

# **Instream Flow Marketing in the Pacific Northwest**

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## **Abstract:**

Buying water for instream flows in the Pacific Northwest is no longer a novel concept. In fact the region is proving to be a leader in this free-market approach to increasing stream flows. Since 1990, more than \$36 million was spent acquire 1.7 million acre-feet of water for instream use. The Bureau of Reclamation, the largest market participant, is acquiring water for salmon recovery efforts in California, Idaho, Oregon and Washington. In Montana, state and private efforts are underway to lease water rights for trout habitat. This paper examines the recent development of instream flow marketing in the Pacific Northwest. A summary of recent sales and market activity in California, Idaho, Montana, Oregon, and Washington is present. The average purchase and lease prices for the region are \$151 and \$30 per acre-foot, respectively. The paper also discusses the growing entrepreneurial efforts by private organizations to acquire water rights for instream use.

## **Introduction**

The Pacific Northwest has taken a unique approach to instream flow protection. Recent legislation and policy changes across the region have created opportunities to protect instream flows through market transfers of water rights. State and federal agencies and private organizations are starting to take advantage of these opportunities causing market activity to increase throughout the Pacific Northwest.

This paper chronicles changes and developments in the Pacific Northwest instream flow market from 1990 to 1997. Market information was collected from state and federal agencies and private organizations that are acquiring water rights for instream flows. The paper reviews public and private acquisition programs in California, Idaho, Montana, Oregon and Washington. A market summary of transactions, prices and quantity is presented. The paper also discusses the emergence of private entrepreneurial efforts to acquire water rights for instream use.

### *The Opportunity for Market Development*

When the prior appropriation doctrine was evolving in the Pacific Northwest, there was little need to consider to instream flows. The primary demands for water was to divert it for agriculture and mining. The development of water rights typically came at the expense of uses such as those for fish and wildlife habitat, outdoor recreation, scenic and aesthetic values and water quality protection. Over the years states have recognized the social, economic and environmental importance of instream flows. Pressures to consider instream flow values in water policies increased dramatically during the 1960s and 1970s. However, these protection measures were implemented after much of the available water was appropriated by out of stream uses.

Market acquisitions of water rights have been used for quite some time to meet the changing and growing demands of offstream uses. Many economists have pointed to market transfers as a way to restore and protect instream flows (Anderson 1983, Saliba and Bush 1987).

On heavily appropriated streams, acquisitions of senior water rights to support instream flows may be the only option that effectively protects flows.

The Pacific Northwest has taken a free-market approach to resolving its instream flow water allocation problem. The region has largely encouraged the development of instream flow markets by allowing agencies and individuals to acquire water rights for instream uses. Market development was prompted by a flood of instream flow legislation beginning in 1987 when Oregon adopted changes that allowed public or private entities to lease or purchase water rights and convert them to instream flow rights.

In 1989, Montana continued this move toward markets by adopting legislation that created a temporary program to allow the Department of Fish, Wildlife and Parks to lease water rights for the purpose of maintaining or enhancing stream flows for the benefit of fisheries. Washington followed in 1991 by establishing their Trust Water Rights program that allows voluntary water right transfers for instream needs. In that same year, California adopted changes to their water code to allow water rights to be transferred for the purpose of preserving or enhancing wetlands habitat, fish and wildlife, or recreation. One year later Idaho granted exceptions to its water banking statutes that made it possible for the US Bureau of Reclamation to lease water from the water banking program for instream use. In 1995, Montana reformed its water right leasing program to allow private groups to acquire water rights for instream flows. While each state has taken a slightly different approach, they all allow market forces to drive instream flow transfers.

#### *Previous Instream Market Research*

A limited number of studies have attempted to quantify market information on instream flow transfers. Colby (1990) identified only a few examples of market acquisitions of water rights for instream use. She asserted that the instream flow market was very thin and that institutional constraints, transaction costs and the public good characteristics of instream flows

where contributing to the limited number of transactions. Brown (1991) identified 15 acquisitions of water rights for instream flows from 1987 to 1991. Lease prices ranged from \$2/acre-foot to \$7/acre-foot and purchase prices varied from \$9/acre-foot to \$14/acre-foot. Most acquisitions were from irrigators, and were used to augment unusually low flows (Brown 1991).

