pinto of Whirlpool.

DISCLAIMER

This guidance represents the authors' best guidance on how to advance water-savings claims for consumer products, it does not guarantee legal or regulatory compliance with relevant claims regulations. It is the responsibility of each individual company to ensure regulatory compliance with relevant requirements.[1]

Glossary

Claim	Any written, visual, or broadcast communication related to impacts and outcomes of a household consumer product or related informational campaign.[2]
Consumer	A person who purchases goods and services for personal use (also sometimes referred to as customer).
Consumer Behavior	The actions, decisions, and preferences of a consumer that modify how much water a fixture, appliance, or consumer product theoretically or actually requires for its use.
Consumer Products	Consumable goods that are used within the home often in the context of water or a water-using appliance or fixture, though not exclusively. This includes personal care products and cleaning products. For the purpose of this guide, this does not include cooking or food-related products or products related to outdoor water use.
Fixtures and Appliances	Durable devices within a home designed to perform functions often associated with cleaning, cooking, or personal sanitation. In most homes, this includes toilets, showers and baths, faucets, dishwashers, and clothes washers. Some homes may also have a water softener, evaporative cooler, or other devices that contribute to water use, though these are less likely to overlap with consumer products.
Potential Water Savings	Water savings that may be realized by consumers from the as-intended application of the household consumer product innovation or campaign.
Shared Water Challenges	A water-related issue, concern, or threat shared by one or more stakeholders within a catchment(s). Examples include physical water scarcity, deteriorating water quality and regulatory restrictions on water allocation.[3]
Sustainable Development Goal 6	Sustainable Development Goal 6 (SDG 6 or Global Goal 6) is about ensuring availability and sustainable management of water and sanitation for all. [5] It is one of 17 Sustainable Development Goals established by the United Nations General Assembly in 2015. The goal has eight targets to be achieved by 2030. Progress toward the targets will be measured using eleven indicators.
Value Chain	The activities involved in delivering value to customers, including direct operations and both upstream (e.g., raw material suppliers, manufacturers) and downstream (e.g., distributors, end users) activities.[7]
Volumetric Water Benefit Accounting	Method for quantifying the volumetric water benefits of water stewardship activities, and associated guidance related to planning, project selection, tracking and reporting and communication.[4]
Volumetric Water Benefits	Volume of water resulting from water stewardship activities, relative to a unit of time, that modify the hydrology in a beneficial way and/or help reduce shared water challenges.[6]
Water Withdrawal	The total amount of water withdrawn from its source for use (also sometimes referred to as “water use”).
Watershed	The geographical zone or land area that channels rainfall and snowmelt to creeks, streams and rivers and eventually to outflow points like reservoirs, bays and the ocean. Also called a drainage basin or catchment.

Executive Summary

This guidance, developed by Alliance for Water Efficiency (AWE) in partnership with Bluerisk and informed by consumer product companies, provides a framework for estimating and communicating potential water savings from household consumer product innovations and campaigns specifically designed to require less water than other products. It aims to be a first step toward standardizing approaches and enhancing transparency.

This guidance supports companies, governments, and researchers in aligning efforts to improve water efficiency, ensuring reliable data and transparency while fostering sustainable growth and resource conservation.

THE GUIDANCE:

- Proposes a step-by-step process for estimating potential water savings,
- Explores how to advance the understanding of consumer behavior to improve the accuracy and credibility of company claims,
- Discusses the path toward a company claiming volumetric benefits as a result of estimated water use reductions,
- Shares key considerations for how companies should communicate claims related to potential water savings from consumer product innovations and campaigns, and
- Illustrates the water savings calculations and applications of communications principles through a variety of examples.

INSIDE YOU'LL FIND:

Five-Step Methodology for Estimating Water Savings:

1. Identify the mechanism for water savings.
2. Calculate baseline water use for the replaced product or behavior.
3. Determine water use with the innovation or campaign.
4. Estimate potential water reductions at various scales (e.g., household, regional).
5. Communicate findings transparently and conservatively.

Key Communication Principles (CPs):

- ✔ CP1: Relatable
- ✔ CP2: Consistent
- ✔ CP3: Transparent
- ✔ CP4: Instructive
- ✔ CP5: Conservative

Key Resources to Get Started:

- ✔ Best Available Data Sources & Considerations for Analysis
- ✔ Case Study Examples
- ✔ Communication Principles Examples

Consumer product campaigns can contribute to reducing indoor household water use, even with small shifts. **Standardizing methodologies enhances credibility, promotes informed consumer choices, and drives innovation in water-efficient products.**

Chapter 1
Introduction

"The guidance seeks to empower companies, practitioners, and researchers with the tools **to deliver credible claims while fostering innovation and driving greater adoption of water-saving products and campaigns."**

Household consumer product innovations and campaigns have the potential to drive reductions in household water use by innovating how products function or encouraging behavior change. However, the lack of a consistent approach for estimating and communicating potential water savings has created challenges for manufacturers and consumers alike. Companies use varying methods to claim potential or actual water savings, making it difficult for consumers to assess the credibility or compare claims across products.

This document aims to address these gaps by offering a foundational framework for companies to estimate and communicate water savings more transparently and consistently. Recognizing the inherent uncertainty in water-savings claims, the document provides practical steps and best practices for creating credible estimates, advancing understanding of consumer behavior, and crafting clear, trustworthy communications.

The guidance seeks to empower companies, practitioners, and researchers with the tools to deliver credible claims while fostering innovation and driving greater adoption of water-saving products and campaigns. By supporting transparency and consistency, it is our hope that these efforts will benefit consumers, businesses, and the environment alike.

1.1 Background

In 2022, drought and water shortages impacted over 85 percent of the contiguous U.S. and nearly 75 percent of the population.

This was the largest drought the country has experienced since 2012—climate change is continuing to reduce and interrupt water supplies, and, as a result, droughts will be longer, more frequent, more severe, and more widespread.[8] Even in regions with abundant water resources, water and wastewater systems consume significant energy, and hot water usage by end users further increases onsite energy demand—both contributing to carbon emissions.

Whether in a drought-stricken area or a water rich area, reducing water use can help to improve resilience of water supplies while reducing greenhouse gases.[9] Beyond reducing demand, water conservation and efficiency strategies can also generate other benefits, including financial savings, risk and impact reduction, protection of water sources, as well as more sustainable growth.

Both the public and private sectors are advancing solutions that can help to achieve many of these benefits. Companies are increasingly more attuned to the water challenges facing their operations, supply chain, and consumers — and are setting ambitious water targets focused on reducing their impact across their value chains[14]. The development of these targets starts with a holistic understanding of where a company is using water and where there are opportunities to achieve savings. For some companies, water use occurring during the use of their products represents a significant portion of the company's overall water footprint.[15] This may be particularly true for companies that produce products associated with end-uses of water, like household appliances, fixtures, cleaning products, personal care products, and more.

The adoption of water-efficient appliances and fixtures has been a reliable, commonly implemented strategy to achieve water use reductions since the 1980s. The Alliance for Water Efficiency (AWE) has worked with the U.S. Environmental Protection Agency (EPA) WaterSense and Department of Energy (DOE) Energy Star programs, plumbing and appliance manufacturers, conservation professionals, water suppliers, and others to hone the methodologies for estimating water savings from water efficient plumbing fixtures and appliances. Multiple studies have contributed to quantifying the impact of household water use when traditional fixtures or appliances are replaced by a high-efficiency product.[16]

Many fixtures and appliances have clearer guidelines and certification protocols in place to ensure a product can deliver on its promise of conserving water compared to other products in the market. However, to the best of these authors' knowledge, there has not been any guidance as to the best way to estimate and communicate potential water savings realized by innovations in household consumer products like cleaning or personal care products. There are many consumer products that are used alongside household fixtures and appliances that have the potential to unlock additional water savings. Household consumer products can be designed to require less or no water use, and, similarly, marketing campaigns can influence consumer behavior to result in less water use. Take water use related to showers for example: dry shampoo may replace a consumer's need to wash their hair as often and may result in a shorter shower or skipping a shower, or a company's ad campaign may influence the consumer to take shorter showers.

It is inherently challenging to estimate water savings from products or campaigns due to the wide variation in household water use associated with consumer products, which is not only based on the water-using fixtures and appliances but also on the consumer's behavior, which can vary greatly. And while fixtures and appliances may have a certain water use specification, the actual water used ultimately depends on how people use the fixtures and appliances and the variety of features. For example, the water use related to a clothes washer depends on 1) the cycle consumers select, as some are designed to use more or less water, and 2) any cycle modifiers used, such as deep fill or pre-rinse options. Further, consumers have different perceptions about how frequently things need to be washed and if any items need to be rewashed if the performance was not acceptable, causing more washing and water use than needed.

A CLOSER LOOK

Benefits of Water Conservation and Efficiency Strategies

Water conservation and efficiency strategies deliver multiple benefits to businesses, communities, and the environment by generating financial savings, reducing risks, and supporting long-term sustainability. Water conservation and efficiency strategy benefits include:

FINANCIAL BENEFITS

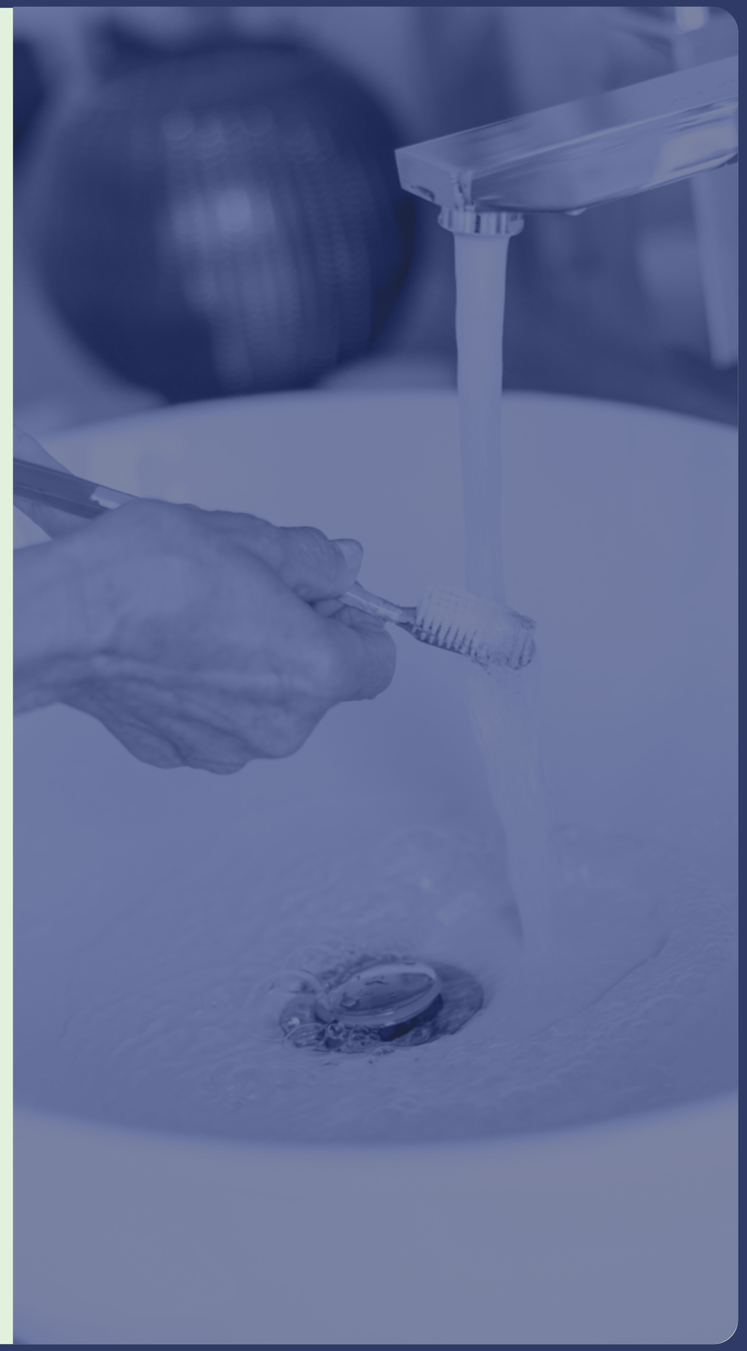
- Saves end-users money on water, wastewater, and energy bills; Conservation is a key strategy to mitigate affordability challenges.[10, 11]
- Reduces or delays water agencies expenditures by limiting the need for costly water supply and infrastructure expansions that drive rates higher than necessary.[12,13]

RISK AND REPUTATION BENEFITS

- Reduces risk for businesses by insulating from rising water and energy costs and improving resilience.
- Reduces risk for communities by decreasing reliance of freshwater sources of decreasing quantity and quality.
- Prepares organizations for complying with water stewardship or sustainability-related mandates, regulatory requirements, regulatory reporting, and more, thereby reducing operational risks.
- Demonstrates a company's commitment to sustainability, fostering trust among stakeholders and building competitive advantages.

ENVIRONMENTAL AND COMMUNITY BENEFITS

- Protecting our rivers, lakes, and aquifers by reducing freshwater withdrawals.
- Reducing the amount of energy used to heat, pump, treat, and deliver water, which in turn reduces greenhouse gas emissions.
- Supports community development and population growth by ensuring long-term resource availability, enabling resilient communities and businesses.



1.2
Problem Statement

Consumer product innovations and campaigns can help consumers save water by reducing the amount of water needed while using a product or by motivating a consumer to adopt a water-saving behavior.

