



Columbia Basin Water Transaction Program: Annual Economic Report 2006





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Prepared for

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Introduction

Objective

The Columbia Basin Water Transactions Program (CBWTP) began operations in 2003 in an effort to use market-based mechanisms to improve flow in key stream reaches within the Columbia River Basin. This report is the second annual economic summary and review of the CBWTP activities. The analysis focuses primarily on measurable economic criteria by evaluating transaction price, quantity, method of acquisition, as well as other metrics. The review does not evaluate ecological or biological metrics, which are beyond the scope of this economic review.

Evolution of the CBWTP has enabled increased instream flow volume and program funding each year since 2003. Transaction innovation and sophistication have also been a part of the program's evolution. The greatest diversity of methods to increase instream flow occurred in 2006. This report focuses on water transactions occurring during 2006 and presents transaction trends from 2003 through 2006.



2006 Transaction Summary

The following section provides a brief review of the transactions completed in 2006. The review summarizes prices and quantities by deal structure. This brief summary is intended to provide context for the discussion of trends for transactions completed by the program since its inception that follows this section.

2006 Activity

The total annual volume of water instream and program funding allocated to water acquisitions in 2006 increased over previous years. Through thirty-eight leases, the CBWTP acquired 46,035 acre-feet of water in 2006. Six permanent purchases resulted in 4,726 acre-feet of water per year. The total annual volume added to stream flows in Columbia Basin tributaries that resulted from 2006 transactions was approximately 50,761 acre-feet. The quantity largely represents the diversion quantity associated with the original water rights acquired under the program.

2006 Transaction Funding

Total CBWTP funding allocated to water transactions in 2006 was \$1,495,373 with additional contributions from program partners in the amount of \$897,723. Table 1 provides a summary of Program funding by acquisition method. Funding for short term partial season and long term full season leases increased significantly from 2005 levels. There was a similar decrease in funding for annual and long term partial season leases. Short term partial season leases and permanent acquisitions received the most funding from the CBWTP in 2006.



Table 1
2006 CBWTP Funding by Acquisition Method

Contract Length	Acquisition Method	CBWTP Funding	Number of Transactions
Short Term Lease (1-5 Years)	Full Season, 1 Year	\$110,265	11
	Full Season, 2-5 Years	\$47,524	11
	Partial Season	\$329,750	10
Long Term Lease (6 Years and Up)	Full Season	\$210,833	5
	Partial Season	\$16,000	1
Permanent	Full Season	\$595,401	5
	Partial Season	\$200,000	1
Total		\$1,495,373	44

2006 Market Prices

Average prices (dollar per acre-foot) paid for water in 2006 declined slightly from 2005. Short term, full and partial season lease prices increased. Permanent purchase price more than doubled.

Table 2 summarizes the lease rates and purchase prices paid for the CBWTP's 2006 transactions. Lease rates paid by the program in 2006 varied significantly depending on the term and structure of the deal. Overall, lease rates in 2006 ranged from \$2.46 to \$104.26 per acre-foot per year.

Price dispersion was less in 2006 than 2005. While lease rates exhibited large price dispersion, average lease rates for various types of short and long term leases were consistent with observed water lease rates for other non-instream uses within the region. Prices paid for permanent purchases of water rights were also volatile with prices ranging from \$122 to \$585 per acre-foot.



Table 2
2006 CBWTP Acquisition Prices¹

Contract Length	Term Type	Mean Price (\$/AF/Yr)²	Change from 2005	Median Price (\$/AF/Yr)	High (\$/AF/Yr)	Low (\$/AF/Yr)	Number
Short Term Lease	Full Season, 1 Year	\$21.44 ³	↓ 19%	\$17.13	\$46.12	\$15.00	10
	Full Season, 2-5 Years	\$20.12	↑ 34%	\$20.16	\$39.60	\$2.46	12
Long Term	Partial Year	\$45.13	↑ 34%	\$31.65	\$104.26	\$4.60	9
	Full Season	\$15.92	↓ 25%	\$13.69	\$40.00	\$3.38	5
	Partial Season	\$25.24	↓ 67%	NA	NA	NA	1

Contract Length	Term Type	Mean Price (\$/AF)³	Change from 2005	Median Price (\$/AF)	High (\$/AF)	Low (\$/AF)	Number
Permanent	Full Season	\$388.74	↑ 272%	\$388.00	\$585.03	\$122.24	5
	Partial Season	\$474.00	NA	NA	NA	NA	1

As displayed in Table 3, when lease prices are analyzed by term length and method of increasing flow instream, partial season transactions are the highest unit prices. Considering that partial season water is leased at the most critical times of the irrigation season, and when instream flows tend to be lowest, higher unit prices are logical. Leasing water when it is needed most demonstrates the sophistication of the transaction. Per unit prices are higher for partial season transactions but the total expenditure for water may be less due to the lower quantity leased.

