

The State Of

Rainwater Harvesting

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In The U.S.

Rainwater catchment or rainwater harvesting are catch-all terms for collecting, storing, and later using precipitation from rock out-crops, roofs, and other surfaces. Across the globe, rainwater is used for many purposes, including drinking water, irrigation, aquaculture, air conditioning, groundwater recharge, and fire fighting, and has been for many centuries.

Harvesting rainwater offers many advantages: It conserves municipal and well water; it is free; gravity fed systems conserve energy; it is low in salts and good for plants; and it can reduce flooding and erosion. Rainwater provides an excellent primary, supplementary, or alternative source of water. In terms of quality, it generally falls between groundwater and surface water. Rainwater can be used at multiple scales from residential to commercial and at the neighborhood or community level.

Rainwater Harvesting Policies Vary

Public policy includes rules, regulations, laws, and codes, as well as tools to maintain, create, or change behavior. Backed by judicial authority to prevent injurious actions against the public or those that are contrary to the public good, the ultimate goal of many guidelines is to ensure public safety, to spur economic activity, or both. Water quality fit for human use and recreation is an instance of both protecting public health and valuing ecosystem integrity. The Clean Water Act was an attempt to solve the problem of national water degradation.

The best rainwater harvesting policies protect water as human right, safeguard public health, and promote rainwater use, resource conservation, and sustainability. Effective policy types include: 1) government standards and enforcement, 2) incentive-based policies, and 3) outcome-based policies. Although featuring some combination of all three types may be useful to promote broad participation, it is uncommon to see multiple policy strategies combined.

Ineffective policy trends emerge, too. Prescriptive and restrictive policies may create barriers to implementation. In one example, code specified a particular type of “roof washer,” creating financial and technical barriers. Restrictive policies such as this add expense and technical knowledge and skills to meet code requirements. Another common restrictive code example is the requirement for an engineer’s approval. Some cases do require added expertise and expense but these are rare. Many financial and technical barriers may be reasonably avoided while maintaining safe rainwater use.

All states have multiple codes such as those related to building, electric, plumbing, zoning, and stormwater. Unfortunately, multiple overlapping codes may discourage rainwater-harvesting activities. Some areas require permits and reviews by all the listed code officials (except zoning). Of course the intent is to protect public health and safety. However, the result is sometimes a disconnected, confusing, technically challenging and expensive environment that puts the burden of proof on the homeowner and lends little education. Indeed, this may be opposite their intent. This is one of many poignant examples of unintended consequences. Other challenges include decision makers’ uncertainty in a changing world, the deep level of complexity that policy has attained, the dearth of information, and the lack of intra-governmental communication.

Harvesting Systems Are Growing

Thousands of rainwater harvesting systems are found in the continental U.S. A 1979 study found that 67,000 cisterns existed in the state of Ohio alone. Islands, including Hawaii, Guam, the Caroline Islands, Marshall Islands, Puerto Rico, and the Florida Keys, all support rainwater activities. Mainland states using rainwater domestically include Arizona, California, Florida, Kentucky, Oregon, Pennsylvania, Texas, Virginia, and Washington.

The U.S. Virgin Islands, Bermuda and other Caribbean islands require a “self-sustaining water supply system for new development or expansion.” In the U.S. Virgin Islands, “every new building is required by law to incorporate a cistern to store roof runoff.” Tucson, Arizona, and Santa Fe County, New Mexico, both require the use of rainwater. And, although not “required,” in the mountains above Honolulu, hundreds of households are dependent almost exclusively on rainwater for all domestic purposes including drinking.

Financial incentives are less frequent, but growing. Currently, Texas is leading the way, offering multiple incentives at the local and state levels. Austin, for example, provides a 30 percent subsidy for the cost of cisterns up to \$500 and sells rain barrels below cost. The rebate application also includes assistance with tank sizing as well as information about area suppliers and contractors. Under Austin’s Commercial Incentive Program, “commercial entities may be eligible for as much as a \$40,000 rebate against the cost of installing new equipment and processes to save water and the state provides property and sales tax exemptions for commercial installations.”

Hays County, Texas, provides a \$100 rebate on the application fee and a property tax exemption. In San Antonio, a 50 percent rebate is available for new water-

saving equipment at the commercial scale. Texas supports rainwater-harvesting activities at state and higher education facilities through a task force and code. Finally, the Lone Star State promotes rainwater harvesting with code allowing performance contracting, which allows recuperation of initial investments through savings earned on utility bills. In other words, the water- and energy-conserving measures are expected to pay for themselves within the contracted period.