To date, **companies have taken their own unique approaches to estimating and claiming potential or actual water savings** resulting from their product innovations or campaigns. Some may simply aim to inform consumers of the possibility to save water with the product whereas others might desire to claim their product or campaign has resulted in actual water savings and other benefits. **This variation in process and data not only makes it challenging for companies who want to make clear and accurate claims,** but it can also **make it hard for consumers to make informed decisions** or comparisons between the water savings claims of different manufacturers since, **until now, there has been no consistent approach recommended or available.**

Consumers increasingly value sustainability. Transparency and consistency are foundational for credible claims and avoid false impressions or the misleading of consumers. Practitioners may have the best intentions, but **without a consistent approach and guidance on how to communicate, it is unsurprising that there is great variation and potential for confusion** in the consumer product marketplace.

The primary audience for this guidance is composed of companies that manufacture and/ or market consumer products that interact directly with a water-using fixture or appliance within households. The secondary audience includes household appliance and fixture manufacturers, local and state government, water agencies, and researchers who study water and household water use habits and practices.

1.3
Objective

To help address the identified gaps, this guidance document is intended to be the first step in helping companies understand the information needed to make credible claims related to potential water savings associated with consumer product innovations and campaigns designed to enable in-use water reduction. This guidance document recognizes the inherent uncertainty embedded in water-savings claims related to the use of consumer products.

The aim is to first advance the state of knowledge and practices by providing:

- ✔ information about household water use,
- ✔ recommendations for estimating potential water-savings, and
- ✔ important considerations and practical tips about communicating claims.

To accomplish this, the guidance:

- ✔ proposes a step-by-step process for estimating potential water savings resulting from product design or campaign,
- ✔ explores how to advance the understanding of consumer behavior to improve the accuracy and credibility of claims,
- ✔ discusses the path toward claiming volumetric benefits as a result of estimated water use reductions, and
- ✔ shares key considerations for how companies should communicate claims related to potential water savings from consumer product innovations and campaigns.

We hope this guidance, and future versions, will:

- ✔ become a key reference for practitioners estimating and communicating potential water savings associated with consumer product innovations or campaigns.
- ✔ enable more consistency across practitioners and lead to more accurate water savings calculations; and
- ✔ serve as an incentive to develop and produce an even greater range of water savings products, hopefully to the benefit of the environment, consumers and society.

1.4
Limitations

In addition to estimating potential water savings, there is interest in estimating the environmental, social, and/or economic outcomes as well. This includes interest in evaluating how changes in water use may affect energy use (and related costs), environmental outcomes, and the relationships between household water-using activities.

Initial stakeholder engagement and desktop research suggests that estimating water savings is a necessary first step to support measuring potential environmental, social, or economic outcomes. This guidance serves to inform an intermediate and practical step to support more consistent and comparable claims about these other outcomes.

Additionally, the process of estimating potential water savings from product innovations or campaigns alone does not necessarily mean advances in sustainable water management are being achieved. For example, a household may purchase a more efficient dishwasher, but still wash dishes by hand or increase water use in another aspect of their daily activities[17]. Similarly, on a community or watershed scale, even when households may be acting in ways that achieve individual water savings, the larger watershed they live in may not benefit. Indoor household water use is largely non-consumptive, meaning most water used indoors is captured by a recovery system, treated, and returned to a water source for future use. Therefore, unless additional assurance is provided, achieving water savings at a household level does not guarantee that the activity will deliver volumetric water benefits or the associated social, economic, and environmental benefits.

Lastly, given there is limited research on how much water is used in relation to consumer products, several assumptions are necessary to establish a baseline. The information presented herein can be updated over time as more field studies of real-world behavior across a greater number of people are made available beyond the household level.

The primary audience for this guidance is composed of companies that manufacture and/ or market consumer products that interact directly with a water-using fixture or appliance within households. The secondary audience includes household appliance and fixture manufacturers, local and state government, water agencies, and researchers who study water and household water use habits and practices.

Chapter 2
Approach

"On an individual household basis, [these changes] may seem small, but on a larger scale, the impact can add up... **In a world of growing water-related changes, every drop counts."**

2.1
Guiding Criteria

Based on the objectives and intended audience described above, this guidance document has been developed following three criteria: Actionable, Trusted, and Practical.

GUIDING CRITERIA	HOW THE GUIDANCE WILL MEET IT
Actionable.	
✔ The approach and guidance should help inform company decision-making.	✔ The approach and guidance were developed in close consultation with key stakeholder groups to ensure that it meets the needs of our target audience.
Trusted.	
✔ The approach and guidance should yield results that are trusted by key stakeholder groups working on water efficiency and corporate sustainability.	✔ The approach and guidance were informed by published scientific methods, practitioner experience, and current smart practices.
Practical.	
✔ The approach and guidance should be applicable by general practitioners within the private and public sector using information readily available to them).	✔ The approach and guidance were developed considering existing information, data, and tools available to the target audience.

2.2
The Opportunity

The value chain of a product includes the acquisition of raw materials, production, distribution, consumer use, and disposal of the product. While the amount and intensity of water varies by industry and even company within each industry, water is an input across the value chain of nearly every company.

Like some other industries, many consumer product companies find that the downstream use of their products (consumer use) represents the largest quantity of water across the product's value chain.[18]

For the purposes of this guidance, we will focus on how companies who sell consumer products and promote campaigns related to consumer products with an impact on household indoor water use can estimate and communicate claims related to the potential, associated water savings.

Municipal household or domestic water use can be a significant portion of water withdrawals for many communities, including major metropolitan urban areas facing water scarcity like Los Angeles, California, and Phoenix, Arizona.[19,20]

In places where household water use is significant, consumer product innovations and campaigns have the potential to contribute to conservation of water resources and address local water scarcity.

The 2016 Residential End Uses study found great variation across the United States in how much water is used per household, with an average indoor water use of 138 gallons per household per day or just over 50,000 gallons per year.[21, 22] Based on this estimate, a product innovation or campaign that reduces indoor water use by 10 gallons per week, for example, or, 520 gallons per year, could reduce annual indoor residential water use by about 1%.

On an individual household basis, this may seem small, but on a larger scale, the impact can add up. In this example, if just under 2 percent, or 100,000 of the approximately 5.5 million households in the cities of Los Angeles and Phoenix adopted the consumer product or shifted behavior because of an ad campaign or new innovation, they could reduce water use by over 52 million gallons per year. On a national scale, if one percent of the U.S.'s approximately 122 million residents made the change, it could reduce use by over 630 million gallons per year. This is the equivalent to the annual indoor use of about 12,600 households. In a world of growing water-related changes, every drop counts.

2.3
Scope

WHAT'S IN & WHAT'S OUT

This guidance focuses on consumer products in the personal care and cleaning categories, specifically for indoor use in residential settings. It does not cover non-residential uses, food- or cooking-related products, outdoor water uses, or major indoor fixtures and appliances. That said, some of the ideas and insights may still be relevant to those areas. While water savings often come with added benefits—like reduced energy use, lower water bills, and environmental gains—this report focuses only on estimating and communicating potential water savings.

*The **product types and related fixtures or appliances** included in this scope are listed in the table to the right.*

*The **types of campaigns or product innovations** included in this scope are listed in the list below.*

CAMPAIGN OR PRODUCT INNOVATION MECHANISM

- **Non-water using products:** non-water using consumer products can replace a water-using product (e.g., traditional liquid shampoo, which requires water to apply and rinse, can be periodically replaced with dry shampoo that requires no water.)
- **Products requiring less water:** more efficient consumer products can replace a less efficient product (e.g., a 2-in-1 shampoo that combines shampoo and conditioner can replace separate shampoo and conditioner, potentially reducing the time a consumer spends in the shower.)
- **Product influences behavior:** consumer products can prompt or remind a consumer to adopt a more efficient behavior (e.g., an electric toothbrush may prompt the consumer to turn off the tap while brushing their teeth.)
- **Product enables appliance efficiency:** consumer products may work well in low water conditions, enabling an appliance to work more efficiently and/or as intended (e.g., a laundry detergent with a suds-reducing or fast-rinse formula may be able to achieve the same level of clean using less water in a rinse cycle that uses sensors rather than a rinse cycle using a fixed volume.)
- **Education campaign:** Consumer education, gamification, or incentive distributed via product marketing can prompt or remind a consumer to adopt a more efficient behavior, (e.g., an automatic dishwashing detergent brand launches an advertisement telling consumers to skip the pre-wash before putting dishes in the dishwasher to save water.)

IN-HOME WATER USING PRODUCT CATEGORY	RELATED FIXTURE OR APPLIANCE (U.S.)
Laundry Detergent	Automatic Washing Machine
Laundry Additives	Automatic Washing Machine
Shampoo (liquid), shampoo (dry)	Bath and Shower
Hair Conditioners	Bath and Shower
Shower & Bath Liquid	Bath and Shower
Shaving razors	Bath and Shower, Bathroom sink
Shaving creams and supplies	Bath and Shower, Bathroom sink
Bar Soap	Bath and Shower, All sinks
Face wash	Bathroom sink, Bath and shower
Toothpaste	Bathroom sink, Bath and shower
Toothbrushes	Bathroom sink, Bath and shower
Automatic Dishwashing Detergent	Dishwasher
Hand Dishwashing Detergent	Kitchen Sink
Hand Soaps (wet), Hand Sanitizers (dry)	All sinks
Cleaning Product Implements (mops, dusters, sponges, wipes)	All sinks, Bath and Shower
Cleaning Products Formulated (floor, surface, toilet)	All sinks, Bath and Shower, Toilet

Chapter 3
Method

3.1

Recommended Steps for Estimating Water Savings from Consumer Product Innovations or Campaigns

The following steps deliver an estimated water-savings claim for a product innovation or campaign. Refer to Resource A for data sources to support calculations. Refer to Resource B for real-world inspired case studies on how to apply the estimation steps. Refer to Resource C for practical examples of applying the communication principles.

STEP 1

✔ Determine the mechanism for water savings

STEP 2

✔ Understand baseline water use before product innovation or campaign

STEP 3

✔ Understand water use during the use of the product innovation or product influenced by the campaign

STEP 4

✔ Estimate potential water use reductions associated with product innovation or campaign

STEP 5

✔ Communicate with care.

Recommended Steps for Estimating Water Savings from Consumer Product Innovations or Campaigns

STEP 1

DETERMINE THE MECHANISM FOR WATER SAVINGS

Determine the mechanism for how the product may save water. Five mechanisms were identified for how indoor residential water demands can be affected related to consumer products use. These include:

- Non-water using products
- Products requiring less water
- Product influences behavior
- Product enables appliance efficiency
- Education campaign

STEP 2

UNDERSTAND BASELINE WATER USE BEFORE PRODUCT INNOVATION OR CAMPAIGN

Calculate the baseline water use of the existing product that is being replaced by a more water-efficient product or the current habit being influenced by the campaign. The baseline calculation will be informed by:

- Water use per number of times used
- Number of times used per selected time period
- Number of consumers using the product

STEP 3

UNDERSTAND WATER USE DURING THE USE OF THE PRODUCT INNOVATION OR PRODUCT INFLUENCED BY THE CAMPAIGN

Estimate the water use (in the context of households) associated with the new product, product innovation, or campaign. This calculation will be informed by:

- Water use per number of times used
- Number of times used per selected time period
- Number of consumers using the product

STEP 4

ESTIMATE POTENTIAL WATER USE REDUCTIONS ASSOCIATED WITH PRODUCT INNOVATION OR CAMPAIGN

Subtract. Use the baseline (calculated in Step 2) and the estimated water use (calculated in Step 3) to determine the potential water use reductions resulting from the product innovation or campaign. The potential water use reduction equals the baseline water use before the innovation or campaign minus the water use with new product innovation or campaign and can be estimated at different geographic and time scales.

STEP 5

COMMUNICATE WITH CARE

Communicate with care by following the recommended principles:

- Relatable
- Consistent
- Transparent
- Instructive
- Conservative

3.2
Considerations for Estimating Water Savings

It was noted in **Section 2.3 - Size of the Opportunity** that while the individual impacts may be small, the total impact and size of the opportunity can be significant when put into the broader watershed context.

In relation to estimating potential water savings, however, it means that the sample size of a study would likely need to be very large to detect a statistically significant result that would allow a company to attribute direct water savings to their innovation or campaign. This type of study could also capture accompanying changes to water use in other parts of the home, energy use, and other potential positive or negative outcomes. Companies can still communicate about the potential for water savings to help inspire and motivate consumers but should avoid falsely attributing realized savings or causality to their product or campaign. More information on this topic can be found in Resource A.

KEY POINTS TO NOTE:

- Some studies may only be able to survey or observe relatively small groups of people or households (e.g., 10-50 participants). While this type of research is common and can be quite useful in gaining deep insight into how some people think or behave, it cannot be used to draw conclusions about actual impacts to water use or how large groups of people will behave, especially over extended periods of time, and should not be used to claim water savings or used as evidence of causal impact.
- Smaller studies like those regularly conducted for research and development are critically important to inform innovation by offering nuanced understanding of user needs, preferences, and pain points. These efforts can provide important qualitative insights that may be impossible to gather through large-scale studies. Companies can iterate quickly, resulting in a more agile development process.
- Companies should avoid using words like ‘resulted’, ‘contributed’, ‘influenced’ in estimating potential water savings claims. Attribution is reserved for robust research studies designed to assess if changes in water use occurred at least in part due to the household action(s) taken in association with the use of a consumer product or information received through a campaign. There are many other factors that influence individual and household water use and without a robust evaluation, companies should not claim or create the impression that their product or campaign is the reason for these changes.

3.3

Key Communications Principles for Water Savings Claims

Smart communications principles were defined after reviewing a variety of water savings claims on packaging, in consumer advertising, and on brand websites from a variety of companies and product categories.[23]

When applied to water-saving claims, these communication principles are likely to help the credibility and substance of claims so that they can be easily understood by the average consumer. The information behind a claim should be easily accessible and reasonably revised over time as technology, water use, and our understanding of residential behavior evolves.