Permanent acquisition prices appear to be higher for 2006 because most of the purchases are through projects in which water is conserved through changes in irrigation practices. These changes generally require capital improvements resulting in greater efficiencies. Therefore, the purchase price reflects the cost of the capital improvements based on the acre-feet of water conserved.

¹ Prices of water, including unit prices, are based upon the total amount of water in the transaction reported by the QLE. Typically, the total amount of water identified in a water right includes both consumptive and non-consumptive water, at least in the primary reach. In most non-instream water transfers and transactions, only the consumptive use of water is transferable.

² Prices discounted for multiple year transactions using a discount rate of 5.125%

³ Prices do not include donated water right.

Table 3
2006 CBWTP Acquisition Prices by Method^{4,5,6}

Term Length	Acquisition Method	Mean Price (\$/AF/Yr)	Median Price (\$/AF/Yr)	High (\$/AF/Yr)	Low (\$/AF/Yr)	Number	Donations
Short	Full Season	\$19.48	\$18.50	\$39.60	\$2.46	11	1
	Partial Season	\$27.31	\$28.70	\$46.35	\$4.60	5	0
	Source Switch	\$16.75	NA	NA	NA	1	0
	Conserved Water	NA	NA	NA	NA	1	1
	Stored Water	\$15.14	\$15.14	\$17.50	\$12.78	2	0
	Forbearance Full Season	\$27.45	\$20.52	\$46.12	\$15.00	7	0
	Forbearance Partial Season	\$59.67	\$55.56	\$104.26	\$16.18	5	0
	Long	Full Season	\$19.06	\$14.78	\$40.00	\$6.67	4
	Partial Season	\$25.24	NA	NA	NA	1	0
	Conserved Water	\$3.38	NA	NA	NA	1	0
Term Length	Acquisition Method	Mean Price (\$/AF)	Median Price (\$/AF)	High (\$/AF)	Low (\$/AF)	Number	Donations
Permanent	Conserved Water	\$389.00	\$424.22	\$585.00	\$122.24	4	0
	Stored Water	\$388.00	NA	NA	NA	1	0
	Partial Season	\$474.00	NA	NA	NA	1	0

2006 Transaction Volume

Table 4 summarizes the size of transactions by deal type. With the exception of a few large transactions, the majority of deals involved transactions between 100 and 300 acre-feet. This was expected given that many of the deals occur on small tributaries where smaller water rights are located. The largest deal in 2006 involved an agreement not to divert 2,711 acre-feet of water by IDWR for flows on the Lemhi River. The smallest transaction was a three year lease by the Washington Water Trust on Frazer Creek for twenty-nine acre-feet a year.

⁴ Prices of water, including unit prices, are based upon the total amount of water in the transaction reported by the QLE. Typically, the total amount of water identified in a water right includes both consumptive and non-consumptive water, at least in the primary reach. In most non-instream water transfers and transactions, only the consumptive use of water is transferable.

⁵ Prices discounted for multiple year transactions using a discount rate of 5.125%

⁶ Prices do not include donated water right.

In general, the majority of the QLEs place an emphasis on restoring stream flows in tributary reaches where a small quantity of water can have significant benefit for fish spawning and rearing habitat. In contrast, few deals are focused on augmenting flows for main stem flows or fish passage.

Table 4
2006 CBWTP Annual Volume

Contract Length	Acquisition Method	Total (AF/Yr)	High (AF/Yr)	Low (AF/Yr)	Number
Short Term	Full Season, 1 Year	7,353	2,711	76	11
	Full Season, 2-5 Years	1,943	360	29	11
	Partial Season	33,337	29,203	45	10
Long Term	Full Season	3,339	1885	59	5
	Partial Season	63	63	63	1
Permanent	Full Season	3,249	1,864	157	5
	Partial Season	1,477	NA	NA	1



Deal Types and Contract Structures

Description

One of the most significant advances in the program has been development of deal terms and contract structures that have increased in complexity since the inception of the CBWTP. Innovation within the program and circumstances specific to landowners and their water rights has resulted in a continued expansion in the contract structures utilized by the QLEs. This creates challenges when attempting to categorize transactions for analysis. In this report, the transactions are summarized according to the following general transaction type:

- **Short Term Lease** – Lease term that is five years or less in duration.
- **Long Term Lease** – Lease term that is greater than five years in duration.
- **Permanent Purchases** – When a water right is permanently acquired and dedicated to instream use in perpetuity.

