



Policy Options for Implementing Water Harvesting

There are several policy options available to communities who wish to encourage or require water harvesting. Common water harvesting implementation options are outlined below. Though much less research has focused on water harvesting in the Southwest than in wetter parts of the country like Portland, Oregon and Philadelphia, Pennsylvania, several communities in this arid and semi-arid region have adopted policies that encourage or require water harvesting. These Southwest-specific efforts are listed in conjunction with the definitions of each implementation option.

Installation of Demonstration Sites and Pilot Projects (McFadden Park, Sierra Vista, AZ)

Demonstration sites and pilot projects are educational tools that raise awareness about what water harvesting and green infrastructure projects look like and how they function. There are several key components of an effective demonstration project: installing the project in a highly-trafficked, pedestrian area; inclusion of signage at the site; dissemination of information through print media; and the establishment of a citizen advisory committee. Pilot projects can help ensure that water harvesting techniques are viable and effective in a specific location. This is important in convincing potential practitioners that water harvesting is worth pursuing, before they then work to convince the public through demonstration sites. Public parcels offer convenient locations at which to implement demonstration sites and pilot projects. The municipality is likely already a willing participant and these lots generally have a high profile in the community's eye.

Removal of Code Barriers (City of Phoenix, AZ)

The EPA has determined that small-scale, residential use of harvested water for outdoor landscape irrigation generally requires no treatment, and that even larger-scale irrigation uses or non-potable indoor uses such as toilet flushing pose little human health risk with proper treatment. However, plumbing codes often act as stumbling blocks when they are overly cautious in treating rainwater as a potential health hazard. Communities can undergo a process known as "green" or "sustainable" code review, in which planners, citizens, consultants, and others comb through existing codes and other ordinances to identify outdated language that could be blocking implementation of water harvesting either by direct wording, through ambiguity, or through omission. These types of reviews can also identify areas in the code that help promote or encourage water harvesting.

Creation of Stormwater Utility/Fees (Town of Oro Valley, AZ)

Often, a municipality's existing funding structure may not include a space for the creation and maintenance of green infrastructure techniques. Municipalities have found several ways to overcome this type of difficulty, including in-lieu fees, impact fees, and real estate taxes. Another option is the creation of a stormwater utility that can leverage stormwater fees. Stormwater fees can help growing communities pay for new infrastructure, or can assist older communities in retrofitting or repairing existing (and aging) infrastructure. In addition, stormwater fees have been characterized as a more equitable way to deal with a community's stormwater issues than other methods because stormwater fees are generally charged based on a property's contribution to runoff generation—the parcel's amount of impervious surface. Though existing municipal departments can bill and collect a newly-instated stormwater fee, many communities choose instead to create a separate entity, a stormwater utility, to handle those actions. Stormwater fees



can also incentivize the use of water harvesting techniques by rewarding green infrastructure practices with fee reductions or credits.

Provision of Incentives (Tucson Water, Tucson, AZ)

Many types of incentive mechanisms exist, including development incentives, grants, rebates, and awards and recognition programs. Some examples of development incentives that a municipality can implement include fast-tracked development reviews or offering density bonuses for parcels that include water harvesting. Grants and rebates supply up-front funding or reimbursements to property owners that install water harvesting practices. Awards and recognition programs recognize model projects and promote those projects to the public and can even offer monetary prizes in a contest-type setting. Just as with stormwater fees, depending on a community's needs, these incentives can target new construction by wrapping into the development process or they can focus on retrofitting existing development, or even address both new construction and retrofits. The type of incentive a municipality chooses will depend on the overall goals of the program as well as available funding. A municipality can also apply incentive programs very strategically, based on geographic areas most in need of focused stormwater management. Conversely, incentives can also have a very broad geographic focus. In addition, because these types of programs are entirely voluntary, they are generally among the politically easiest water harvesting implementation policies to put in place.

Development of Regulation (City of Tucson, AZ)

Regulations can come in the form of development codes or ordinances. The code or ordinance language can reflect the goals that the community wishes to achieve with the regulations. Thus, one municipality's ordinance might emphasize the use of native plants within stormwater management features, while another might aim for the inclusion of recreational features within those types of features. In many instances, these codes and ordinances are modifications of a community's requirements for stormwater control through the National Pollutant Discharge Elimination System (NPDES). Stormwater rules vary by community, but generally include sizing criteria for retention and detention basins and other types of stormwater infrastructure. Communities can proactively add green infrastructure features to these requirements. Overlay zones, which add additional regulations on top of existing zoning, can also be used to require specific techniques in problem areas. Cities may opt to make rezoning approvals conditional on inclusion of water harvesting features to mitigate the impact of development/redevelopment on site hydrology. Suggested key components of a water harvesting ordinance include the intent, scope, authority, administration, and definitions to be used, as well as clear requirements. Also important are outlining exemptions, variance standards, easements for inspections and maintenance, enforcement of the regulation, as well as the appeal process. Municipalities should consider working with stakeholders to develop regulations. These stakeholders might include planners, citizen groups, and decision-making bodies such as city councils. Using both regulations and incentives can often achieve the best results.



Further reading and resources:

- EPA's "Municipal Handbook" series on a variety to implementation options: http://water.epa.gov/infrastructure/greeninfrastructure/gi_policy.cfm
- McFadden Park demonstration site: http://watershedmg.org/green-streets/projects#McFadden_SV
- Phoenix code review to promote green infrastructure: <https://wrrc.arizona.edu/publications/water-harvesting/city-phoenix-code-review-promote-green-infrastructure-case-study>
- Oro Valley Stormwater Utility: <https://wrrc.arizona.edu/publications/water-harvesting/oro-valley-storm-water-utility-service-fee-proposal>
- Tucson Water rainwater harvesting rebate program: http://cms3.tucsonaz.gov/sites/default/files/water/docs/rwh_brochure_6_28_2012.pdf
- City of Tucson Commercial Water Harvesting Ordinance: <http://cms3.tucsonaz.gov/files/water/docs/rwhordsum.pdf>



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