Application examples of each principle and its key attributes can be found in Resource C. These principles are also illustrated in the case studies outlined in Resource B.

It is important to again note that this guidance is intended to assist companies and manufacturers of these products in developing well-substantiated and meaningful estimates used in claims rather than establishing a pathway for determining exact quantities related to consumer product claims. Utilizing monitoring data during a study can contribute to even more robust results, but the potential savings quantity should still be considered an estimate once extrapolated to represent a larger population. The below communication principles are being recommended as a way to support proper use of those estimates.

COMMUNICATIONS PRINCIPLES:

- ✔ **CP1: Relatable:** Consumers should be able to easily understand the potential savings
- ✔ **CP2: Consistent:** Units and assumptions should be appropriate in scale and consistently used across communication channels
- ✔ **CP3: Transparent:** Best available data should be used and accompanied by clear evidence of objective calculations
- ✔ **CP4: Instructive:** The consumer should have a clear understanding of how to use the product to potentially save water
- ✔ **CP5: Conservative:** Estimates of total savings should err on the side of underestimating impact and utilize language that reflects the level of uncertainty

Communications Principles (CP) Referenced across this document, the below principles are intended to support proper use of those estimates.

PRINCIPLE	ATTRIBUTES
CP1: RELATABLE **Consumers should be able to easily understand the potential savings**	✔ State potential water savings per unit in which the product is typically used. (e.g., per bottle, per shower, per dishwashing cycle, etc.) ✔ Use units that are easily understood by consumers in the target geography. (e.g., gallons vs. liters.) ✔ Explain how the claim was derived. (e.g.,assumptions, methods, simple calculation steps, etc. included in a footnote or claim language – include enough to enable reasonable replication)
CP2: CONSISTENT **Units and assumptions should be appropriate in scale and consistently used across communication channels**	✔ Units should be appropriate for the claim to avoid misleading or exaggerating the size of the impact. (e.g., Using 4 gallons vs. 64 cups) ✔ Use the same units, time scale, data, and assumptions across all claims for the relevant product
CP3: TRANSPARENT **Best available data should be used and accompanied by clear evidence of objective calculations**	✔ Provide supporting data on brand website to make it easy for consumers to access all information behind a claim; ensure website includes documented assumptions and any related studies, data, etc. ✔ Citations or explanations should appear as close to the statement as possible and be easy to find ✔ Reference the date the study was completed and the years the data represent to ensure transparency, relevance, and to provide context for interpreting the findings. ✔ Consistently use the best available data. Validated, statistically significant, third-party data is preferred. Internal data gathered with a high scientific standard can inform communications if a third-party alternative does not exist. In this case, companies should consider publishing their internal data and studies
CP4: INSTRUCTIVE **The consumer should have a clear understanding of how to use the product to potentially save water**	✔ If water savings is only realized by habit change or a specific action, claim should appear with instructions on how to use it properly to realize potential water savings ✔ Clearly communicate a timescale or usage unit appropriate for how the product is typically used (e.g., toothbrushing is most typically a 1-2 times daily occurrence so savings could be communicated appropriately in terms of daily water usage; frequency of doing the laundry and household volume of laundry can vary greatly but a typical household measures this task in loads rather than number of garments so a per load savings would be appropriate ✔ Distinguish potential water savings that occur during consumer product use and how the company may have otherwise improved its water footprint (e.g., manufacturing processes or facility efficiencies). Distinctly communicate about each separately, especially if also communicating a combined estimated impact across a value chain to avoid confusing or inflating the individual consumer's potential impact.
CP5: CONSERVATIVE **Estimates of total savings should err on the side of underestimating impact and utilize language that reflects the level of uncertainty**	✔ The less certain the water savings and/or the larger the scale (e.g., national), the more conservative the claim should be ✔ Claim language should indicate uncertainty in outcomes by using language like: "Could save," "could lead to savings," "may save," "has the potential to save," "when used properly could save," "as much as," "up to," and if-then structured statements ✔ Only communicate estimated claims of potential water savings that you can support as having been directly related to your product innovation or campaign ✔ Claims based on scales outside of an individual household should be used sparingly and be accompanied by compelling data, transparency as to the assumptions made to arrive at the claim, application of conservatism, and with the intent to utilize the claim for illustrative purposes only to inspire action

3.4
Volumetric Water Benefit

There is an interest by companies to understand how water savings resulting from consumer product innovations or campaigns can lead to volumetric water benefits (VWBs). However, there is still significant uncertainty in quantifying the impacts of consumer product innovations and campaigns.

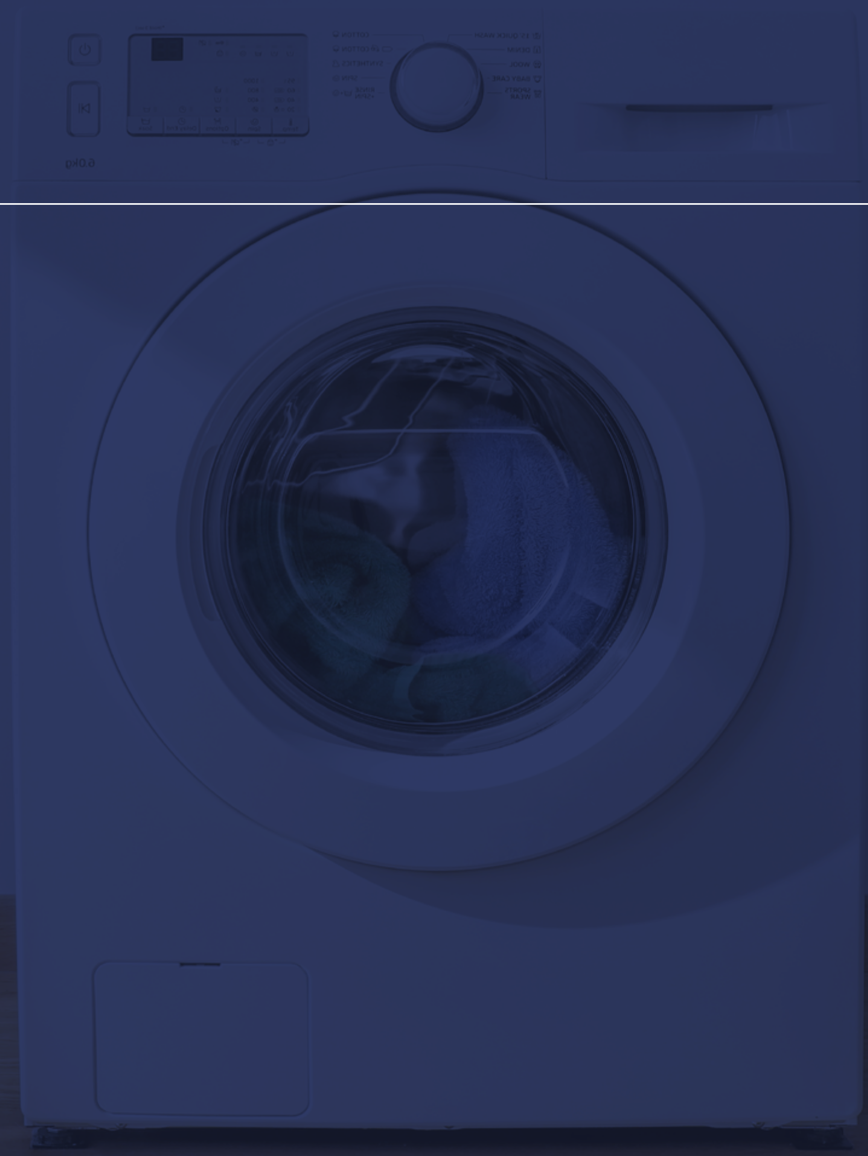
At this time, the guidance does not define a path to claiming VWBs against a corporate target. However, the outlined methodology helps to support improved understanding and communication around the water savings associated with consumer product innovations or campaigns. Future iterations may evolve to address this connection, and when or how to adjust claims accordingly.

Today, this guidance provides companies with many of the necessary tools to estimate water savings in the hope that more organizations will also consider where and how these savings can:

- Address the local (e.g., catchment-based) water challenges that are shared with local communities and stakeholders, and
- Have a measurable and positive impact on the watershed's water availability, quality, and accessibility.

Building upon this foundational understanding, companies and others can start exploring whether the estimated savings led to VWBs, as well as examine other positive social, environmental, and economic impacts resulting from their efforts. It is important for companies considering this path to consult the existing Volumetric Water Benefit Accounting (VWBA) methodology.

Chapter 4
Discussion



4.1
Final Thoughts

No single water saving strategy or water-using sector will solve all the water challenges we face. Nor can we eliminate water withdrawals.

However, household strategies can be part of the solution and should be considered a strategy in regions that are currently or are projected to experience increased water unreliability or scarcity. The wise and efficient use of water is critical to ensuring that water resources are available now and into the future to support healthy economies, ecosystems, communities, and individuals. Consumer product innovations and campaigns can help households use less water or make more efficient water choices while still accomplishing daily household tasks. We can all do our part to recognize how we may contribute to water challenges and, therefore, how we can be part of the solution.

We hope this guide helps consumer products companies start or continue to do their part in bringing innovative solutions that help to reduce water use in households. After reviewing this guide, practitioners should be able to better understand the information needed to make credible claims related to potential water savings associated with consumer product innovations and campaigns focused on enabling the reduction of water use during the use of consumer products. Historically, companies have taken various approaches to estimating and claiming impacts from their products or campaigns. And with greater transparency and consistency, we can pave the way to more accurate and transparent calculations of savings and related claims.

Enhanced transparency builds trust, allowing consumers to make informed choices based on reliable information. For industries, adhering to consistent and accurate communication standards can instill credibility and strengthens brand reputation. Clear and accurate water savings claims can also contribute to a more sustainable marketplace, encouraging the adoption of water-efficient products and practices. This, in turn, fosters environmental responsibility and resource conservation on a larger scale. Ultimately, the cumulative effect of transparent, consistent, and accurate communication about water savings is a more informed, sustainable, and conscientious society that actively participates in water conservation efforts, increasing the potential for positive impact at the local, watershed, regional and or/global levels.

4.2
Looking to the Future

Looking ahead, this guidance offers significant opportunities to deepen our understanding of consumer behavior and how innovations in consumer products and campaigns can drive more efficient water use.

Advancing this work will benefit from well-designed, large-scale studies of consumer behavior, updated datasets on household water end uses, and robust mechanisms for sharing findings to accelerate progress.

THROUGH THE DEVELOPMENT OF THIS GUIDANCE, THE AUTHORS IDENTIFIED A VARIETY OF TOPICS FUTURE RESEARCH COULD EXPLORE, SUCH AS:

Incorporating Consumer Behavior Insights. Expanding the understanding of consumer behavior—particularly how people perceive and act on water-saving claims—could refine how products are marketed and ensure claims resonate with diverse audiences. This could include pilot studies that measure actual water savings achieved by consumers using these products compared to estimated savings.

Sector-Specific Adaptation. Research could explore tailoring or expanding the application of the guidance to specific sectors, such as fixtures and appliances, currently excluded indoor products, outdoor water use products, commercial or industrial appliances, or multi-family housing, to address unique challenges and opportunities.

Informing Product Water Consumption Targets. Research could explore how companies might set realistic targets for consumer product-related water consumption and track progress toward those goals. Developing guidance for benchmarking and goal-setting could position water efficiency as a more central feature of corporate sustainability efforts and innovation, offering another benefit to companies utilizing this guidance.

Expanding Environmental and Economic Metrics. Future research could explore how this guidance intersects with broader environmental goals, such as reducing energy consumption and carbon emissions associated with water use, and economic benefits, such as driving innovation and market growth in water-saving technologies.

Enhancing Communication Strategies. Further work could research testing and improving the identified smart communications practices to ensure information is clear, transparent, and engaging for consumers. This work could identify more engaging or innovative ways for consumers to interact with information and celebrate their role in protecting water resources.

Addressing Affordability and Equity. How might consumer product innovations and campaigns specifically support consumers with high-cost water bills and lower incomes? Future research could include an analysis of cost savings directly tied to water-efficient products and campaigns, alongside recommendations for how to claim these savings in a way that is both meaningful and accessible to economically vulnerable populations. This work could also examine mechanisms to incentivize adoption among underserved communities.

Collaboration between companies, researchers, and communities will be key to improving collective understanding and driving innovation. **By partnering to publish and share findings widely, we can ensure more equitable and efficient use of one of our most precious resources while fostering accelerated advancements across industries.**

Resource A:
Data & Analysis

This section includes data sources that can be leveraged for estimating potential water use reductions related to consumer product innovations and campaigns. This section also provides a discussion and cautions around the challenges of estimating behavior-based changes of this nature.

A.1
Current Best Available Data Sources

This section includes the currently best available data sources for use in water savings estimations in the United States and Canada.

The Residential End Uses of Water, Version 2, Water Research Foundation Report #4309b (REU2016) is a key reference for estimating the baseline water use pre-innovation or campaign and to estimate water use post-innovation or campaign in Steps 2 and 3.[24] REU2016 provides the largest and most thoroughly analyzed data set for indoor water use by single-family residential customers in the United States and Canada.[25] While outdoor use varies significantly from place to place in North America, indoor use is more consistent. Based on this relative consistency, this national water use dataset is recommended. Furthermore, while there is no similar study yet for multi-family residential, it is generally assumed that per person use in multi-family settings is similar to single-family.