Transactions are primarily categorized by the length or term of the agreement. However, seasonal timing of the use of water for instream flows has evolved the contract structure so that partial or split season agreements have started to appear within the program. Under these agreements, a water right holder agrees to forgo irrigation during the part of the year when flows are needed for fisheries purposes.



Lease Rates and Prices 2003 Through 2006

Table 5 summarizes average lease rates and prices paid from 2003 through 2006. Full season, one-year lease agreements are the most common contract structure. The average lease rate for full season, one year deals is \$21.25 per acre-foot per year with a high of \$62.50 per acre-foot per year and a low of \$1.25 per acre-foot per year. The highest short term lease rate is for partial season leases at \$38.55 per acre-foot per year.

For the first three years of the program, approximately 34,000 acre-feet has been instream under long term contract through the CBWTP. The average annual lease rate for long term, full season leases are lower than all other types of leases. The average rate for long term, full season leases contracted under the program was \$16.40 per acre-foot per year. The highest average lease rate is the long term partial season rate at \$64.31 per acre-foot. (All lease rates have been normalized to reflect the annual value of the contract.)

Table 5
2003-2006 CBWTP Acquisition Prices⁷⁻⁸⁻⁹

Contract Length	Acquisition Method	Mean Price (\$/AF/Yr)	Median Price (\$/AF/Yr)	High (\$/AF/Yr)	Low (\$/AF/Yr)	Number
Short Term	Full Season, 1 Year	\$21.25	\$20.33	\$62.50	\$1.25	51
	Full Season, 2-5 Years	\$25.78	\$27.61	\$77.25	\$2.46	25
	Partial Season	\$38.55	\$28.45	\$106.19	\$1.81	23
Long Term	Full Season	\$16.40	\$13.33	\$40.56	\$0.54	20
	Partial Season	\$64.31	\$54.03	\$140.55	\$8.66	4
Contract Length	Acquisition Method	Mean Price (\$/AF)	Median Price (\$/AF)	High (\$/AF)	Low (\$/AF)	Number
Permanent	Full Season	\$247.40	\$175.61	\$585.30	\$20.78	14
	Partial Season	\$474.00	NA	NA	NA	1

⁷ Prices of water, including unit prices, are based upon the total amount of water in the transaction reported by the QLE. Typically, the total amount of water identified in a water right includes consumptive and non-consumptive water. In most other water transfers and transactions, only the consumptive use of water is transferable.

⁸ Prices discounted for multiple year transactions using a discount rate of 5.125%

⁹ Prices and count do not include donations.



Rates and Prices by State

Lease rates vary by lease term and type. In addition, lease rates vary by market characteristics determined largely by the geographic location of the market. Though analysis of CBWTP lease price by market would be ideal, there is not adequate data to do so for all the markets in the Columbia Basin. Instead, in this section of the report, prices have been analyzed by state. There are multiple water markets within each state and prices may differ significantly within a given state. However, this information summarizes general trends on instream flow acquisition prices of each state in the Columbia Basin.

Short term lease prices by state are less dispersed compared to long term lease rates. Table 6 displays the average acquisition price by state from 2003 through 2006. The highest average short term lease rate is in Idaho at \$26.31 per acre-foot per year, with the lowest rate in Oregon at \$20.21 per acre-foot per year.

Conversely, Idaho has the lowest long term average lease rate at \$12.32 per acre-foot per year. The highest long term average lease rate is in Washington at \$30.91 per acre-foot per year. State average permanent purchase price ranges from a low in Montana at \$167 per acre-foot to a nearly identical high in Oregon and Washington at \$250. It is interesting to note that all of the permanent purchases of rights were in Oregon in 2006 with an average purchase price of \$403 per acre-foot. Yet in 2005, there were a total of four permanent purchases in Oregon, with an average purchase price of approximately \$97 per acre-foot.