## **Market Outlook**

The Pacific Northwest is proving to be a leader in instream flow marketing. Market activity has increased in recent years. Much of this activity is driven by efforts to restore flows for salmon. Since 1990, an estimated \$36 million was spent on leases and purchases of water for instream use. The market saw a significant jump in 1992 when total expenditures rose to more than \$3.9 million, about 4 times the amount spent in 1991 (Figure 1). This increase marked the initiation of the San Joaquin Refuge water acquisition program funded by Central Valley Project Improvement Act.

The total quantity of water purchased, leased, and donated for instream flows is on an upward trend (Figure 1). Since 1990, more than 1.7 million acre-feet of water was acquired for instream flows. The amounts traded for instream use increased considerably in 1995 to over 400,000 acre-feet (af) of water. This rise marked the beginning of an aggressive campaign by the Bureau of Reclamation to lease water for endangered salmon species in the Columbia and Snake River Basins. The Bureau's efforts in the Columbia River Basin are driven by a 1995 Biological Opinion that calls on the agency to provide 427,000 af of water each year for flow augmentation (Rigby 1997). The opinion also stipulates that the water must be acquired from willing sellers (Rigby 1997).

### *Who's Acquiring Water*

The federal government accounted for just over 80 percent of all expenditures and 90 percent of the total quantity of water acquired from 1990 to 1997. The Bureau of Reclamation who has initiated acquisition programs in Idaho, California, Oregon, and Washington negotiated

most of these acquisitions. The majority of the negotiated agreements were short-term leases that usually lasted for a single irrigation season.

The Bureau began its acquisition program in 1991 when it started leasing water from Idaho's water banking program (Rigby 1997). The program was initiated to assist with salmon recovery efforts in the Snake River and has acquired more than 1.15 million acre-feet of water (Rigby 1997). In 1994, the bureau expanded its acquisition efforts to California to improve flows for salmon in the Sacramento and San Joaquin Rivers. The California acquisition program is funded through the Central Valley Project Improvement Act and has leased over 420,000 acre-feet of water (USBR 1997). In Washington, the Bureau has initiated a pilot leasing program to restore flows in the Yakima River Basin. The program first started in 1996 and has leased a total of 7,000 acre-feet of water (USBR 1998). The most recent addition to the Bureau's acquisition program was in 1997 when it began a demonstration program in Oregon's Klamath River Basin. Three leases totaling to 400 acre-feet of water were completed during the first year of the program (Davis 1997).