The REU2016 reports the total faucet water use without distinguishing between bathroom faucet use and kitchen faucet use, so the authors recommend using EPA's WaterSense estimate from its High-Efficiency Lavatory Faucet Specification Supporting Statement, Version 1, October 1, 2007, for products using the bathroom faucet. In this supporting statement, EPA estimates that the water savings from switching from a 2.2 gallons per minute (gpm) bathroom faucet to a 1.5 gpm faucet would be 0.6 gallons per capita per day (gpcd), which translates into 0.9 minutes of use per person per day and 2 gpcd when using a 2.2 gpm faucet. Furthermore, AWE recommends 9.1 gpcd for kitchen faucets, which is calculated by subtracting 2 gpcd for bathroom faucets from the 11.1 gpcd for all faucets from the REU2016's total faucet water use of 11.1 gpcd.

All data in the table is shown on a per capita basis in terms of gallons. Estimates should be translated if conducting an analysis where a different unit is more appropriate. If it is desirable to make claims at the household level, then the latest government data on the number of persons per household from the relevant geography should be used (e.g., US Census Data).

Based on REU2016 and, in the case of faucets, EPA WaterSense research, AWE recommends using the following data for U.S. claim development in the absence of or in combination with other robust studies:

FIXTURE OR APPLIANCE	AVERAGE WATER USE (gallons per capita per day)	AVERAGE FREQUENCY OF USE	OTHER WATER VOLUME DATA
Toilet	14.2 gpcd	5 flushes per person per day	Average flush volume is 2.6 gallons per flush
Clothes Washer	9.6 gpcd	0.3 loads per person per day	Average volume is 31 gallons per load
Shower	11.1 gpcd	0.69 showers per person per day	Average shower duration is 7.8 minutes • Average flow rate is 2.1 gallons per minute • Average volume is 15.8 gallons per shower[26]
Bath	1.5 gpcd	0.07 baths per person per day	Average volume is 20.2 gallons per bath
Bathroom (Lavatory) Faucets	2.0 gpcd	0.9 minutes per person per day	Average flow volume is 2.2 gallons per minute
Kitchen Faucets	9.1 gpcd	4.1 minutes per person per day	Average flow volume is 2.2 gallons per minute
Dishwasher	0.7 gpcd	0.10 loads per person per day	Average volume is 6.1 gallons per load
Note: Other indoor water use, including leaks, totals an average of 2.5 gpcd			

Note that this is the best data available as of publication of this report. There is a currently underway update of the REU2016 study as well as potential for other emerging data sources to become widely available that are representative of multiple geographies and types of households. For example, water agencies are adopting advanced metering infrastructure (AMI), which can deliver hourly meter reads and can offer improved insight into household behaviors. There is also a strong influx of consumer products on the market that are known as smart home devices that leverage flow sensors and provide a home's residents with detailed information about their personal end uses of water, possible leaks, and opportunities for water saving activities.

FEDERAL WATER EFFICIENCY STANDARDS

If a particular product innovation or campaign is focused on households with a certain appliance or fixture efficiency level, it may make sense to use the water volume data associated with a particular efficiency level. For example, if a laundry detergent is focused on households with new clothes washers rather than average households, or if the intervention is focused on new homes rather than older homes. In cases such as these, additional information about current water efficiency standards is provided below.

WATER FIXTURES

There are federal standards that apply to all fixtures and appliances through the Energy Policy Act of 1992. Beyond these, there are federal, voluntary efficiency standards in the U.S. for water-using appliances and fixtures, managed by the EPA WaterSense and EnergyStar labeling and product performance programs. The federal standards as well as the federal voluntary standards are listed below. Note that WaterSense does not have a specification for kitchen faucets. Some U.S. states have chosen to adopt more efficient standards. For example, California has adopted a lower maximum flow rate for showerheads (1.8 gpm), bathroom faucets (1.2 gpm), and kitchen faucets (1.8 gpm) than the EPA WaterSense volumes.

FIXTURES	U.S. FEDERAL MAXIMUM WATER VOLUME	EPA WATERSENSE MAXIMUM WATER VOLUME
Toilet	1.6 gallons per flush	1.28 gallons per flush
Showerheads	2.5 gallons per minute	2.0 gallons per minute
Bathroom (Lavatory) Faucet	2.2 gallons per minute	1.5 gallons per minute
Kitchen Faucet	2.2 gallons per minute	N/A

WATER APPLIANCES

Dishwasher and clothes washer voluntary standards are managed by the EPA EnergyStar program, which is focused on reducing energy use but also incorporates water saving requirements. The dishwasher and clothes washer criteria are not as straight forward as the WaterSense products since there can be differences in capacity across models. The federal standard for standard and compact dishwashers are no more than 5 gallons per cycle and 3.5 gallons per cycle, respectively. In general, EnergyStar dishwashers must use 3.2 or fewer gallons per cycle for standard dishwashers, and 2 or fewer gallons per cycle for compact dishwashers.[27] This is about half as much as the average dishwasher water use found in the REU2016 Study.

EnergyStar clothes washers also present significant water savings potential. According to the Association of Home Appliance Manufacturers, the average standard size clothes washer sold in 2020 was 4.25 cubic feet. Washers of this size fall into the ‘standard” category (anything greater than 1.6 cubic feet of capacity). The federal standard uses a measurement called an Integrated Water Factor (IWF); to determine the water usage per cycle, multiply the IWF by the capacity. The IWF for a top-loading standard-sized unit is 6.5 gallons per cycle per cubic foot of capacity and 4.7 for a front-loading standard-sized unit. This means a 4.25 cubic foot washer should use no more than 27 gallons per cycle for a top-loading unit, and 20 gallons per cycle for a front-loading unit.

Assuming a clothes washer of this size meets the minimum requirements for water efficiency to earn the EnergyStar label, a top-loading unit would use 19 gallons per load and a front-loading unit would use 14 gallons. This means the new EnergyStar models use far less than the average of 31 gallons per load found in the REU2016 study. Many EnergyStar models are more efficient than the minimum requirement and adjust water usage based on load size rather than using a fixed volume of water for each load, so actual savings are likely to be even greater. To compare the water usage of clothes washers of different capacities, EnergyStar currently uses the Integrated Water Factor (IWF). The EnergyStar requirements are revised from time to time, and it is possible both the efficiency levels and the metrics used for comparison will change in the future.

The US Energy Information Administration publishes a Residential Energy Consumption Survey on a regular basis of a nationally representative sample of housing units.[28] The survey is used to estimate energy costs and usage for heating, cooling, appliances and other end uses. This survey includes information about how many households have appliances and how they are used, for example, how many households have a dishwasher and how many times per week they run a load. This data source may be useful for some potential water savings claims.

PREVALENCE OF HIGH-EFFICIENCY WATER FIXTURES AND APPLIANCES

The REU 2016 study included some analysis of the prevalence of appliance and fixture efficiency levels. The study only looked at this for clothes washers, toilets and showerheads and assessed a relatively low level of efficiency: 30 or fewer gallons per load for clothes washers, 2.2 gallons per flush or less for toilets, and 2.5 gallons per minute or less for showerheads. In REU2016, 46%, 37%, and 80% of clothes washers, toilets and showerheads met these levels, respectively.

A 2019 study assessed the prevalence of EPA WaterSense products and estimated that only 16.8% of all residential tank-type toilets were WaterSense (1.28 gallons per flush or less), 40.1% of bathroom faucets were WaterSense (1.5 gallons per minute or less), and only 45.4% of showerheads are estimated to meet the WaterSense standard (2.0 gallons per minute or less).[29] Localized saturation rates will vary depending on local building or point of sale codes, and water and energy provider efficiency programs designed to accelerate the adoption of high efficiency fixtures and appliances.

POPULATION AND HOUSEHOLD DATA

The U.S. Federal Government's Census Bureau regularly collects current facts and figures about America's people, places, and economy. Data collected through the American Community Survey and releases new data each year. This data is made publicly available.[30] This dataset includes information like household size and number of housing units, among other data which may be of interest to researchers. The data can be further explored by different types of individual characteristics to better align with a particular target audience of the innovation or campaign, like households with children. The average number of persons per household is currently about 2.6. States, counties, cities, and/or regional entities tasked with community and/or transportation planning may have other datasets about populations and households to inform these studies, too.

NOTES ON UNAVAILABLE DATA

AWE is not aware of, and has no recommendations for, reliable, publicly available studies and data that account for actual human behavior and are related to water use, frequency, and duration of a variety of activities related to consumer products.

To AWE's knowledge, water use data has not been documented in publicly available studies related to these activities:
Washing hair using only shampoo (lathering and rinsing)
Washing hair using shampoo (lathering and rinsing) and conditioner (applying, waiting, and rinsing)
Washing hair using 2-in-1 shampoo/conditioner (lathering/applying, waiting, and rinsing)
Brushing teeth (plus frequency)
Shaving (plus frequency)
Washing hands using lavatory faucet (plus frequency)
Hand washing dishes (water running, sink filled, using a separate sink to rinse)
Volume used to wash floors using bucket and mop

Any industry claims regarding the above should be based on rigorous product testing and data collection from large sample sets, (see more in Resource A.2 below). Further it is highly recommended that the product testing and data collection be done under real world conditions or other test conditions designed to capture natural variation in human behavior.

A.2
Estimation Challenges

There are some challenges in estimating and claiming potential or realized water savings from behavior-based efforts.

Behavior-based efforts, like those discussed in this guide, may include outreach, education, competition, comparisons, providing feedback, and more.

There have been challenges to the widespread adoption of behavior-based strategies, most notably the ability to evaluate and verify the impact in a rigorous way. We can never know for certain how much water a person would have used without having seen a consumer product campaign or used a product designed to use less water.

Further, there can be great variation across individual consumers, for example where one household may run their dishwasher once per week and another may use it multiple times per week. In the absence of being able to see two versions of the future for each individual, the next best option is to run randomized control trials, which is an approach to research that can isolate the average effect of the campaign or product while controlling for the variety of other factors that influence water use. This robust evaluation approach starts with good study design by randomly assigning people or households into two different groups. These two groups should be very similar on average in terms of factors that could influence water use. For example, their baseline average water use should be similar, the distribution of ages, education level, or other demographics should be similar, and the prevalence of high efficiency vs. older appliances and fixtures should be similar among the two groups. This approach is commonly associated with the medical field but is also commonly used across many industries and fields of study.

A.2 ESTIMATION CHALLENGES

Studies with more people or households over longer periods of time are likely to lead to greater precision of the estimated impact. Further, the smaller the expected difference in water use, the larger the sample size needed to identify the impact. It is expected that behavior-based programs, like the consumer product campaigns and products discussed in this guide, that are designed to change water use by relatively small amounts for each individual or household will be hard to robustly identify without significantly large sample sizes. Researchers use power analysis to determine the minimum necessary sample size.[31] Very small samples undermine the ability to draw meaningful conclusions, especially of what the impact might be when an effort is scaled. Claiming direct impacts using small studies can be misleading.

The size of the sample needed to statistically infer causation from an intervention designed to influence an individual or household to reduce its water use depends on the expected size of the impact (i.e., change in water use) as well as some statistical parameters.[32] Sample size cannot be fixed later on in a study; thus, researchers must get it right from the start. Given the relatively small expected individual impact of consumer product innovations or campaigns relative to the total water used in a home, it would require potentially thousands of households to determine causality and statistically detect a difference in water use.

Some studies may survey or observe relatively small groups of people or households. While this type of research can be useful in gaining deep insight into how some people think or behave, it should not be used to draw conclusions about how large groups of people will behave, especially over extended periods of time, and should not be used to claim realized water savings.

Smaller studies like those regularly conducted for research and development are critically important to inform innovation by offering nuanced understanding of user needs, preferences, and pain points. These efforts can provide important qualitative insights that may be impossible to gather through large-scale studies. Companies can iterate quickly, resulting in a more agile development process.

If these types of studies are used for constructing claims about potential water savings, industry claims should be transparent about what data sources or assumptions they are using. For example, if relying on a survey of consumers, the number of participants should be disclosed as well as a caveat that reported behaviors are often not indicative or reflective of actual behavior.[33] If a company is using a study conducted in-house, this study or a version of it should be published online and referenced with the claim. The published study should at a minimum disclose the methodology of the study and key findings.

The common data sources provided above and the methodology of calculating potential water savings are meant to reflect average behavior, recognizing that there is significant variation across consumers and households. A larger study of more households will yield a more representative estimate of “average” consumer behavior. For smaller studies, companies can provide transparency about how the studied household might be different from the general population. For example, if the study is focused on more affluent households with higher end appliances and fixtures and/or the ability to spend more on consumer products. Or if the study focused on household that only or prefer to speak Spanish. Providing this information can allow the company to move forward with the data available to them, while also being transparent about how the data does or does not apply to an individual consumer or subset of the population.

Industry claims should also be compared against the baseline water use for the relevant fixture or appliance, and the claimed savings should never exceed the baseline water use.

Resource B: Case Studies

This section provides example case studies inspired by real-world examples. Each case study is organized by the five different mechanisms of how the consumer product may save water.

As a reference from the main body of the guidance, these include:

Non-water using products: non-water using consumer products can replace a water-using product
Products requiring less water: more efficient consumer products can replace a less efficient product
Product influences behavior: consumer products can prompt or remind a consumer to adopt a more efficient behavior
Product enables appliance efficiency: consumer products may work well in low water conditions, enabling an appliance to work more efficiently and/or as intended
Education campaign: Consumer education, gamification, or incentive distributed via product marketing can prompt or remind a consumer to adopt a more efficient behavior

B.1
Non-Water Using Products

A non-water using consumer product replaces a water using product (e.g., traditional shampoo, which requires water to apply and rinse, can be periodically replaced with dry shampoo that requires no water.)

Case Study:
Dry Shampoo

Brand X has created a new product that consumers can spray on their dirty, oily hair when their hair is dry to extend the time between washing hair with shampoo and water. This product eliminates the need for water during application and has been shown to save water by eliminating at least one shampoo/conditioner occurrence per week. The team followed the recommended steps, used recommended data sources when appropriate, and clearly communicated the potential savings along with clear instructions that the product should be used without water to extend the time between shampooing and conditioning with water.