Table 6
2003 – 2006 Average Prices by State¹⁰

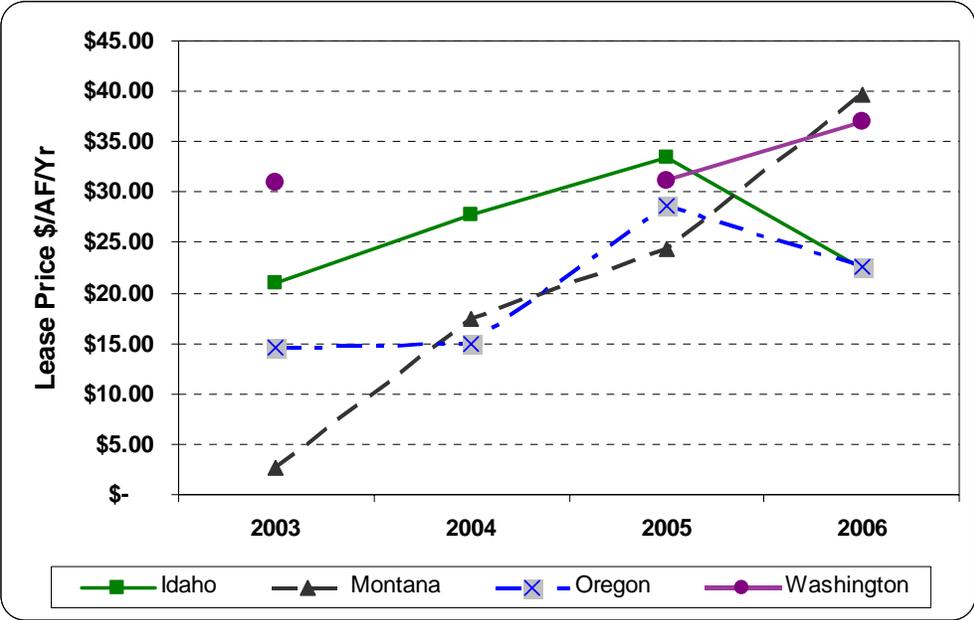
State	Short Term (\$/AF/Yr)	Long Term (\$/AF/Yr)	Permanent (\$/AF)
Idaho	\$26.31	\$12.32	NA
Montana	\$21.04	\$23.17	\$166.67
Oregon	\$20.21	\$13.90	\$249.90
Washington	\$22.07	\$30.91	\$249.71

A general trend of increasing short term lease prices is apparent in every state in the CBWTP. Figure 1 displays the trend in short term lease price by state from 2003 through 2006. Prices have changed the most in Montana, increasing from approximately \$3 to nearly \$40 per acre-foot per year. The least amount of change in

¹⁰ Prices discounted for multiple year transactions using a discount rate of 5.125%

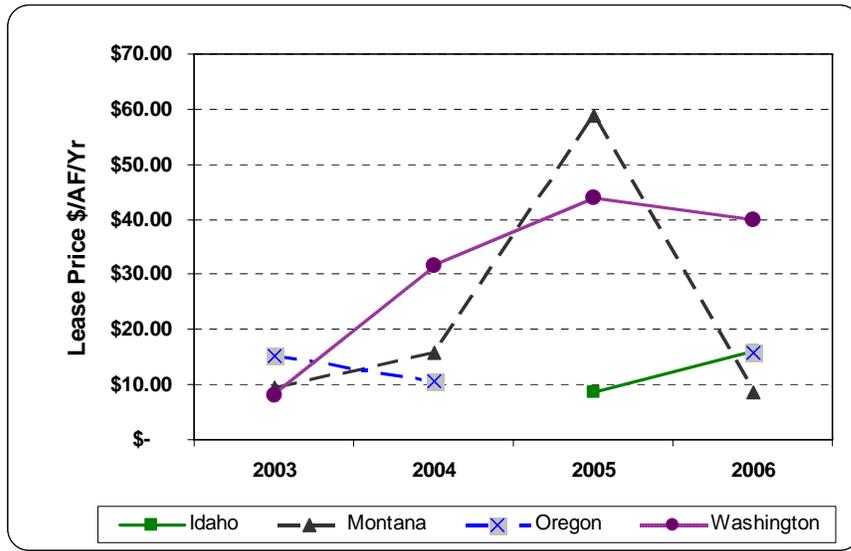
price has been in Washington, though still an increase from approximately \$31 to \$37 per acre-foot per year.