# Pacific Northwest Instream Flow Markets

## Acquisition Quantity & Expenditures

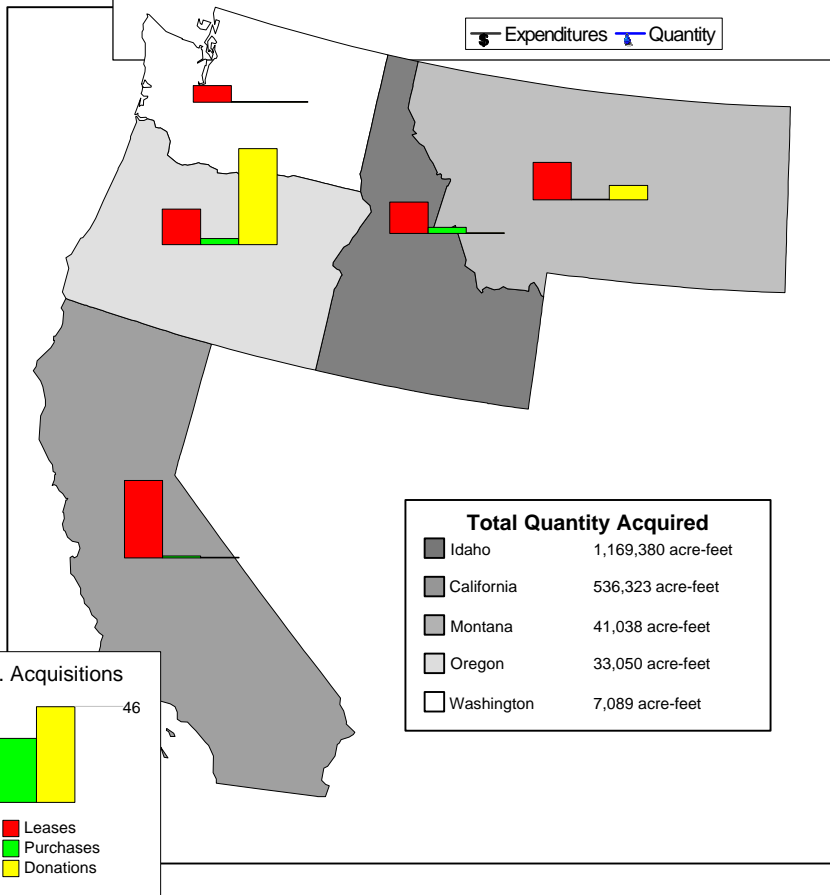
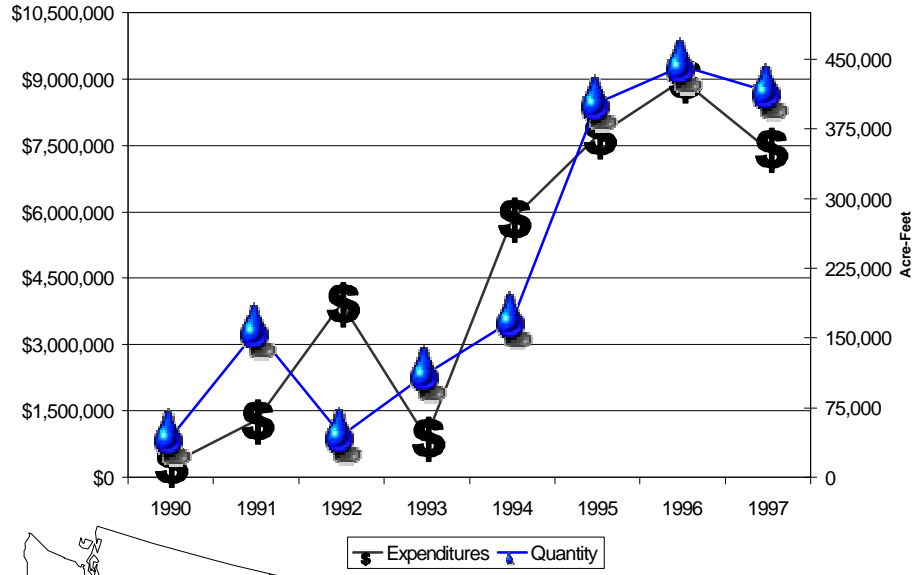


Figure 1

Market Activity By Sector				
	Federal	State	Private	Total
Lease Expenditures	\$26,745,410	\$3,684,619	\$96,482	\$30,526,512
Purchase Expenditures	\$5,038,975	\$702,200	\$61,700	\$5,802,875
Total Expenditures	\$31,784,385	\$4,386,819	\$158,182	\$36,329,387
Lease Quantity (af)	1,563,088	111,672	22,083	1,696,843
Purchase Quantity (af)	57,396	10,000	507	67,903
Donation Quantity (af)	0	18,377	13,756	32,133
Total Quantity	1,620,484	140,049	36,347	1,796,880

State agencies are proving to be major players in the instream flow market. Commonly criticized for lacking money to implement water acquisition programs (Sterne 1997, Root 1995), states are now stepping up efforts to acquire water for instream needs. Since 1990, state agencies across the Pacific Northwest have spent an estimated \$4.3 million to acquire about 140,000 acre-feet of water.