Case Study: Dry Shampoo

STEP 1: DETERMINE MECHANISM FOR WATER SAVINGS

To effectively clean hair, this product requires no water for use and would replace the need to shampoo/condition hair in the shower for the same result. This finding is supported by research done with consumers during product development.

STEP 2: BASELINE WATER USE

Based on a robust internal study that Brand X recently conducted on a large and representative sample of consumers, the claims manager knows the average shampoo time is 1 minute, and conditioner time is 2.5 minutes. They use the average shower flow rate of 2.1 gallons per minute based on REU2016 data, so the total water used for both steps is 7.35 gallons.

The claims manager also assumes that since the average frequency of shampoo/conditioner use according to REU2016 data is 0.69 times per person per day or 4.83 times a week, then the average weekly water use for the average consumer to use shampoo and conditioner in the shower is 35.5 gallons a week.

Baseline water use
= Shampoo and conditioner task time × average shower flow rate
= (1 min + 2.5 min) × (2.1 gal/min)
= 7.35 gal per use of shampoo and conditioner

Baseline water use per week
= Task water volume per shower × average showers weekly
= 7.35 gal/shower × 4.83 showers/week = 35.5 gal per week

STEP 3: WATER USE WITH PRODUCT

Water needed for a dry shampoo product is 0 gallons. Note: for all products utilizing this method, the value for Step 3 should be zero since it represents the absence of water use to perform the task.

Water use with product = 0 gallons per shampoo and conditioning task skipped

STEP 4: ESTIMATE POTENTIAL WATER SAVINGS

Based on the company's consumer habit study with the new product, it is found that the product replaces the need for one shampoo and conditioning occurrence per week for the typical consumer which is a 7.35-gallon savings per week. The claims manager considers including that this product's water savings potential could also be expressed as a 20% reduction in water use weekly for the average consumer. But the claims manager decides that characterizing the savings as a total percentage reduction could lead to confusion among consumers since daily in-shower shampoo users and thrice weekly in-shower shampoo users could have wildly different percentage savings per week (14% and 33% respectively). The claims manager also recognizes that telling consumers they can skip one in-shower hair washing a week by using this product is an easier and more relatable message for consumers, and is more directly supported by the data.

Potential water savings
= Baseline Water Use × Reduction due to new product
= 7.35 gal/shower × 1 weekly hair wash skipped **= 7.35 gal/week**

Potential water savings per year = 7.35 gal/week × 52 weeks
= 382 gallons

STEP 5: COMMUNICATE WITH CARE

Brand X clearly communicated on the brand website and retailer websites that the product does not require water for use: "Get clean, revived hair without stepping foot in the shower." Brand X communicated potential individual savings on their brand website in a conservative manner (by rounding down) and stating "You could save up to 7 gallons each time you replace one shampoo/condition with dry shampoo, or about 350 gallons per year." The relevant data sources were noted via footnote, including that the annual estimate is based on replacing one instance of shampoo/conditioning in the shower per week.

- ✓ **CP1: Relatable:** Used one weekly shower as the context for reduction rather than a percentage reduction or another unit which could be harder for consumers to relate to. Actual frequency of use of the product is likely to vary by consumer.
- ✓ **CP2: Consistent:** The scale of one weekly shower, and the annual savings expressed in gallons are both appropriate for the volumes.
- ✓ **CP3: Transparent:** Brand X only used internal data when specific external datasets were not available. Information about how the brand arrived at the potential water savings is included in a footnote wherever the claim is displayed.
- ✓ **CP4: Instructive:** The brand language on the website is clear that replacing one shampoo/conditioning use per week with this product is what leads to potential water savings.
- ✓ **CP5: Conservative:** Even though 382 gallons per year could have been rounded up to "almost 400," the claims manager chose to round down to be more conservative at the annual scale.

Case Study: Dry Shampoo

INPUT DATA, SOURCES AND ASSUMPTIONS

VARIABLE	VALUE	SUPPORT
Showerhead Flow Rate (gallons/minute)	2.1 gal/ min	REU2016
Minutes Shampooing and Conditioning	3.5 minutes	Robust internal habits and practice study documenting time consumers spend shampooing and conditioning during the shower process
Average number showers per person per day	0.69 showers per day	REU2016

ASSUMPTIONS

- Consumer habits study determining one hair wash in the shower per week savings did not contain any unknown confounding variables and that this behavior is consistent over time and through seasons.
- For the baseline condition, consumers are always using both shampoo and conditioner during their shower and skip both steps if using a dry shampoo.
- The consumer is skipping washing their hair during one shower a week and using the dry product instead, not necessarily foregoing the shower completely. Potential savings could be higher if consumer also skips entire shower as a result of using the dry shampoo.
- All showers taken by consumers in the REU2016 study included hair shampoo and conditioning steps.

B.2
Products Requiring Less Water

A more efficient consumer product replaces a less efficient product.

Case Study:
Spray Hand Dishwashing Detergent

Company Y has created a new hand dishwashing product. The product does not need water for application to dirty dishes like other hand dishwashing detergent. Instructions tell consumers to apply the product directly to dirty dishes without the addition of water and only wet a sponge for scrubbing. Dishes should be briefly rinsed at the end of the task. This eliminates the need for water at the start of and during the dishwashing process; water is only used to wet a sponge if needed and for a quick rinse. Company consumer studies of dishwashing with the product versus with the current in-market product showed a reduction in water use. Company Y recognized that this requires a change to existing habits and worked to clearly and simply communicate how this enables consumers to save water each time they complete the task of washing dishes by hand, no matter how frequently they do it.

Case Study: Spray Hand Dishwashing Detergent

STEP 1: DETERMINE MECHANISM FOR WATER SAVINGS

The claims support team determined the product can save water by requiring less water than traditional products since it eliminated a water-using step in the process vs. the traditional hand-dishwashing detergent it is replacing.

STEP 2: BASELINE WATER USE

The U.S. Federal maximum water volume is 2.2 gallons per minute for kitchen faucets. Currently, there is not a kitchen faucet WaterSense specification, however, high-efficiency faucets rated between 1.5-1.8 gallons per minute are widely available in the product's market. The lowest flow rate was selected for the calculation to ensure the claimed savings are more conservative. Using data from the company's large internal consumer practices study, the product team estimates the amount of water that consumers use to wash dishes by hand on a per-wash basis is an average of 16.5 gallons since the study indicated that more than half of all consumers in the study spent around 11 minutes at the sink after a meal. This study also found that consumer-claimed hand dishwashing behavior is significantly under-reported versus actual observed behavior, so a more conservative water savings potential approach is justified.

Baseline water use = Kitchen faucet flow rate × Task time = 1.5 gal/min × 11 min per wash
= **16.5 gallons per hand dishwashing occurrence**

STEP 3: WATER USE WITH PRODUCT

Consumer research on the new product demonstrated that when consumers shut off their faucets while washing per product directions, a 53% water reduction was observed due to reduced time with the faucet on. To be conservative, this estimate was rounded down to 50%. In a study to test the new packaging, it was noted that adding a reminder to follow the package directions increased the desired behavior of reduced sink use.

Water use with new product = Baseline water use × Percent reduction in time = 16.5 gal × 50%
= **8.25 gallons**

STEP 4: ESTIMATE POTENTIAL WATER SAVINGS

Based on the reduced time with the faucet running, and assuming a consistent flow rate, the claims manager estimates potential savings of up to 8 gallons.

Potential water savings = Baseline Water Use – Water Use with New Product = 16.5 gal – 8.25 gal
= **8.25 gallons per occurrence with new product**

STEP 5: COMMUNICATE WITH CARE

Save up to 8 gallons per wash with Product Y* (*Amongst consumers who wash the dishes for at least 11 minutes with a running faucet; Follow product directions and use water only to rinse after cleaning)

A graphic to simply "Spray, Wipe, Rinse" was also prominently added to the packaging as extra encouragement to the consumer to begin with dry dishes.

- ✔ **CP1: Relatable:** Even though the observed water savings in the study were estimated as a reduction of time the sink was running, applying the assumed flow rate to determine the savings further helped to demonstrate more tangible potential savings.
- ✔ **CP2: Consistent:** Consumers vary in how many times per day or week they may cook at home and wash dishes, but the water reduction observed in the study was consistent during each wash occasion, so potential savings is consistently expressed as a "per wash" savings is more appropriate rather than a daily or weekly estimate, which further exacerbates potential differences across consumer behaviors.
- ✔ **CP3: Transparent:** Multiple kitchen faucet flow rates were available from external sources, but some data required an internal study. The assumptions are included in the product claim.
- ✔ **CP4: Instructive:** The best outcome for savings occurred when consumers were reminded of the directions, so a prominently placed and easy-to-understand set of directions was added to the packaging.
- ✔ **CP5: Conservative:** While there are multiple kitchen faucet flow rates, the most conservative flow rate was selected. Estimates from studies were rounded down, rather than up, even though there is some indication that time spent at the kitchen sink is underreported by consumers.

Case Study: Spray Hand Dishwashing Detergent

INPUT DATA AND SOURCES

VARIABLE	VALUE	SUPPORT
Sink Flow Rate (gallons per minute)	1.5 gal/min	U.S. Federal standard for for kitchen sink flow rate is 2.2 gallons/minute. Several options for high efficiency faucets are available in the market. Many of the available high efficiency faucets are rated at 1.5-1.8 gallons/minute. To be conservative, the lowest value of 1.5 gallons/minute was selected.
Minutes at Sink	11 min	Internal company study supports that more than half of consumers spend at least 11 minutes at the sink after a meal.

ASSUMPTIONS

- There is wide variability in how often consumers may wish dishes in the kitchen sink during a given time period.
- The 11 minutes spent at the sink is a consistent average across populations for one session at the sink washing dishes regardless of how often this task occurs in a household.
- For the baseline water use estimation, assumes water is running at a consistent rate for the entire time consumers are at the sink.

B.2
Products Requiring Less Water

A more efficient consumer product replaces a less efficient product.

Case Study:
2-in-1 Shampoo and Conditioner Product

A company has developed a 2-in-1 format they are calling Product Z that combines the performance and benefits of their existing shampoo and conditioner products into a single formula. Switching to this product, consumers will be able to lather and rinse without needing an additional step which can result in less time in the shower and therefore potential water savings.

Case Study: 2-in-1 Shampoo and Conditioner Product

STEP 1: DETERMINE MECHANISM FOR WATER SAVINGS

This product combines two formerly separate steps requiring water into one step requiring water. The mechanism best fits this scenario “products that require less water than traditional products” (i.e., separate shampoo and conditioner that needed to be applied and rinsed separately).

STEP 2: BASELINE WATER USE

Average shampoo time is 1 minute, and conditioner time is 2.5 minutes according to a robust internal company study of consumer habits. Assuming an average shower flow rate of 2.1 gallons/min according to REU2016 data is selected, resulting in total water used for both steps is 7.35 gallons.

Baseline water use
= Shampoo and conditioner task time × average shower flow rate = (1 min + 2.5 min) × (2.1 gal/min)
= 7.35 gal per use of separate shampoo and conditioner

STEP 3: WATER USE WITH PRODUCT

Based on company consumer product testing for Product Z, the average time using the 2-in-1 product was 1 minute (which happens to be the same amount of time to use shampoo alone). This means estimated water use with the 2-in-1 product is estimated to be 2.1 gallons per use.

Water use with new product
= 2-in-1 product task time × average shower flow rate = (1 min) x (2.1 gal/min)
= **2.1 gal per use of combined 2-in-1 shampoo and conditioner**

STEP 4: ESTIMATE POTENTIAL WATER SAVINGS

The estimated potential time saved in the shower is 2.5 minutes which means total potential savings is estimated to be 5.25 gallons (which is also all water needed to condition hair in a separate step).

Potential water savings
= Water using two separate products - Water using 2-in-1 product
= 7.35 gallons for separate products - 2.1 gallons for combined product
= 5.25 gallons saved each shower using the new product

The claims manager also assumes that since the average frequency of showers is 0.69 times per person per day or 4.83 times a week, according to REU2016 data, and the new product replaces the use of two separate shampoo and conditioner steps in all showers, then the average weekly potential water savings is estimated to be 25.3 gallons a week, or 1,318 gallons per year.

Number of product replacement occurences × Water saved per switch to Product Z
= 4.83 showers/week × 5.25 gallons saved
= **25.3 gallons saved/week = 1,318 gallons saved/year**

Potential water savings per year = 25.3 gallons saved/week x 52 weeks
= **1,315.6 gallons saved/year**

To explore a new way to communicate potential savings, the company also estimates the water savings per bottle. Upon further examining the internal consumer product testing data for Product Z, 97% of the consumers were able to get between 25 and 35 washes out of every bottle.

Potential water savings per bottle = Number of uses per bottle × Water saved per use of Product Z
Low end of range = 25 uses/bottle × 5.25 gallons saved = **131.25 gallons saved/bottle**
High end of range = 35 uses/bottle × 5.25 gallons saved = **183.75 gallons saved/bottle**

Case Study: 2-in-1 Shampoo and Conditioner Product

STEP 5: COMMUNICATE WITH CARE

Ads for the product run with the text, “Save a step and you can save 5 gallons of water each time you use Product Z’s new 2-in-1 formula.” The video version of the ad shows two side-by-side videos of elapsed time and a water tank emptying while cleaning and conditioning hair using the 2-in-1 versus two separate products. The ad ends with the consumer sporting healthy hair watering vegetables in the community garden with a labeled 5-gallon bucket to conceptualize the amount saved.

The savings per bottle estimates will be scaled appropriately to the three different sizes of bottles to be released. The claims manager opts to use the lower number of the range and rounds it down to remain conservative. A thermometer-style product level window is added to the side of the bottle to indicate how much water has been saved as the product is used up.