Figure 1
2003-2006 Short Term Lease Prices by State



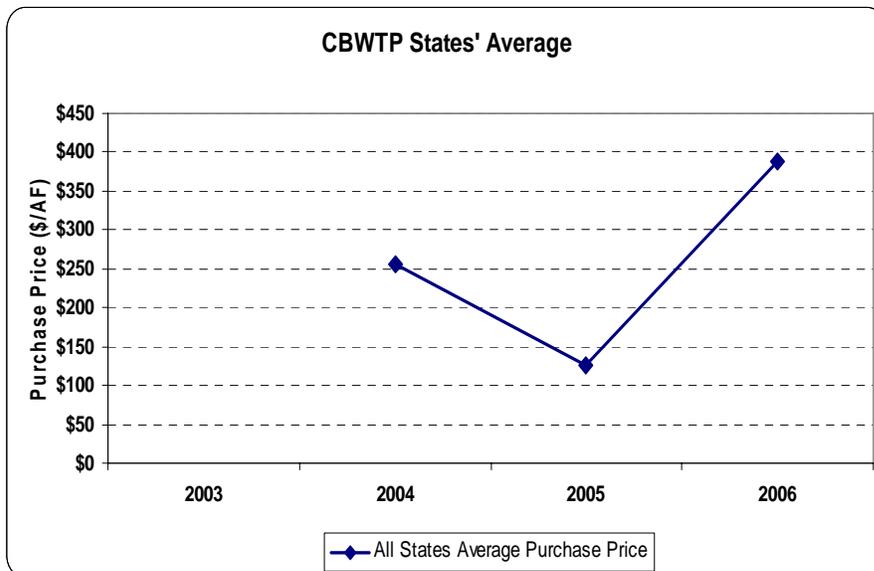
Long term lease prices have not exhibited a general trend by state from 2003 through 2006. Figure 2 displays the average long term lease rate by state from 2003 through 2006. Rates in Oregon and Idaho have changed very little and in 2006 were both roughly \$16 per acre-foot per year. Rates in Montana have fluctuated by year from a program wide low of approximately \$9 per acre foot per year in 2003 and 2006, to a program high of nearly \$60 per acre-foot per year. Rates in Washington have exhibited the most consistent trend of increase, though in 2006 they dropped slightly from 2005.

Figure 2
2003-2006 Long Term Lease Prices by State



Permanent purchase of water rights has been less consistent than other means of acquisition from year to year in the CBWTP. There were no purchases in 2003 and in the other years there have only been one to two states with purchases. Figure 3 displays the average purchase price by year for all purchases in the CBWTP. No clear trend in purchase price is apparent. However, in 2006, the average purchase price was higher than all other previous purchases except one.

Figure 3
2003-2006 Average Purchase Price for All States



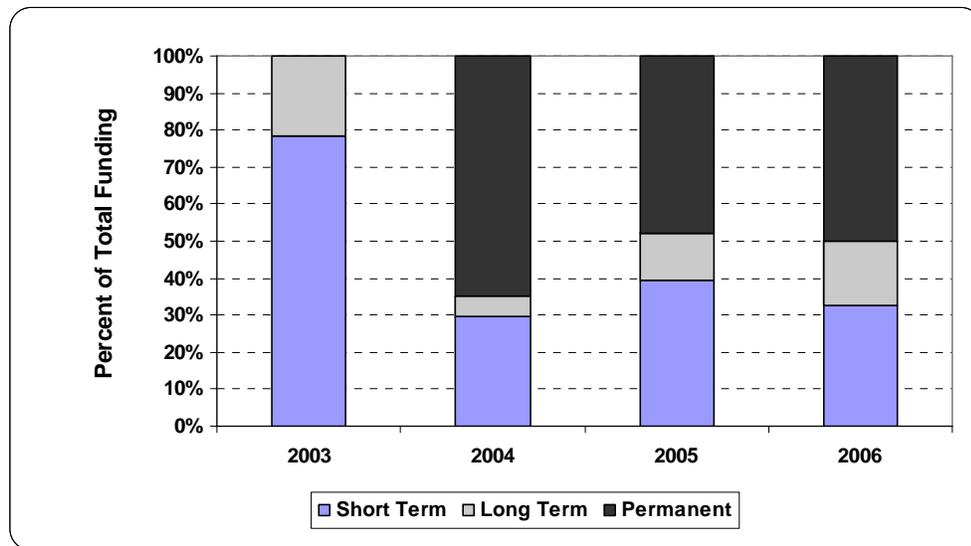
Expenditures 2003 Through 2006

Bonneville Power Authority's (BPA) expenditures on CBWTP transactions have increased with each year of the program. In 2003 BPA contributed \$171,613 to CBWTP transactions. Transaction funding rose to \$1,495,373 in 2006. BPAs expenditures on CBWTP transactions totaled \$3,636,444 from 2003 through 2006.

Figure 4 displays the percentage of transaction funding each year by transaction term. In the first year of transaction funding, approximately eighty percent of funding went toward short term transactions. Since then, the proportion of annual short term transaction funding has been much lower and ranged from approximately thirty to forty percent.

Permanent transaction funding was nearly fifty percent or greater from 2004 through 2006 with no permanent transactions funded in 2003. Since the low in 2004, the proportion of long term funding has increased and in 2006 was at approximately twenty percent.

