



## Daily Domestic Water Use

This EnviroAtlas community map estimates the total gallons of water used each day for domestic or residential purposes within each census block group. For this map, domestic or residential water demand includes all indoor and outdoor uses, such as for drinking, bathing, cleaning, landscaping, and pools for primary residences. It includes the demand on both public water distribution systems and self-supplied water from either ground water or surface water sources. It does not include second homes and vacation rentals.

### Why is domestic water use important?

Individuals and communities depend on water resources for a variety of needs and activities, such as drinking, household use, recreation, agriculture, industry, power generation, and transportation. Evaluating demand can provide insight into the delicate balance between water availability and use. Though water appears to be everywhere, it is a finite resource. Overuse within a [watershed](#), from all uses, not just domestic, can lead to unintended consequences, such as water shortages, greater treatment requirements, and higher costs resulting from storage and distribution. In addition to the economic impacts of treating or delivering water, overuse of water resources can impact [ecosystems](#), such as forests and wetlands, and the [ecosystem services](#), or natural benefits, which they provide.

Domestic use is among the most fundamental uses of water resources. Based on United States Geological Survey (USGS) 2010 Water Use data, the average person in the U.S. uses approximately 90 gallons of water a day.<sup>1</sup> Usage varies throughout the year and depends on many factors, such as climate, population density, evolving technologies and practices, conservation efforts, cost, and cultural preferences (e.g., landscaping). The EPA WaterSense Partnership estimates that over 70 percent of daily water usage comes from indoor activities such as flushing the toilet, washing clothes, and bathing.<sup>2</sup>

Natural ecosystems such as wetlands, trees and forests, and water bodies protect the supply and quality of water resources. They ensure that clean and plentiful water is available for drinking, recreation, and aquatic habitat by storing and filtering rainwater, and preventing sediment and contaminants from entering waterways. Natural ecosystems also regulate the flow of water throughout the water systems, by slowly releasing rainwater into the ground or to



waterways. Regulating flows in streams helps protect water quality, aquatic habitat, and water supply in downstream areas. Understanding the demand placed on these systems will help safeguard their ability to continue providing such services.

### How can I use this information?

Evaluating the demand for water within a community is an important part of identifying potential imbalances and trends in supply and demand. Within EnviroAtlas, this map, Daily Domestic Water Use (x1000 gal/day), could be used with other community maps, such as Annual Water Recharge by Tree Cover and Percent Impervious Area, to help gain insight into the community's ability to maintain local availability for self-supplying residents. This map could also be used with maps on stream and lake buffers, or annual change in sediment/nutrients, to help gain insight into possible restoration efforts that would reduce the need for and cost of treatment before consumption.

These data could also be used in conjunction with the national water supply and demand maps in EnviroAtlas to demonstrate the community's water use within local 12-digit [HUCs](#) and to highlight where ecosystems that protect water resources may experience strain, require protection, or benefit from restoration. In areas with significant imbalances or detrimental trends, measures to further understand and alleviate pressure on the water supply could be implemented.

## How were the data for this map created?

For this map, local water use data, reported in gallons used per person per day (GPD), was collected. The GPDs were spatially applied to a map by service provider area, census block maps, block groups, and tracts as applicable. The local water use was then weighted by multiplying it by a distributed population map, known as [dasymeric](#) population data. This technique estimates the number of people in any given area and subsequently the estimated domestic water usage. The weighted water use was summarized by census block group for display.

## What are the limitations of these data?

Water use reporting is complex and has limitations. Available data may be limited and usage varies based on several factors. For example, seasons, short-term weather patterns, and the distribution of single family homes versus multi-family dwellings all impact outdoor water use. Where available data are limited, such as areas primarily supplied by private wells, accessible data are used to provide estimates. Additionally, people routinely cross-report boundaries for activities, such as work or vacation, which also influences results.

## How can I access these data?

EnviroAtlas data can be viewed in the interactive map, accessed through web services, or downloaded. The accompanying metadata per community provides further information regarding the source water use data.

## Where can I get more information?

There are numerous resources on domestic water use and demand; a small selection of these resources is listed below. EPA and USGS have additional resources on their respective websites. Many state agencies also provide detail on their reporting and planning practices. For additional information on the data creation process, access the metadata for the data layer from the drop down menu on the interactive map table of contents and click again on metadata at the bottom of the metadata summary page for more details. To ask specific questions about this map, contact the [EnviroAtlas Team](#).

## Acknowledgments

EnviroAtlas is a collaborative effort by EPA, its contractors, and project partners. Elena Horvath, EPA Student Services Contractor, and Megan Mehaffey, EPA, developed this map for EnviroAtlas. The fact sheet was created by Elena Horvath and Jessica Jahre, EPA Student Services Contractors.

## Selected Publications

1. U.S. Geological Survey. 2010. [Estimated use of water in the United States, 2010](#). Accessed February, 2015.
  2. Environmental Protection Agency. 2008. [Indoor water use in the United States](#). Accessed February, 2015.
- Gibbison, G., and J. Randall. 2006. [The salt water intrusion problem and water conservation practices in southeast Georgia, USA](#). *Water and Environment* 20(4):271–281.
- Hanak, E. 2007. [Finding water for growth: New sources, new tools, new challenges](#). *Journal of the American Water Resources Association* 43(4):1024–1035.
- House-Peters, L., B. Pratt, and H. Chang. 2010. [Effects of urban spatial structure, socio-demographics, and climate on residential water consumption in Hillsboro, Oregon](#). *Journal of the American Water Resources Association* 46(3):461–472.
- Hutson, S., compiler. 2007. [Guidelines for preparation of state water-use estimates for 2005](#). U.S. Geological Survey Techniques and Methods Book 4, Chapter E1.
- Kenney, D., R. Klein, and M. Clark. 2004. [Use and effectiveness of municipal water restrictions during drought in Colorado](#). *Journal of the American Water Resources Association* 40(1):77–87.
- Mayer, A., A. Muñoz-Hernandez. 2009. [Integrated water resources optimization models: An assessment of a multidisciplinary tool for sustainable water resources management strategies](#). *Geography Compass* 3(3):1176–1195.