The Product Z team also extrapolates that the national potential annual savings could be approximately 1,300 gallons a year multiplied by the number of women between 18-50 then multiplied by the market share for this product. They assume that the first adopters of the new product will be their existing consumer base using their brand’s separate shampoo and conditioner. The marketing team is careful about documenting the caveats and assumptions about estimating a national potential savings, and decides this would be difficult to incorporate into product packaging, a 15- or 30-second video ad, or a print ad so they opt to share this information in a longer form blog post about their water sustainability efforts, so they do not have to sacrifice clarity and accuracy due to time or space limitations.

- **CP1: Relatable:** Rather than focusing on time-savings, the marketing team for the product emphasizes the water saved as a result of the time savings.
- **CP2: Consistent:** Even though the savings are communicated in different ways depending on the format, the same assumptions are consistently used.
- **CP3: Transparent:** When properly citing sources, caveats and assumptions for one aspect of the claim did not fit in to desired ad format, the team used a longer blog format for that particular claim that allowed for clearly labeled citations.
- **CP4: Instructive:** The product marketing is clear that spending less time shampooing and conditioning hair through a 2-in-1 formula is what leads to the potential savings.
- **CP5: Conservative:** While the company developed a larger scale claim for their potential market, they did not include vague or misleading information about water savings on the product or smaller format advertisements. Claims on the product and ads only focus on more tangible estimates in the form of a per-shower or per-bottle savings.

INPUT DATA AND SOURCES

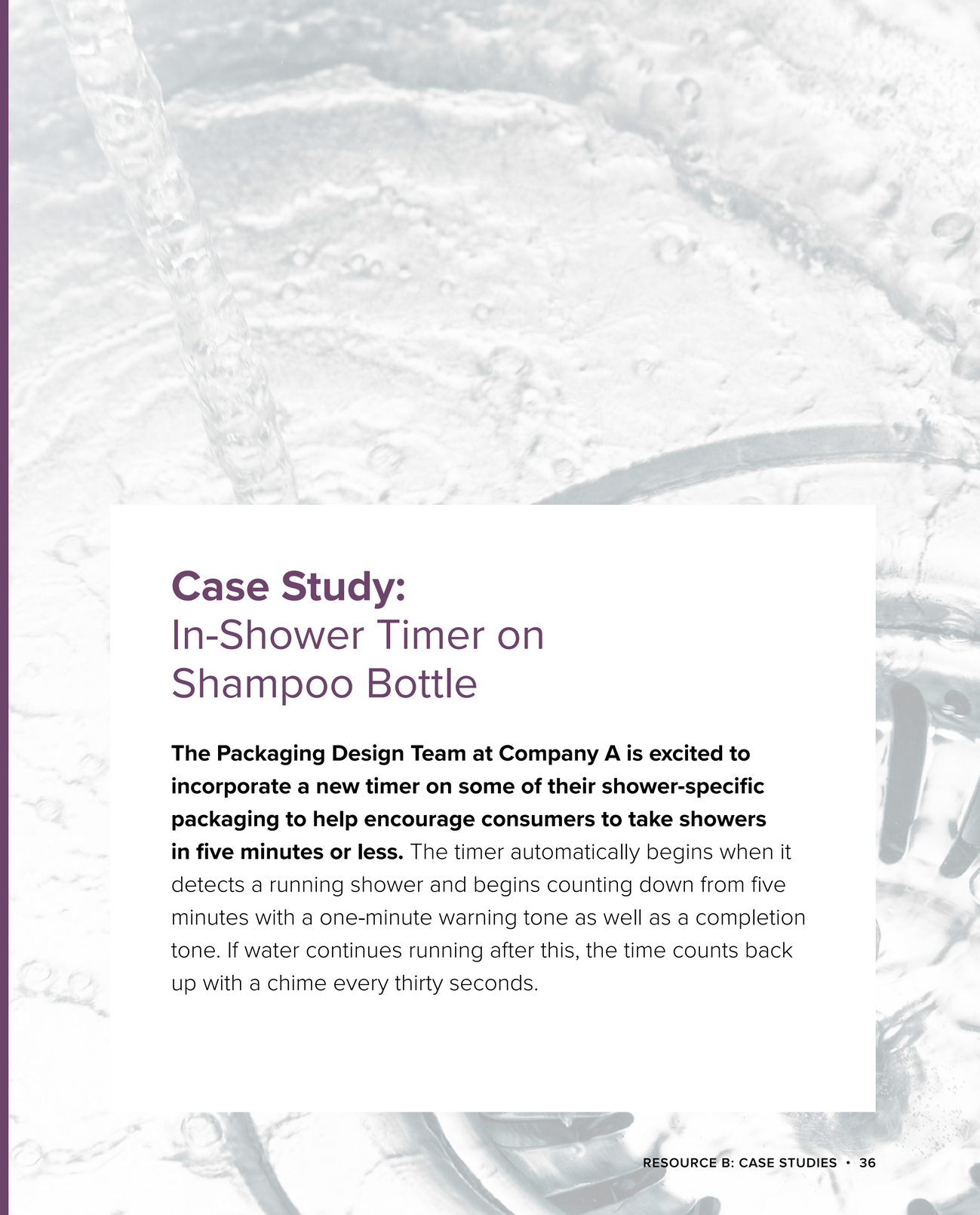
VARIABLE	VALUE	SUPPORT
Showerhead Flow Rate (gallons/minute)	2.1 gal/ min	REU2016
Minutes Shampooing and Conditioning	3.5 minutes	Robust internal study documenting time consumers spend shampooing and conditioning during the shower process
Average number showers per person per day	0.69 showers	REU2016

ASSUMPTIONS

- Consumer habits study determining one hair wash in the shower per week savings did not contain any unknown confounding variables and that this behavior is consistent over time and through seasons.
- Consumers are not continuing to use a separate conditioner in addition to the 2-in-1 product.
- All consumers switching to the 2-in-1 Product Z switch from a separate shampoo/conditioner that requires the same time to apply and rinse both steps as the company’s existing 2-step products.
- All showers taken by consumers in the REU2016 study included hair washing.

B.3
Product Influences Behavior

A consumer product prompts or reminds a consumer to adopt a more efficient behavior.



Case Study:
In-Shower Timer on Shampoo Bottle

The Packaging Design Team at Company A is excited to incorporate a new timer on some of their shower-specific packaging to help encourage consumers to take showers in five minutes or less. The timer automatically begins when it detects a running shower and begins counting down from five minutes with a one-minute warning tone as well as a completion tone. If water continues running after this, the time counts back up with a chime every thirty seconds.

Case Study: In-Shower Timer on Shampoo Bottle

STEP 1: DETERMINE MECHANISM FOR WATER SAVINGS

Product that prompts or reminds a consumer to adopt a more efficient behavior.

STEP 2: BASELINE WATER USE

On average Americans spend 7.8 minutes per shower and showerhead flow rates are approximately 2.1 gallons/minute according to the best available data. The claims manager calculates that an average shower uses 16.38 gallons of water.

Baseline water use
= Average shower duration × shower flow rate = (7.8 min) × (2.1 gal/min) = **16.38 gal per shower**

STEP 3: WATER USE WITH CAMPAIGN

The shower timer created by Company A encourages consumers to complete their shower within 5 minutes. A 5-minute shower uses 10.5 gallons of water.

Water use with campaign
= Shorter shower duration × shower flow rate = (5 min) × (2.1 gal/min) = **10.5 gal per shower**

STEP 4: ESTIMATE POTENTIAL WATER SAVINGS

A consumer taking a 5-minute shower instead of a 7.8 minute shower, saves 2.8 minutes' worth of water usage, which is equal to 5.88 gallons per shower.

Potential water savings = Baseline average shower water use - 5 minute shower water use
= 16.38 gallons - 10.5 gallons
= 5.88 gallons potential savings per shower

STEP 5: COMMUNICATE WITH CARE

The company wants to avoid over-promising or exaggerating the benefits and decides to round down on the estimate and launches a national level campaign called "Do it in Five" that indicates that "You could save 5 gallons of water each time you shower in 5 minutes or less." The branded timer is attached to bottles for the same price as those without. The company also makes it available to anyone in the US for free in exchange for signing up for email marketing.

Note that this example also lends itself well to demonstrating another of the pathways of savings water: an education campaign. The public campaign is another avenue to influence consumers to take shorter showers, not just the timer itself.

- ✔ **CP1: Relatable:** The claim focuses on individual savings potential in terms and units easily understood.
- ✔ **CP2: Consistent:** The campaigns emphasize showering in 5 minutes or less rather than mixing the messaging with additional scales or ranges.
- ✔ **CP3: Transparent:** External sources were used for all data assumptions. This element could be improved by ensuring the key assumptions are included in ads and other places the claim is used.
- ✔ **CP4: Instructive:** The claim includes clear directions about how to achieve the savings. This further makes it transparent that the potential savings don't apply for consumers who already take showers that are 5 minutes or shorter.
- ✔ **CP5: Conservative:** The claim focuses on the individual level vs. global scale and is rounded down. The claims do not over promise, though there are likely consumers who take longer showers and/or have higher flow rate showerheads and could theoretically save more water than 5 gallons each time then scale back to 5-minute shower.

Case Study: In-Shower Timer on Shampoo Bottle

INPUT DATA AND SOURCES

VARIABLE	VALUE	SUPPORT
Showerhead flow rate (gallons/minute)	2.1 gal/ min	REU2016
Average number showers per person per day	0.69 showers	REU2016
Average shower length	7.8 minutes	REU2016

ASSUMPTIONS

- ✔ The timer does not have an unintended consequence of influencing consumers taking showers shorter than 5 minutes to increase their shower length up to 5 minutes (or more).

B.4
Education Campaign

Consumer education prompts or reminds a consumer to adopt a more efficient behavior.

Case Study:
Toothbrushes/Toothpaste Product Campaign

Brand B recognizes that some consumers leave the faucet running for the entire duration of brushing their teeth.
The Brand B marketing team prepares an ad campaign aimed at reminding consumers to turn off the faucet while they are brushing to prevent unnecessary water waste. The campaign will include print and digital ads, reminders on packaging, messaging and rewards embedded in connected products, and the commissioning of a social media dance by a popular influencer.

Case Study: Toothbrushes/Toothpaste Product Campaign

STEP 1: DETERMINE MECHANISM FOR WATER SAVINGS

Education campaign that motivates change in habit to reduce water use since no product innovations have occurred that would also influence water savings.

STEP 2: BASELINE WATER USE

The U.S. Federal maximum water volume is 2.2 gallons per minute for bathroom faucets, and the REU2016 data suggests average flow volume for bathroom faucets is 2.2 gallons per minute. Currently, the WaterSense specification for bathroom faucets is 1.5 gallons per minute. To be conservative and recognize some consumers may not turn the faucet on to full volume, Brand B selects the high-efficiency flow rate of 1.5 gallons per minute. The claims manager further assumes consumers brush twice a day for two minutes per instance, based both on recommendations from external organizations (World Health Organization and the American Dental Association) and confirmed as a widely adopted habit in large company internal studies on habits and behaviors.

Baseline water use = Bathroom faucet flow rate × Duration × Frequency
= 1.5 gal/min × 2 min × 2 brushes/day = **6 gal per day**

STEP 3: WATER USE WITH PRODUCT

The campaign will prompt customers to turn off the faucet completely while brushing, leading to 0 gallons (or very close to it) per brushing event. The claims manager assumes that the water used by some consumers to wet the brush before use and to rinse after brushing is such a small percentage of the total water consumption relative to the water running down the drain from an open faucet during brushing and does not consider it in the calculation, though this is likely somewhat addressed by using a more conservative estimate (see Step 5). This also makes the message more straightforward for consumers.

Water use with campaign = 0 gallons per brushing occurrence with faucet turned off

STEP 4: ESTIMATE POTENTIAL WATER SAVINGS

Total water savings if consumers turn off the faucet during brushing each day is 6 gallons per person per day. This is 2,190 gallons of potential savings per person per year.

Potential water savings = Baseline water use - Water use with campaign = 6 gal - 0 gal = **6 gal per day**

A company internal consumer habit survey finds that **35%** of the adult population already turn off the faucet while they brush their teeth. This result is based on self-reported habits, which may not fully reflect actual behavior. So, any estimated savings, especially those that scale up to larger or national estimates of potential savings, should include the following qualifier: 35% of adults already turn off the faucet while brushing.

Potential US adult population water savings
= Individual daily savings potential × 365 days x ((1 - % with exisiting desired habit) × US Adult Population)
= 2,190 gal/yr X ((1 - 0.35) × 250 million
= 2,190 gal/yr × (65% × 250 million) = **355,875,000,000 gal/yr**

Case Study: Toothbrushes/Toothpaste Product Campaign

STEP 5: COMMUNICATE WITH CARE

If you turn off the faucet while brushing your teeth with Brand B, then you can save up to 6 gallons of water every day when brushing 2x a day. * (*based on a high-efficiency WaterSense bathroom faucet and on commonly recommended 2 minutes to brush teeth.) This same copy is used on outer product packaging, print and digital ads, and it pops up as in-app reminder text when brushing using one of Brand B's iOS or Android brushing guidance apps.

A social media campaign is commissioned which includes a shot of the individual looking down at their sink while brushing, requiring the phone to be at the bottom of the sink, underscoring that the consumer must turn off the faucet to save water.

All references made to the national savings potential from this habit change are used in non-ad formats such as blog posts, journal papers, and investor reports when there is more space to explain the potential of habit change within a population. The national potential savings estimate is also rounded down to more conservatively say "could save over 300 billion gallons per year". Each of these formats includes footnotes, citations, and hyperlinks to public data. These statements are formatted as "if-then" statements to show the collective possibility.