Figure 4
CBWTP Transaction Funding by Term Type



Cost Share Expenditures

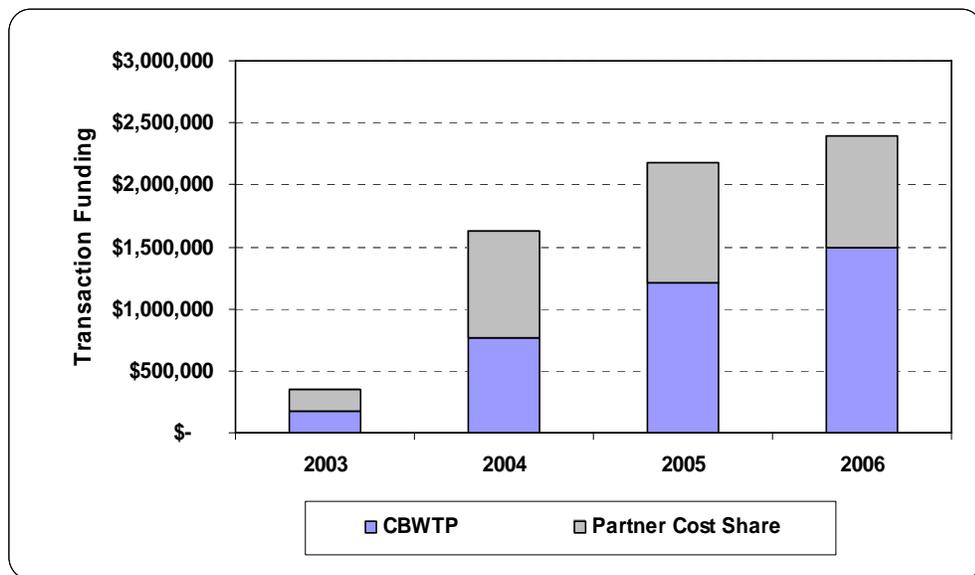
In addition to funding transactions directly, CBWTP money is commonly used in conjunction with other cost share funding sources. The opportunity for and availability of cost share among funding sources varies by transaction and QLE. Cost share is not required for CBWTP funding. However, CBWTP funding is often used

for transactions with cost share matching requirements. The attractiveness of CBWTP funding for matching is that it is typically considered non-federal money, a limitation on most federally funded programs. When and how to use cost share is up to the individual QLEs.

Program partner funding has been significant relative to the funding from the CBWTP. From 2003 through 2006 CBWTP partners have contributed \$2,912,335 to water transaction funding.

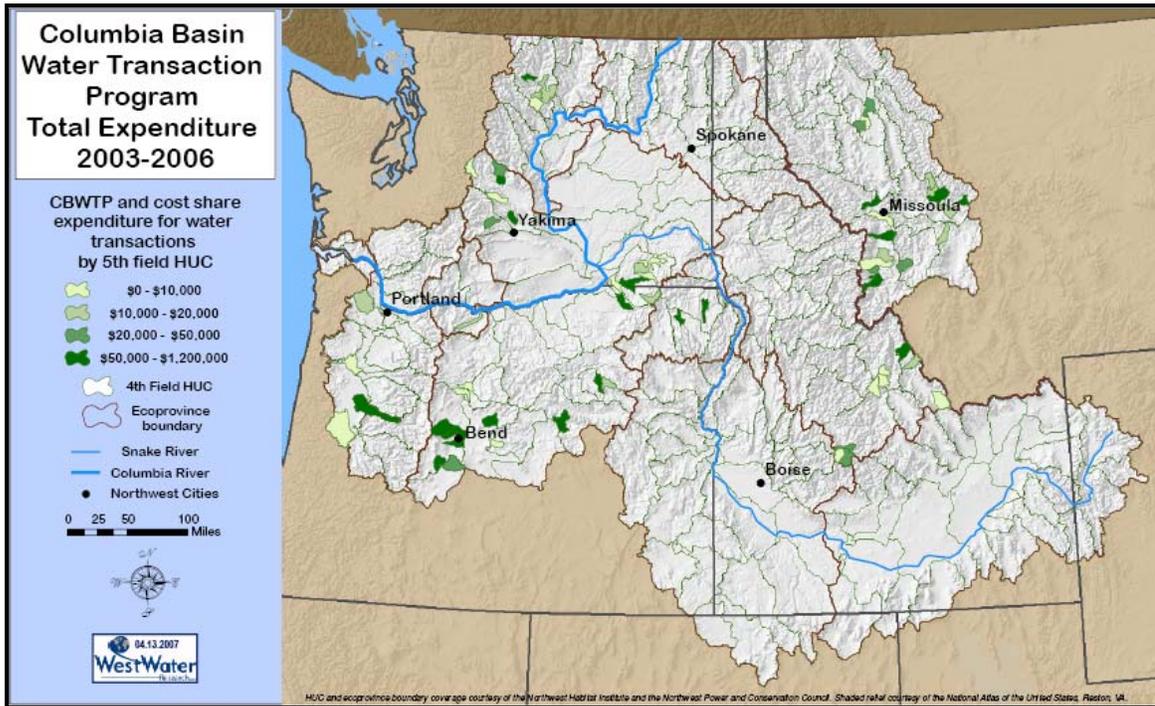
Figure 5 displays the total funding for transactions broken out by CBWTP and partner funds. In 2003 and 2004 cost share funding was approximately fifty percent of the total transaction funding. The percentage declined slightly in 2005 and significantly, to thirty-seven percent, in 2006. However, total cost share funding was at its peak in 2005 at approximately \$972,000 followed by \$894,000 in 2006.

