



**Making the Economic Case for Investing in Healthy Headwaters:
Tools, Policies, Strategies, Partnerships**

Briefing Paper, June 2013

Communities and utilities throughout the West, and nationwide, are increasingly aware of the need to restore and preserve their headwaters landscapes. The story of how [New York City](#) invested in the preservation of its remote Catskills watershed, thus avoiding the need for [billions of dollars](#) in capital costs for new treatment facilities, is only the best-known example.

However, even with climate change projections indicating that headwaters restoration will be one of society's best options to ensure the quality and reliability of water supplies, the economic case for making these investments is not always clear – at either the local level, or for federal and state agencies. Accounting norms, bonding requirements, and budgeting rules often under-value natural capital, or discount it entirely, skewing cost benefit analyses toward built infrastructure at the expense of green. Differing circumstances can lead to widely divergent conclusions about what may be the best economic path, and when to take it.

Thus, Salt Lake City Public Utilities, and smaller utilities such as Eugene Water and Electric Board, have followed New York's path in making the decision to invest significantly in their source watersheds to avoid the much higher costs of additional water treatment. However, a community not facing urgent economic pressure has a more complex calculation to make in determining where and when to spend scarce ratepayer dollars.

Moreover, even when the economic case for headwaters protection is clear, many, if not most, local communities and utilities are unlikely to have the financial wherewithal to restore and/or preserve their source water forests. Partnerships between federal, state, regional and other beneficiaries of the ecosystem services provided by healthy headwaters are often critical to finance the work needed to ensure the resilience of these landscapes over time. The breadth of interests who stand to benefit from healthy and ecologically functioning watersheds is a huge opportunity; but also a significant challenge since these benefits may not always be well aligned.

Demonstration of Avoided Cost

Public utilities across the West are funded primarily by ratepayer dollars and governed by public officials. They are under considerable pressure to produce high quality and reliable water supply while keeping rates and rate increases to a minimum. Investment in capital-intensive infrastructure must therefore demonstrate real value to consumers, as well as to bond investors. This is even more so with “green infrastructure,” where benefits can appear to be less certain or direct, and are difficult to quantify using traditional valuation techniques (see below).

A key tool for making the economic case for downstream investment in upstream source water landscapes is demonstrating that such investment will avoid major and predictable water supply/quality costs resulting from various stressors; fire, climate change, development, toxic pollution, etc. The critical issues for most communities (as well as other potential beneficiaries) in determining whether – and when – to commit dollars to protection of source water landscapes are: (1) the ability to quantify benefits; and (2) determining how the investment compares with other critical needs. How will forest restoration advance water quality or quantity? Will it save money by avoiding harm to existing built infrastructure? What are the likely costs of climate change in the region, and to what extent can healthy headwaters mitigate these? Wildfires are often extremely costly in terms of damage to water supply, but what if the possibility of such impacts appears remote? What if it is someone else’s responsibility to manage the forest to avoid catastrophic fires? How do these nuances figure in to the economic calculation about the benefits of headwaters investment?

Quantifying the avoided cost piece of the equation is complex. A partnership of interested parties has been engaged for several years in one of the better-known avoided cost studies in connection with the Mokelumne Watershed Environmental Benefits Program. The study is an attempt to quantify the benefits of upper watershed restoration treatments, primarily fuel hazard reduction and forest health management, to downstream beneficiaries, and reduce operational costs of energy and water delivery agencies. Boiled down, the question is whether it can be demonstrated that the insurance policy provided by upstream ecological health is likely to be less expensive in the long run than the potential costs associated with the risk of catastrophic fire.

The avoided cost calculus is going to look different in each community. But are there common approaches, transferrable tools, that can be broadly employed? What are the questions that localities, utilities and other downstream beneficiaries need to address to make sound financial

decisions about the costs of healthy headwaters investing compared with the costs such investments could avoid?

Accounting Barriers

For decades, natural resource economists have warned that the ways in which governments analyze the costs and benefits of public sector investments fail to account for the value of natural capital (or “ecosystem services”). See, e.g., [President’s Council of Scientific and Technical Advisors](#) (PDF, 2011). While these issues may seem head-achingly technical, cost accounting is often the fulcrum of decision-making. The ability fully to account for, and accurately reflect, the economic value of Western headwaters cost accounting could have a profound impact on whether and how restoration efforts are able to attract the necessary financial support. A few of the key barriers to accurate accounting for restoration and related infrastructure are listed below.

Principles & Guidelines (P&G)

Drafted in 1983 under the auspices of then-Interior Secretary James Watt, the *Principles & Guidelines for Evaluating Federal Water Projects* has reigned over virtually every dollar of federal water project funding for decades, from dams to levees to wetland restoration. Long criticized for an imbedded bias in favor of built infrastructure over green, or non-structural options, and under-valuing the costs of environmental degradation, the P&G are now undergoing revision in response to Congressional direction in the Water Resources Development Act (WRDA) of 2007, Section 2031. Draft [revisions were released in March 2013](#) that emphasize the value of healthy ecosystems and encourage consideration of green infrastructure solutions. Progress is slow however; apparently a rider to the Continuing Resolution [prevents the Army Corps](#) from actually implementing the new policy. As overarching federal policy, the P&G have considerable potential to shift how natural capital is accounted for and addressed in cost benefit analyses nationwide. It may be worthwhile examining the potential role of the P&G to elevate healthy headwaters considerations throughout the West and beyond.