Montana and California have the most active state acquisition programs in the Pacific Northwest. Created as a temporary program, state's leasing program allows the Department of Fish, Wildlife and Parks (DFWP) to lease water rights to maintain and enhance stream flows for fish. Since the program's inception in 1991, the DFWP has negotiated nine long-term leases and has paid between \$1 and \$50 per acre-foot annually (Montana Fish Wildlife and Parks 1998). However, some people in Montana contend that the DFWP has not been as aggressive as it could be in implementing the program (McKinney 1991). They argue that the state has forgone several lease opportunities due to potential controversy and perceived political fall out (McKinney 1991).

The California Game and Fish Department has leased and purchases about 100,000 acre-feet of water. Most the water has come from the Central Valley Project and was used for flow

augmentation in wildlife refuges. The department has spent an estimated \$4.2 million on these acquisitions.

Washington began efforts in 1992 to implement the state's Trust Water Rights program. The program provides a mechanism for voluntary transfers of water rights to instream flows. However, the program is so poorly organized and funded that the Washington Department of Ecology, responsible for administering the program, has not issued a single trust water right (Nelson 1998, Sterne 1997).

Private organizations are starting to make their presence known on the trading floor. Since 1990, private groups have spent over \$158,000 to acquire roughly 22,000 acre-feet of water. The Oregon Water Trust and the Washington Water Trust are two new organizations that have formed to take advantage of new market opportunities. The Oregon Water Trust is a nonprofit, private organization established in 1993 that uses a market based approach to help maintain and restore surface flows in the rivers and streams of Oregon. The group is proving to be very successful and is responsible for most of the private acquisition efforts in the Pacific Northwest.

The Center for Environmental Law and Policy and the American Rivers have joined forces to form the Washington Water Trust. The organization will use the provisions of the Trust Water Rights Program to acquire water through leases or purchases for instream needs.

More traditional environmental organizations are also expanding their interest in instream flow marketing. The Environmental Defense Fund, the Nature Conservancy, and Trout Unlimited have participated in acquisition efforts in Washington, Oregon and Montana. The Environmental Defense Fund (EDF) played a key role in organizing the first water right transfers in Washington. A 1994 EDF report, *Restoring the Yakima River's Environment*, recommended using voluntary transfers of water rights to help restore aquatic habitats in the Yakima and tributaries such as the Teanaway (EDF 1996). The report served as the basis for the Bureau of Reclamation's pilot acquisition program in the Yakima. EDF, with the help of Confederated

Tribes of Warm Springs Reservation, is also working with several irrigation districts in Oregon to lease conserved water for flow enhancement in the Deschutes River (EDF 1996).

Montana Trout Unlimited successfully negotiated the Montana's first lease of a irrigation water right by a private organization. The 10-year lease agreement provides an additional 460 acre-feet of water in Rock Creek, a small stream in western Montana. The Nature Conservancy of Montana was one of the first private organizations to get involved in leasing in Montana. In 1991, the Conservancy helped raise money to establish the Montana Water Leasing Trust Fund (McKinney 1991). At the time the fund was created the Department of Fish, Wildlife and Parks was the only entity allowed to lease water rights for instream flows. The fund served as a repository for contributions from private individuals, foundations and corporations who wanted to help implement the leasing program.

In addition to leases and purchases, private organizations have been very successful in procuring a large quantity of water by donation. Private organizations have received 48 donations that total more than 13,000 acre-feet of water. Most of these donations have occurred within the last three years. The Oregon Water Trust has been particularly successful in acquiring donated water rights and was responsible for 46 of the 48 donations (Oregon Water Trust 1998). Most of the donations were for small amounts of water ranging from 15 to 1000 acre-feet.