Figure 5
2003 – 2006 Transaction Funding from BPA and Cost Share



Areas of higher transaction funding correspond with areas of more transactions. Figure 6 displays the total transaction expenditure by fifth field HUC from 2003 through 2006. The areas of higher funding include the Lemhi basin in Idaho, the Bitterroot basin in Montana, the Deschutes basin in Oregon and the Yakima basin in Washington.

Figure 6
2003 – 2006 Total Transaction Expenditure by Fifth Field HUC

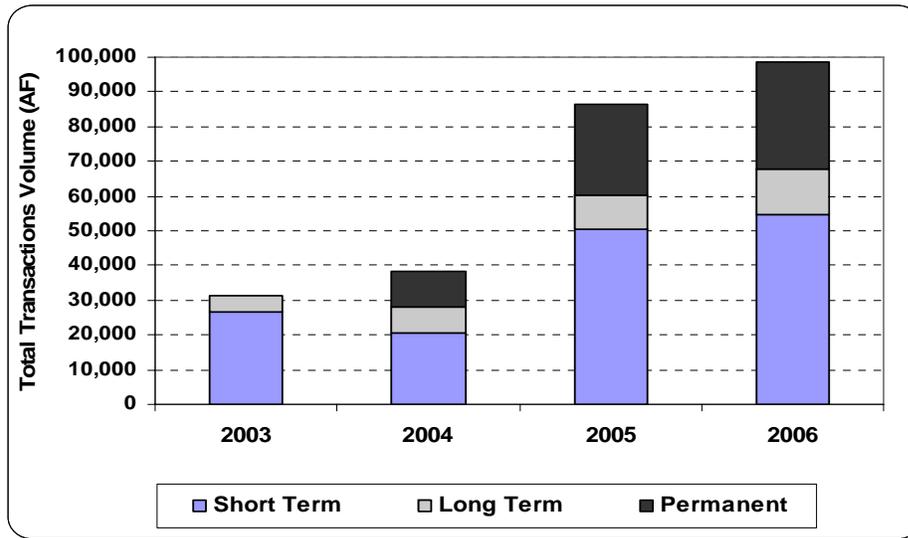


Annual Volume of Water Instream 2003 Through 2006

Figure 7 displays the annual volume of water instream by transaction term for each year of the program. The largest annual volume of water instream occurred in 2006. Annual water instream under long term contracts from 2005 to 2006 increased by thirty-five percent.

