amazon | sustainability

# Water Positive Methodology

## Introduction

As part of our goal to operate more sustainably, Amazon Web Services (AWS) is committed to returning more water to communities and the environment than we use in our global operations—that is to be *water positive* for these operations. The methodology we outline here governs how we implement our water positive goal, including details on how we select, assess, and manage replenishment projects.

## Our Approach

AWS employs four strategies to meet our water positive goal, listed below. Our first three strategies focus on minimizing water-related impacts from our facilities, while the fourth involves investing in replenishment projects. We prioritize minimizing water impacts when feasible.

1. **Sustainable water sources:** Amazon uses sustainable water sources such as recycled water and rainwater for building operations wherever possible. Recycled water is treated wastewater and can typically only be used for a limited set of purposes such as irrigation and industrial use. By using recycled water, we preserve higher-quality drinking water for communities and the environment. Rainwater harvesting not only minimizes our demands on community water resources but also reduces negative impacts from stormwater runoff, which is a leading source of water pollution globally.

2. **Efficiency:** Amazon strives to minimize water withdrawals through efficient water infrastructure and elimination of water waste. AWS is a public cloud leader in water usage effectiveness (WUE), measured as the volume of water withdrawn per kWh of electrical load within a data center. Our strategies include using real-time water use data to identify leaks, piloting new treatment technologies, and exploring a range of operational changes to further improve efficiency.

3. **Water reuse:** Within our data center operations, we circulate water through our cooling systems as many times as practical, but eventually need to replace it with new water. The spent cooling water can continue to be used for other purposes such as irrigation. We only count water reuse toward the water positive goal where water can be reused without additional third-party treatment. For example, in our Eastern Oregon region, we make our cooling water available to farmers for direct reuse in irrigation of crops like alfalfa, soybeans, and wheat. We do not count spent cooling water toward the water positive goal if it is directed to a wastewater treatment plant.

4. **Replenishment:** Amazon supports replenishment projects that deliver water back to the communities and ecosystems where we operate after the first three strategies have been evaluated. Broadly, replenishment includes watershed restoration; water, sanitation and hygiene (WASH); and water efficiency such as leakage reduction and irrigation optimization.

## Measuring Our Progress Toward Water Positive

We calculate progress toward our water positive goal as follows:

$$\text{Water Positive \%} = \frac{\text{Reused Water + Water from Replenishment}}{\text{Total Water Withdrawal – Water from Sustainable Sources}} \text{ X } 100$$

- **Reused Water:** The annual volume of water sent directly to third parties for reuse without additional third-party treatment.
- **Water from Replenishment:** The annual volume of water returned to communities and ecosystems through projects funded by Amazon in line with the replenishment standards detailed below.
- **Total Water Withdrawal:** The total annual volume of water withdrawn for use in our in-scope facilities. Water efficiency improvements are reflected in a lower volume of water withdrawal.
- **Water from Sustainable Sources:** The annual volume of water withdrawals from recycled water and on-site rainwater harvesting systems.

If the Water Positive % is at or less than 100%, we need to do more to reach a water positive goal. If the Water Positive % is greater than 100%, that means we're returning more water to the community than we're using and have met our water positive goal. We will assess and report our progress toward the goal annually and strive to be water positive for our 2030 operations.

### Geographies

AWS will be water positive for direct operations including leased, owned, and colocation data centers both (1) at the global level and (2) within every water-scarce basin where AWS withdraws more than 10 million gallons of water per year, which is the equivalent of approximately 100 U.S. households. AWS may support replenishment in non-water stressed basins recognizing opportunities exist to support water resources in every watershed. Water-scarce regions are designated based on the Water Stress score in the World Resource Institute's Aqueduct Water Risk Atlas, although we classify some additional regions as water-scarce based on our experience in the region. Within Aqueduct, water stress is delineated at HydroBASINS' level 6 hydrological sub-basin resolution.