During the 1970s California encouraged water conservation with the California Water Conservation Tax Law. This law provided tax credits up to \$3,000 for implementation of rainwater, greywater, or combined storage cisterns or other water conservation devices. However, in 1982 the law was repealed. Code language can be found in the states of Texas, Ohio, Oregon, and Washington, and in the cities of Portland and Eugene (Oregon), and Seattle, while Kentucky, Hawaii, Arizona, New Mexico, Washington, West Virginia, Texas, and the U.S. Virgin Islands have guidelines for the practice.

In San Juan County, Washington, the Department of Health and Community Services provides a checklist of what a rainwater harvesting system must include. The State of Washington provides guidelines from the State Building Codes Council. Delaware provides a unique policy that not only encourages rainwater use, but also addresses water availability in times of drought and in a sustainable way. “Water utilities, both public and private, should have adequate supplies of water available, *even in times of drought*, to meet the present and future needs of this state on a continuing and sustainable basis.”

Key Characteristics of Good Policy

When creating public policy, we believe it’s time to ask: What behavior or action do we want to encourage? With respect to rainwater policies this could include safe use of water, conservation of both water and energy, as well as other resources, and the promotion of green building and sustainability. In formulating new policy in this growing sector, we have a unique opportunity to both enhance quality of life and support green business opportunities. When creating new policy, ask yourself if the policy:

- Makes sense from economic, social, and environmental perspectives
- Focuses on end results (outcome based)
- Is easy for the public to understand (written in lay terms; short as possible)
- Is simple for the public to implement (user friendly)
- Is achievable and measurable
- Has been reviewed by actual rainwater harvesting practitioners
- Meets the common sense test
- Includes a way to educate the public and elected officials
- Has a standardized and streamlined application processes

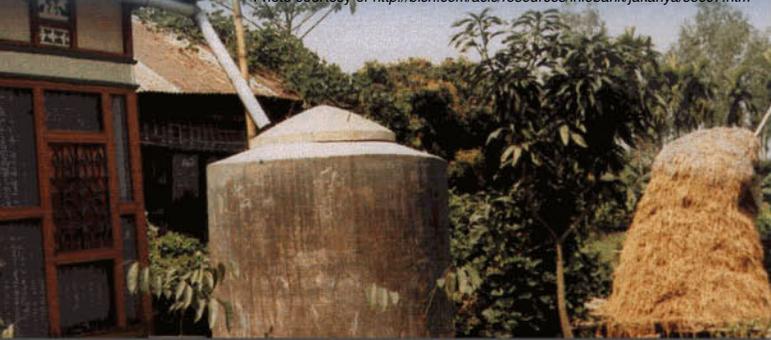


Rainwater Policies Around the World

Outside the U.S., Germany, Australia, Japan, and some island communities lead the way with the quantity, variety, and extent of rainwater use. Australia provides a good example of combining government code with incentive programs, requiring rainwater harvesting while providing key financial incentives to make it a reality. Rainwater harvesting is required in the Indian states of Chennai and Madhya Pradesh.

The results of a Thai rainwater jar program conducted between 1981 and 1991 were “staggering, with around 10 million rainwater jars constructed in just over five years,” according to Nissen and Gould-Petersen. This program spurred local businesses who employed many villagers, which in turn drove the price of a household Thai jars down to about \$20, thus enabling even more households to obtain rainwater jars.

Photo courtesy of <http://bicn.com/acic/resources/infobank/jakariya/sec07.htm>



Other recommendations include providing for rainwater harvesting in state, county, and city codes, financial incentives, and ample education and technical support, including technical training workshops. Formalized code sends the message that rainwater-harvesting activities are okay and can also be educational tools. Education is crucial, but an area often ignored in practice. Technical support and training sessions also guide the public rather than letting them flounder. And, financial incentives may be particularly beneficial for the rural poor in water-stressed areas. Financial support such as grants, subsidies, tax exemptions, revolving funds, and income-producing activities should not be underestimated.

A more sophisticated approach will combine the above suggestions and use multiple strategies in concert that change over time to meet specific contexts.

And finally, definitions are crucial. Avoid classifying rainwater as stormwater, runoff, greywater, or wastewater. It is not. If rainwater is classified incorrectly, additional rules may be invoked, which are not appropriate. The creation of common-sense policies—through a coordinated effort between educational institutions, private industry, government, and the public—will encourage rather than discourage rainwater harvesting.

To review a detailed list of rainwater harvesting codes, visit harvesth20.com. Delaware's code related to rainwater and sustainable water may be found at www.delcode.state.de.us under § 1401, Title 26, Chapter 14, Self-Sufficient Water Supply.

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Doug Pushard founded *HarvestH20.com* as a personal expression of his interest in the subject of water conservation. His writing has appeared in several publications, including the *New York Times*, *Home Power*, *Smart HomeOwner*, *SUN Monthly*, and *Water Today*.