General Accounting Standards Board (GASB)

Established in 1984, the GASB is an independent organization responsible for setting standards of accounting and financial reporting for state and local governments nationwide. It is the source recognized by governments, the accounting industry and capital markets as the official source of “generally accepted accounting principles” (GAAP), which every public water agency uses in doing their books.

For the most part, GASB is a technical backwater; but its approach to utility accounting is attracting significant attention, due largely to the efforts of Earth Economics and others who have pointed out that the GASB rules do not treat the watershed lands owned and managed by many water agencies as capital; that is, these lands and the services they provide are not [considered to have value under the GASB rules](#) (PDF) in the same way that pipes, filtration facilities, trucks and copy machines do. As Earth Economics points out, the value of watershed land under the GASB rules is limited to the “market value of the raw land plus the timber value of the trees.” The watershed is not treated as an economic asset for the ecosystem services it provides:

Current GASB accounting rules, with their sole focus on historical cost accounting and manmade assets, do not provide an accurate or meaningful picture of water utilities’ assets. Because accounting rules have been developed for built capital, which depreciates, they are historically cost based, meaning the value of the watershed is the original amount paid for the land, in [some cases], in the nineteenth century. These rules do not permit a water utility to adequately account for or invest in its greatest asset: the watershed itself.

-Earth Economics, *How Water Utilities Can Spearhead Natural Capital Accounting*, Solutions (2011)

A working group is now engaged in a long-term effort to improve the GASB accounting rules in a way that fully accounts for the economic value of natural capital, and would allow water agencies to finance watershed restoration and management activities to ensure long-term health and stability of these resources.

Financing Headwaters Protection: Who Should Pay, How to Prioritize, and Integrated Regional Water Management

Finding the funds to pay for the many needed and worthy efforts to restore and protect the critical watersheds of the American West is an ongoing and daunting task. While no clear figure exists (that we have been able to pin down), it is fair to say that billions of federal, state and local dollars have been spent in recent decades on watershed restoration efforts at all levels, many with significant success. But in this time of climate change, the needs overwhelm the resources available.

Addressing the issues outlined above – establishing a clear protocol for evaluating and accounting for the economic benefits of healthy headwaters investments – would likely have very beneficial effects; potentially easing the flow of federal dollars to projects deemed

economically worthy under a revised P&G analysis; allowing water agencies more tools to finance restoration if GASB rules are modified; or leading to more decisions that the green infrastructure provided by headwaters landscapes is the economically preferable alternative as demonstrated by an avoided cost study.

Nevertheless, questions around the selection of specific projects, how they fit in to larger planning efforts, and what the mix of financial responsibility is for them will continue. It is beyond the scope of this paper to address this issue in detail, but for purposes of the Healthy Headwaters Convening, it may be useful to consider California's Integrated Regional Water Management Program (IRWM) as a potential model, or starting point, for helping to make these determinations.

A 2002 state law established a voluntary program under which local projects would be eligible for state bond funding as part of an IRWM Plan. IRWM is essentially a process for coordinating regional water-related projects on a watershed basis. Local agencies are encouraged to join together to form Regional Water Management Groups, and create regional plans to manage water in an integrated manner addressing related land use, flood control, environmental sustainability and other issues. Virtually all California jurisdictions now belong to an IRWM planning area.

The State has enthusiastically embraced the IRWM model stating; "Integrated regional water management is the future for California." 2005 State Water Plan. Over the last decade, billions in state bond funding have been funneled to water projects throughout California through the IRWM process. But while the concept of integrated resource planning has broad support, California is still working out the best ways to be effective in practice. The Public Policy Institute of California (PPIC) offers this view of California's IRWM approach:

Although this financial carrot approach has encouraged some new forms of cooperation and collaboration among local entities, it suffers from the need to distribute large sums of cash, which has kept the focus of partnerships on capital projects that agencies want to build. [footnote omitted] To achieve real functional and geographic integration, California needs to develop a management framework that requires regional coordination in water and land resource planning.

-PPIC, [Managing California's Water: From Conflict to Reconciliation at 309](#) (PDF, 2011)

Others have noted that there remains a need to develop consistent performance standards and metrics for success to ensure durable outcomes. As recently reported by the Water Education Foundation (WEF),

The new way of thinking, which seeks to break down the 'silo' approach of managing water quality, water supply, land use planning, public health and the environment, can be ushered through the response of individual agencies to climate change. [Nevertheless], barriers exist because of skepticism, a situation that initially faced the idea of IRWM and still does to some extent.

-WEF, [*Layperson's Guide to Integrated Regional Water Management*](#) at 18 (April 2013)

While Western communities obviously face some similar issues when it comes to the economics of their respective water futures, there are also vast discrepancies and it is not realistic to assume a one-size-fits-all solution. Thus, a it will be a major challenge to develop the economic valuation and assessment tools that can be broadly applied to address the range and scope of issues outlined above.

Please contact Cynthia Koehler, Director of Programs: cynthia@carpediemwest.org