- **CP1: Relatable:** The ads provide clear directions that turning off the faucet is the pathway for the consumer to save water. The ad includes common brushing guidance to avoid confusion with other brushing-related ads.
- **CP2: Consistent:** Even though the team calculated a national potential savings, all consumer-facing ads kept the messaging to the "up to 6 gallons" individual savings potential.
- **CP3: Transparent:** The ad includes information about how the potential savings were estimated. The national estimate was only discussed in a longer form to enable the ability to clearly show the data and assumptions used to estimate the potential water savings claim.
- **CP4: Instructive:** The ads clearly communicate that to save water the consumer needs to turn off the faucet. The successful completion of the social media dance (including the video's angle) is only possible if the faucet is off.
- **CP5: Conservative:** Clear if-than statements are used to underscore that the collective savings are only possible if the changed behavior occurs. The claims manager using language like "up to" to avoid over promising and remain conservative. Using a round, general number for the national scale estimates is better as a more unique number, like 356 billion, conveys a more detailed measurement which can give a false sense of accuracy or precision of the estimate.

INPUT DATA AND SOURCES

INPUT	VALUE	SUPPORT
Flow Rate	2.2 gallons per minute	US EPA WaterSense and REU2016
Number of brushes per day	2 times/day	Recommended by WHO and ADA[34] that consumers brush twice daily. Habit adoption confirmed by a Brand B consumer habits study
Time brushing during each occurrence	2 minutes	Average duration per brushing occurrence observed across 3000+ study participants in a Brand B consumer study
US adults who already turn off tap while brushing	35%	Brand B consumer survey placed across a subset of US adults
US Adult Population	250,000,000 (age 18+)	US Census Bureau

ASSUMPTIONS

- There is not a significant difference in brushing time between those who keep the faucet turned off and those who keep it on.
- The consumers who already keep the faucet turned off continue to maintain their habit.

B.4
Education Campaign

Consumer education prompts or reminds a consumer to adopt a more efficient behavior.

EDUCATION CAMPAIGN

Case Study:
Dishwashing Product

Most dishwashers are water efficient compared to washing dishes by hand. Company C, however, discovers that many Americans still believe using their automatic dishwasher uses more water than washing dishes by hand at the sink. In fact, they find that 20% of households with a dishwasher do not use them at all. With this in mind, the Company C team sets out to educate these consumers on the potential to save water by using their dishwasher. The team considered various ways to approach the campaign and leveraged information from the company's internal habits and practices studies and discovered that consumers reported that having an empty sink made them feel accomplished at the end of the day. Further, they felt guilty about running the dishwasher because of the perceived high-water usage associated with it. As a result, Company C decides to focus the campaign on educating consumers on the potential water savings of dishwashers and the target audience of households who have a dishwasher but do not use it. The campaign message encourages these households to try to incorporate just one use of their dishwasher per week among the non-user households who already have a dishwasher.

Case Study: Dishwashing Product

STEP 1: DETERMINE MECHANISM FOR WATER SAVINGS

An education campaign designed to shift behavior to reduce water use by switching from handwashing dishes to using the automatic dishwasher just once per week.

STEP 2: BASELINE WATER USE

The U.S. Federal maximum water volume is 2.2 gallons per minute for kitchen faucets. The company claims team leverages a previous large company study that indicates more than half of consumers spend at least 11 minutes hand washing at the sink per meal. These same consumers reported eating about 60% or 12.6 meals at home per week (assuming 3 meals per day). To be more conservative with the estimates, the team rounded down and used 12 meals at home per week. Since the campaign is targeting non-users of the appliance, it is assumed that all dishes in the household are hand washed.

Baseline water use = (Handwashing time × Kitchen faucet flow rate) × frequency
= (11 min/meal × 2.2 gal/min) × 12 meals/week
= 290.4 gal/week

STEP 3: WATER USE WITH CAMPAIGN

The federal standard for standard dishwashers is a maximum of 5 gallons per cycle and, in general, EnergyStar dishwashers must use 3.2 or fewer gallons per cycle for standard size dishwashers. The claims team decides to estimate potential water savings based on the federal maximum, to be more conservative. They also assume that one weekly dishwasher load will replace two handwashing occurrences for the household, which assumes consumers will wait until the dishwasher is full or nearly full before running their weekly load.

Water use of once weekly dishwasher use replacing two handwashing occurrences
= (Dishwasher Cycle Volume × Frequency) + (Handwashing task time × Kitchen faucet flow rate) × New reduced frequency of handwashing
= (5 gal × 1 load/week) + (11 min/meal × 2.2 gal/min) × 10 meals/week
= 247 gal/week

STEP 4: ESTIMATE POTENTIAL WATER SAVINGS

The potential weekly water savings from using a dishwasher vs. handwashing for two meals per week is the difference between the baseline water use estimates and the estimated water use of consumers who change their handwashing habits based on the campaign messaging to estimate the potential water savings.

Potential water savings = Baseline water use - Water use with campaign
= 290.4 gal/week - 247 gal/week
= 43.4 gal\week

STEP 5: COMMUNICATE WITH CARE

The team runs print and targeted digital ads, a 30-second video spot, and in-store displays, and each uses the same language and prominently shown footnotes. The potential savings estimate is rounded down to 40 gallons to be both more memorable and more conservative.

Running your dishwasher once more each week* instead of washing dishes by hand can save you up to 40 gallons of water a week.** (*with a standard dishwasher; **vs. washing dishes at a running sink 12 times a week for 11 minutes each time, which may be common in households that never use their dishwasher).

- ✔ **CP1: Relatable:** The team communicates potential savings in weekly terms that is understandable to most consumers. The footnote includes the specific numbers and assumptions, while also putting in terms to help the consumer understand if it represents their behavior. The team also includes messaging (not reflected here) that acknowledges the guilt consumers may feel initially while also assuring them that using the dishwasher can be a treat for themselves, and the planet.
- ✔ **CP2: Consistent:** The same units, messages, and footnotes were used across the different versions of the campaign.
- ✔ **CP3: Transparent:** Claims team utilized several credible third-party sources and only used their internal data for values not available elsewhere. This information was presented with the educational campaign.
- ✔ **CP4: Instructive:** The ads direct households on the action to take that can lead to potential water savings.
- ✔ **CP5: Conservative:** The calculations incorporate various elements to create a more conservative estimate including using the higher-efficiency levels for the baseline water usage, the lower efficiency level for the water usage adopting the action communicated through the campaign, rounding the potential savings down, and using a round number to indicate lack of precision with this estimate.

Case Study: Dishwashing Product

INPUT DATA AND SOURCES

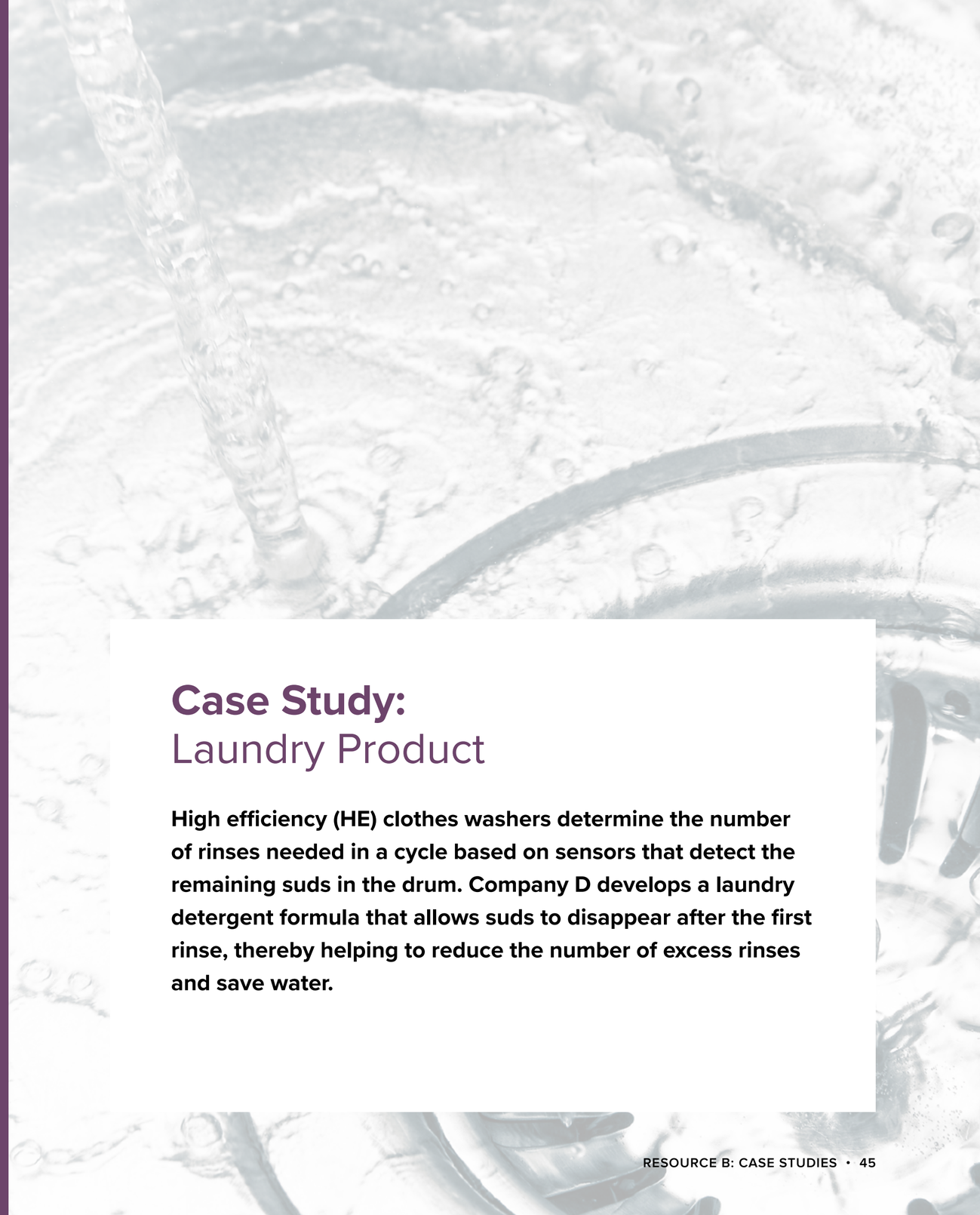
VARIABLE	VALUE	SUPPORT
Kitchen Faucet Flow Rate	2.2 gal per min	U.S. Federal standard for kitchen faucet flow rate is 2.2gallons/minute.
Time spent washing dishes at the sink	11 mins per meal	Internal company study supports that more than half of consumers spend at least 11 minutes at the sink after a meal.
Hand Wash frequency	12 times a week (meals/week)	Internal company study found that 78% of consumers eat 60% of meals at home (12.6 meals at home/week out of 21 meals). 12 meals/week was used to be more conservative.
Automatic dishwasher water usage	5 gallons per cycle	Federal maximum gallons per dishwasher cycle for standard dishwashers.
Prevalence of household dishwashers	20% of households with a dishwasher never use it	US Energy Information Administration Residential Energy Consumption Survey

ASSUMPTIONS

- ✔ Households will run a full machine once a week, which would contain at least two meals worth of dishes and avoid all handwashing associated with those meals.

B.5
Product Enables Appliance Efficiency

A product may work well in low water conditions—enable an appliance to work more efficiently and/or as intended.



Case Study:
Laundry Product

High efficiency (HE) clothes washers determine the number of rinses needed in a cycle based on sensors that detect the remaining suds in the drum. Company D develops a laundry detergent formula that allows suds to disappear after the first rinse, thereby helping to reduce the number of excess rinses and save water.

Case Study: Laundry Product

STEP 1: DETERMINE MECHANISM FOR WATER SAVINGS

Product enables appliance efficiency since an HE washer will use fewer rinses on a normal wash setting if there are fewer suds that need to be rinsed.

STEP 2: BASELINE WATER USE

Based on an internal study by Company D, it was found that a competitor product uses an average of 24.46 gallons per Normal cycle in an HE washing machine. Based on EnergyStar data, however, standard top-loading high efficiency clothes washing machine uses 19 gallons of water per cycle. The claims team uses this lower volume to be more conservative.

STEP 3: WATER USE WITH CAMPAIGN

The new innovation laundry detergent, Product D, uses an average of 14.40 gallons per Normal cycle in an HE machine by using lower sudsing technologies to enable the machine to run for less time while still achieving an effective clean.

STEP 4: ESTIMATE POTENTIAL WATER SAVINGS

The product is estimated to save an average of 4.6 gallons vs competitor product on the market when clothes are washed in an HE washing machine on the Normal cycle. The claims team rounds down to 4 gallons per cycle to communicate potential water savings.

Potential water savings = Baseline water use - Water use with product
= 19 gal/cycle with a high efficiency clothes washer
- 14.4 gal/cycle with new laundry detergent = **4.6 gal\/cycle**

STEP 5: COMMUNICATE WITH CARE

Company D runs ads claiming that the “Product Can Get Your Clothes Cleaner, Faster” and Product D “can save you up to 4 gallons of water per wash*” (*by eliminating unnecessary rinse cycles). Information and footnotes are included in ads and on the product itself. All potential water savings messaging is combined with information that the product is specifically formulated for HE machines.