Private acquisitions currently represent a small portion of the total quantity trade in the market but they are increasing in size and number. While state and federal governments are spending most of their money and effort on main-stem flow enhancement projects, most private organizations are focusing their restoration efforts on tributary streams where small amounts of water can have significant effects. This is the approach that the Oregon Water Trust has taken. Most of their acquisitions are for small amounts of water, less than 500 acre-feet, but often times that may represent the entire flow of the stream. Take for example a recent permanent purchase on Squaw Creek, a small stream in central Oregon. The Trust spent about \$42,000 to increase flows by .86 cubic feet per second on a three-mile stretch of the creek (Oregon Water Trust

1997). This section of the stream, near the town of Sisters, dries up in most years due to irrigation withdrawals. The additional flows are now providing habitat for bull trout, which is proposed for listing under the federal Endangered Species Act.

The Trust also spends about \$6,000 annually on hay to keep Buck Hollow, another small stream in central Oregon, from running dry. In a partnership that began in 1994, the Trust leases about 196 acre-feet (.93 cfs) of water in exchange for 76 tons of hay. Buck Hollow is one of the best steelhead spawning tributaries of the Deschutes River, an internationally famous fishing river (OWT 1996). These two acquisitions are excellent illustrations of how small amounts of water and cash can provide significant ecological benefits.

*For How Much?*

On average, water rights purchased for instream uses in the Pacific Northwest sold for about \$151/af. The highest sale price, \$429/af was charged to the Oregon Water Trust in 1996 (OWT 1998). The purchase was a part of a conservation project that made water available for instream flows by improving irrigation technology. On the low end of the market, the US Bureau of Reclamation paid \$65/af in 1996 to buy back a water service contract for water stored in a the Lucky Peak Reservoir, Idaho (Rigby 1997).

Market Price and Quantity Summary					
	Mean	Std. Dev.	High	Low	N
Purchase Price (\$/af)	\$151.38	\$126.19	\$429.18	\$65.00	7
Lease Price (\$/af)	\$30.40	\$35.46	\$214.10	\$0.62	93
Purchase Quantity (af)	9,700.51	12,656.18	35,000.00	23.30	7
Lease Quantity (af)	18,245.63	39,669.68	232,839.10	12.00	93

Short term leases of less than five years accounted for the majority of market transactions. The average lease price across the Pacific Northwest was \$30/af annually. The highest lease price for water, \$214/af was charged to the Bureau of Reclamation in Oregon's

Klamath Basin (Davis 1998). The lease was negotiated with a farmer who had already planted irrigated wheat and was planning on using the water. The lowest lease price, \$0.62/af was paid by the California Game and Fish Department in 1993 when it leased 8,000 acre-feet of surplus storage water for a San Joaquin River wildlife refuge (Water Strategist 1993). The most unique lease agreement is one arranged by the Oregon Water Trust. In 1994, the Trust negotiated a lease agreement with a cattle rancher to increase stream flows in an important spawning stream in central Oregon. Under the terms of the agreement, the Trust leased two water rights in exchange for hay to feed the rancher's cattle (Oregon Water Trust 1996).

## **Conclusion**

The Pacific Northwest has taken a market approach to protecting instream flows. The market is seeing a significant increase in activity. Since 1990, more than 150 leases, purchases and donations of water rights for instream flows have occurred. The Bureau of Reclamation is the largest market participant and has spent in excess of \$30 million to acquire more than 1.6 million acre-feet of water.

State agencies in Montana and California are also using market opportunities to protect fish and wildlife habitat. The two states have spent a combined total of \$4.3 million on purchases and leases. California is acquiring large blocks of water. The states largest lease was for 44,900 acre-feet of water. Montana has limited its program to small leases. All of the state's leases were for less than 2,000 acre-feet of water. Washington attempted to implement a state acquisition program but the program has proven to be unsuccessful primarily due to poor funding and support.

Several states in the region have adopted policy reforms that make it possible for private organizations to entire the market place. Private groups are starting to take advantage of these changes and are leasing and purchasing water rights for instream use. The groups also have been very successful in encourage water right donations for instream protection. The actions of these

organizations are demonstrating that private resources can and will be devoted to environmental goods such as instream flows and that the value of this resource is high enough to compete in the market place.

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