### Assurance

To ensure transparency in how we meet the AWS water positive goal, we have two levels of review and verification: project-level audits and program-level assurance. Third-party experts audit replenishment project benefits and performance at the start, following completion, and periodically during the life of the project. At the program level, AWS works with a trusted third-party assurance expert each year to validate the claims we make about progress toward the water positive goal.

## Replenishment Program Governance

AWS follows the standards for developing, implementing, quantifying, maintaining, and monitoring replenishment projects as outlined in the Volumetric Water Benefit Accounting (VWBA) guide. A full list of replenishment projects funded by Amazon to date is available on our water stewardship webpage.

### Selection criteria

We use the following criteria to assess and select replenishment projects for funding:

- **Hydrologically connected to operations:** Amazon prioritizes replenishment projects that are close to where we withdraw water. This means prioritizing projects within the Hydrobasin Level 7 boundary where our facilities are located or from which they withdraw water. In certain cases, we may expand that to the Hydrobasin Level 5 boundary where closer projects are not reasonably available, especially where an upstream watershed restoration project will have downstream benefits within the target subbasin. For WASH projects, we prioritize opportunities that drive positive impact within the municipalities where our facilities are located. If WASH needs are greater in outlying rural areas, we expand our boundaries to ensure we can provide a more meaningful impact to the community.

- **Need-based:** Within our replenishment portfolio, we aim to address the specific needs of a given watershed through tailored solutions. In some cases, this may involve increasing the total volume of water available through projects like groundwater recharge. In other cases, it could involve improving water quality or expanding water access. There is no one-size-fits-all solution. We use a combination of data and input from local stakeholders to determine which projects will deliver the greatest benefit to the community and ecosystems surrounding our operations.

- **Quantifiable:** Projects must deliver a reasonably defined quantity of water to a watershed or community. These quantities are validated by third-party experts before AWS makes an investment. In the case of water quality projects, we quantify the volume of water with reductions in pollutant loading, as demonstrated by water quality monitoring where feasible.

- **Additional:** We invest in new projects that would not occur without our support.

- **Cost effective:** We use internal cost benchmarks to evaluate the impact of our investments and with an aim to provide the greatest impact to the community and ecosystem. We adjust those benchmarks as needed to account for regional variations.

- **Innovative:** We work to incorporate innovative technologies, business models, and financing models into our replenishment projects. We seek to elevate the innovations that can bring positive change to the water sector beyond the projects we support.

- **Multi-benefit:** We prioritize projects that have multiple benefits, including biodiversity, carbon mitigation, community green space access, and environmental justice.

- **Delivered by established partner:** We seek partners with an established record of project success in a given region to increase the likelihood our chosen project delivers.

- **Lasting:** We seek projects that deliver volumetric benefits for at least 10 years. Certain projects such as permanent water rights acquisitions may be counted for longer periods. In other cases, we may support projects with shorter-term benefits in order to pilot a concept we would like to scale more broadly if successful.

### Quantifying Project Benefits

Before funding replenishment projects, we receive an estimate of volumetric benefits from a neutral third party based on the methodologies in the VWBA guide. When available, we update pre-project estimates with actual water volumes once projects are complete using one of several approaches:

- **Direct measurement:** We measure the flow of water from a given project by, for example, metering the flow passing through a water pipe.

- **Modeled estimate updated with actual inputs:** For many projects including most nature-based solutions, volumetric benefits can't be directly measured, so we model them using inputs like soil type, slope, and average precipitation. For these projects, we update the pre-project estimates with actual precipitation data on a yearly basis to ensure that volumetric claims are based on available data, and we update projections of future benefits using a 3–5 year rolling average of precipitation levels once a project has sufficient data to do so.

- **Modeled estimate based on conservative assumptions:** For certain project types, we're not able to update pre-project estimates with actual data. For example, where we support connecting homes to piped water supply systems, we wouldn't monitor water flows at each home. In this case, we make conservative assumptions about the water used by each home to ensure the claimed benefits are not overstated.