- ✔ **CP1: Relatable:** Savings are shown per load and the claim doesn’t require any math for the consumer.
- ✔ **CP2: Consistent:** The savings potential is always shown per load and not scaled up, which could be confusing given each household’s laundry habits vary significantly.
- ✔ **CP3: Transparent:** The message balances providing information without overwhelming consumers, given that some consumers may not fully understand the sophisticated way modern washing machines work. The product is marketed for HE machines using the HE logo which is not brand specific. It was developed by the American Cleaning Institute (ACI) and the US Environmental Protection Agency (EPA) to indicate products made for high efficiency washing machines. Products must meet standards set by the Department of Energy (who oversees the EnergyStar program) and receive approval from the ACI to use the logo.
- ✔ **CP4: Instructive:** The savings can be realized without any additional change in behavior, only it requires the use of Company D’s new product optimized for HE machines, so all of the marketing emphasizes how simple it is to achieve the savings.
- ✔ **CP5: Conservative:** The calculations incorporate various elements to create a more conservative estimate including using the EnergyStar water use for standard high-efficiency washing machines, even though internal data based on studies on a competitor’s product suggests that water use may be higher. The estimated savings per cycle is rounded down.

INPUT DATA AND SOURCES

VARIABLE	VALUE	SUPPORT
Baseline washing machine water use per cycle	19 gallons per cycle	Department of Energy EnergyStar
Washing machine water use per cycle with detergent innovation	14.40 gallons with Product D detergent	Company D internal study comparing water consumption for identically soiled and composed loads on various HE machines on the Normal cycle comparing the Product D detergent and the leading competitor’s detergent.

ASSUMPTIONS

- ✔ The suds sensor on consumer machines is functioning as designed.
- ✔ Consumers are using the appropriate amount of detergent.

Resource C: Communications Principles Examples

This resource section provides practical examples of applying the communication principles outlined in the main body of the document to water-saving claims related to consumer products. These examples draw from real-world observations of packaging, advertising, and brand communications across various product categories.

The examples demonstrate how the five communications principles can enhance the credibility, substance, and clarity of water-saving claims, making them more accessible and understandable for consumers. By showcasing how principles like transparency, relevance, and accuracy can be applied, this resource serves as a guide for manufacturers and marketers to craft meaningful and well-supported water-saving claims.

For reference, the communications principles are:

- **CP1: Relatable:** Consumers should be able to easily understand the potential savings
- **CP2: Consistent:** Units and assumptions should be appropriate in scale and consistently used across communication channels
- **CP3: Transparent:** Best available data should be used and accompanied by clear evidence of objective calculations
- **CP4: Instructive:** The consumer should have a clear understanding of how to use the product to potentially save water
- **CP5: Conservative:** Estimates of total savings should err on the side of underestimating impact and utilize language that reflects the level of uncertainty

CP1: Relatable: Consumers should be able to easily understand the potential savings

BEFORE APPLYING PRINCIPLES	AFTER APPLYING PRINCIPLES	HOW THE APPLICATION OF PRINCIPLES IMPACTED CLAIM
Automatic dish detergent: You can save water by using the dishwasher over washing at the sink.	**Automatic dish detergent:** Two minutes of running the sink uses the same amount of water as running a dishwasher so you'd have to wash all your dishes in under two minutes to be more efficient.	✓ Claim contextualizes the savings with an easily understood alternative rather than just making a bold (but factual) statement.
No-rinse hair product: Using the product as directed could result in a water reduction of "90 seconds per shower."	**No-rinse hair product:** Using the product as directed could result in a water reduction of "90 seconds per shower" and with the bottle size of this particular product packaging that adds up to be "460 liters of water" or the equivalent of the average amount of drinking water for one person over seven months.	✓ The product claim does all of the math for the consumer in the copy rather than assuming a consumer would know the flow rate and understand what that equates to after using a full bottle of the product over time.
Equivalent automatic dish products in the US and the UK: Claim copy is identical for equivalent products across the globe and uses liters; flow data was estimated based on most common global fixture types.	**Equivalent automatic dish products in the US and the UK:** The US product claims a 4-gallon savings in skipping a 2-minute rinse whereas the UK product claims a 12-liter savings by eliminating the same task. Each claim was calculated using the relevant country's fixture flow data.	✓ The units are geographically relevant in each case. Flow rates are determined by country-specific data, where available, as to account for regional differences in fixture adoption globally.
Dry shampoo product: With this product "you can even save a shower or two."	**Dry shampoo product:** With this product "you can even save a shower or two (that's 7-15 minutes of running water or 15-30 gallons) per week for typical consumers."	✓ Added context as to how often a typical consumer may be able to realize the benefit and specific quantity of savings makes this more relatable.
No-rinse hair care product: If every woman in California switched to this type of product, it could save 17 billion liters of water.	**No-rinse hair care product:** If every woman in California switched to this type of product, it could save ~4.5 billion gallons of water.	✓ Claim uses both US geographical references and US measurement units.

CP2: Consistent: Units and assumptions should be appropriate in scale and consistently used across communication channels

BEFORE APPLYING PRINCIPLES	AFTER APPLYING PRINCIPLES	HOW THE APPLICATION OF PRINCIPLES IMPACTED CLAIM
Floor care product: Print and digital ads state the water saved each time the floor is cleaned, however TV ads use water saved per month. Some digital ads assume weekly cleaning, some print assume monthly.	**Floor care product:** Consistently claims an annual water savings for a typical household, keeping volume, units, assumptions, and timeframe the same across channels.	✓ When the claim stays consistent in its assumptions (such as timeframe, units, etc.) across channels (i.e., print, digital, TV, etc.), there is less opportunity for consumer confusion.
Oral care awareness campaign: Ad states that an average American wastes 900 cups of water weekly when letting the sink run while brushing.	**Oral care awareness campaign:** Ad states that an average American wastes 8 gallons of water per day when letting the sink run while brushing.	✓ A more appropriate scale for the volume can be achieved by using larger units and/or shortening the timeframe.

CP3: Transparent: Best available data should be used and accompanied by clear evidence of objective calculations

BEFORE APPLYING PRINCIPLES	AFTER APPLYING PRINCIPLES	HOW THE APPLICATION OF PRINCIPLES IMPACTED CLAIM
No-rinse hair product: Product uses factually accurate claim information on packaging, but underlying sources can only be found within the company's sustainability report.	**No-rinse hair product:** Product uses links and footnotes across various channels (ads, websites, and even on packaging) to help the consumer find additional, detailed information.	✓ The sources and citations are readily available across communication channels and applications so can easily be found by consumers and stakeholders.
Oral care product: Ad claim utilizes an internally conducted survey of 30 consumers for externally available data points.	**Oral care product:** Ad references recently published data from trusted third-party sources such as a country-specific water association and a water partnership program from a well-known and respected government agency.	✓ Available data came from a broadly trusted third party rather than using an internal source or a source with questionable data.
Oral care product: Ad claim utilizes an internally conducted survey of 30 consumers for data points not externally available and gives no indication as to the scientific rigor of the survey.	**Oral care product:** Ad claim utilizes an internally conducted survey of 30 consumers and includes a QR code for consumers to read about the survey design which indicates evidence of statistical significance.	✓ Since no external data was available, the brand conducted its own scientifically rigorous study and published the study design for the sake of transparency.
Automatic dish product: A product website contains a video saying consumers could save 75 liters a load, and then a header below the video says "save up to 1,000 liters" with the product.	**Automatic dish product:** A product website contains a video saying consumers could save 75 liters a load, and all other content on the site references the same underlying assumptions from the video. References and calculations are clearly articulated.	✓ Website should give context to the consumer on why and how numbers are different, maintain consistent assumptions, and indicate references for data and calculations.

CP4: Instructive: The consumer should have a clear understanding of how to use the product to potentially save water

BEFORE APPLYING PRINCIPLES	AFTER APPLYING PRINCIPLES	HOW THE APPLICATION OF PRINCIPLES IMPACTED CLAIM
Hand dishwashing soap which doesn't require a pre-wetted surface: Packaging is identical to the previous version of the product that required a pre-rinse and contains no instructions for use though the new ads claim it can save you water.	**Hand dishwashing soap which doesn't require a pre-wetted surface:** Consumers are encouraged on pack and in ads to simply, "Spray, wipe, rinse" and lets the consumer know that by doing so they can save the specified amount of water claimed and cited.	✓ Directions for use are clear and simple and have been modified to include new directions that account for the innovation while also connecting this action to the claim of water savings.
No-rinse hair care product: Web ads and packaging tout this as a no-rinse product but assume the consumers are using it while the shower off so do not include directions specifying that.	**No-rinse hair care product:** On-package messages as well as web ads that remind consumers to "turn off the shower and apply on damp hair" in order to save the water claimed per pack.	✓ Since the water savings only happens with a consumer action, the directions clearly specify the needed action across messages and do not assume the consumer will automatically change the habit with the new product.
Clothing refreshing spray: Ads and packaging only talk about the scent duration and ability to eliminate body odors on clothes. The product makes vague water savings claims elsewhere in ads.	**Clothing refreshing spray:** Ads tell consumers to use the product to "wear [the garment] one more time" before washing in addition to touting scent and odor elimination benefits. The product quantifies the water savings that can result from the product if used as directed.	✓ The messaging encourages the desired behavior to realize the water savings benefit the product enables.
Premium automatic dishwasher product: The package includes indications that it can be used on any cycle in the fine print of the product description online only.	**Premium automatic dishwasher product:** Has messaging on the packaging to clearly let consumers know the product can be effective in a quick-wash dishwasher cycle which saves a specific claimed amount of water per load.	✓ The directions are in an easy-to-find location on the package and help consumers understand that the product enables a savings realized through a more efficient wash setting available on most machines.
Hand-washing product: Back label of the product has an icon that says, "save water" but does not indicate how the consumer could achieve this.	**Hand-washing product:** Back label of the product has an icon that says, "save water" and reminds consumers in the directions they can lather without the tap running. Packaging also mentions their new fast-rinse technology.	✓ Informs the consumer how this specific product enables water savings and what action they as the consumer can do too rather than only using a generic message to save water.
Clothing refreshing spray: A claim on the product bottle says it is made with only 0.3% of the water used in a normal load of laundry and instructs the consumer if they buy this, the consumer is saving water.	**Clothing refreshing spray:** Packaging includes a claim communicating to the consumer that the product is manufactured using 80% less water than the traditional product.	✓ Keeps upstream (water intensity in manufacturing) and downstream (consumer water use) benefits clear and separate for the consumer to avoid confusion.

CP5: Conservative: Estimates of total savings should err on the side of underestimating impact and utilize language that reflects the level of uncertainty

BEFORE APPLYING PRINCIPLES	AFTER APPLYING PRINCIPLES	HOW THE APPLICATION OF PRINCIPLES IMPACTED CLAIM
US-specific floor care product: Indicates an average household's water savings when using the product over alternatives that require an additional bucket of water to use and then estimates how many buckets of water are being filled anywhere in the world per minute using the alternative; uses this result as the potential water savings.	**US-specific floor care product:** Indicates both an average household's water savings when using the product over alternatives and quantifies potential savings based on how many consumers have reasonable access to purchase and use that product.	✓ The language clearly references product access (i.e., number of consumers who could purchase in their market) and does not assume or state with certainty that every consumer will adopt. The claim does not extrapolate a total water savings potential by combining these data points.
Clothing refresher spray: A blog post quantifies a total potential water savings when every person in the US does one less laundry load per month.	**Clothing refresher spray:** A blog post quantifies a total potential water savings, if every family in the US did one less laundry load per month.	✓ Clear cause-effect type of statement with a reasonable and relatable workload amount. The hypothetical also factors in that laundry is more typically a household/family task rather than a savings that would be at an individual level.
Low foam toothpaste product: Packaging claims the product formula foams less so you use less rinse water, and you're helping us save 1.2 billion liters of water every year.	**Low foam toothpaste product:** Packaging claims the product formula foams less so you use less rinse water. Based on sales last year, and assuming each use of the product saves a cup of water, that could add up to a savings of 1.2 billion liters last year alone.	✓ There are clear math steps, assumptions about behavior adoption predicted, uses conservative language like "could", and specifies that this is based on specific product sales.
Automatic dish product: Ad claims the product saves a set amount per load and collectively the country saves a set amount in a year.	**Automatic dish product:** Ad claims the product could save up to a set amount of water per load if consumers use the quick cycle, and says that if every regular cycle was switched to quick, the total water savings in the country could be achieved.	✓ Adding more tempered language to the amount of water saved and clarity about what assumptions must be true to realize both the individual and collective savings gives a more reasonable expectation of the savings potential.

Note: Examples throughout this document were inspired by real-world claims, but do not necessarily reflect real claims in the marketplace today.

Endnotes

1. Readers may also find the The Federal Trade Commission reports and documents related to their views of environmental marketing claims helpful. Their topics are complementary and span carbon offsets, compostible claims, free-of claims, non-toxic claims and more. Environmentally Friendly Products: FTC's Green Guides: https://www.ftc.gov/news-events/topics/truth-advertising/green-guides

2. Note that there are many other definitions and contexts for the term "claim". The definition here is specific to the context of this guidance. It is different from other sustainability-focused claims that may be related to a standard or certification process where there is a defined standard and a product or service has been verified to be incompliance with that standard, for example, the EPA WaterSense product standards.

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5. https://sustainabledevelopment.un.org/SDG6

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7. Science Based Targets Network. https://sciencebasedtargets.org/

8. National Centers for Environmental Information Monthly Climate Reports: Annual 2022 Drought Report. https://www.ncei.noaa.gov/access/monitoring/monthly-report/drought/202213#overview

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Advancing Sustainability through Household Consumer Products: Guidance and Insights for Estimating and Communicating Water Savings

ALLIANCE FOR WATER EFFICIENCY

The Alliance for Water Efficiency (AWE) is a nonprofit organization dedicated to the efficient and sustainable use of water. AWE is driven by the belief that using water efficiently saves money, preserves the environment, and helps communities thrive. AWE advocates for water efficient products and programs, and provides information and assistance on water conservation efforts. AWE works with more than 500 member organizations, providing benefit to water utilities, business and industry, government agencies, environmental and energy advocates, universities, and consumers.

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