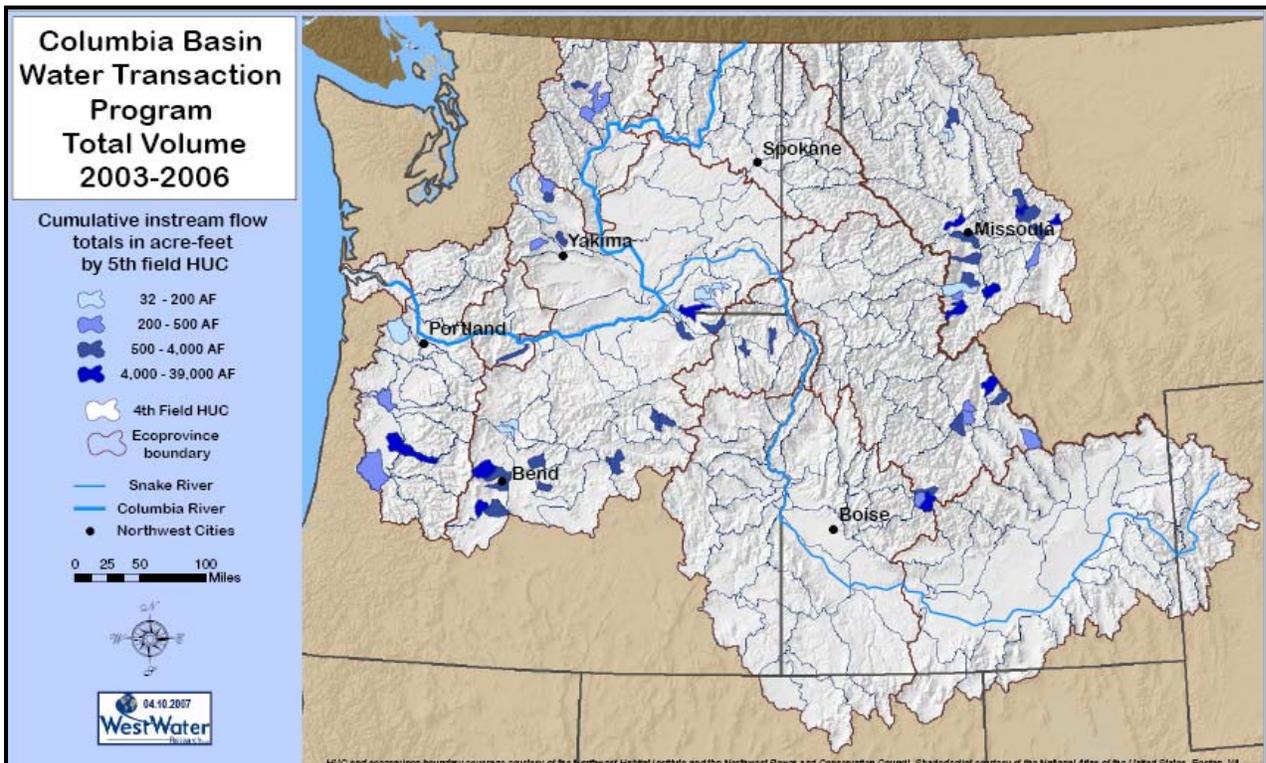
Annual water instream from permanent acquisitions increased by eighteen percent and from short term leases by eight percent. The total volume added to tributary flows from 2003 through 2006 through short term deals is 152,494 acre-feet. For the same time period, 34,455 acre-feet of water has been leased through long term contract. Water instream through permanent acquisition over the same period is 67,278 acre-feet. The total volume of water instream through the program from 2003 through 2006 is approximately 254,227 acre-feet.

Figure 7
Annual Instream Volume by Term Type 2003 – 2006



Volume of water instream by fifth field HUC is displayed in Figure 8. Typically, the areas receiving higher levels of funding also have higher levels of water instream. Areas with high levels of instream flow relative to funding include the Calapooia River in Oregon, and the Blackfoot basin in Montana.

Figure 8
2003 – 2006 Total CBWTP Water Instream by Fifth Field HUC

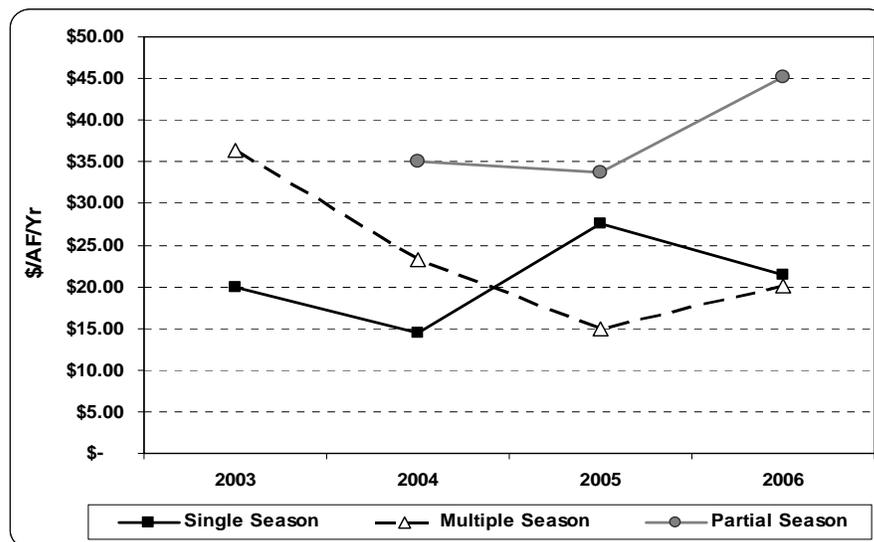


Short Term Leases

Lease Rates

Short term lease rates in the CBWTP have varied by transaction type over time. Figure 9 displays short term lease rates by transaction type from 2003 through 2006. In general, rates on short term leases, lasting two to five years, have declined about fifty percent from 2003 through 2006. Short term, partial season leases have increased by about twenty-nine percent from 2004 through 2006. Single season lease rates have not exhibited a discernable trend. Annual water supply conditions may play a larger role in determining these lease rates than other short term transaction types. It is interesting to note that in 2006, single season (\$21.44) and short term (\$20.08) transactions have nearly the same unit price.

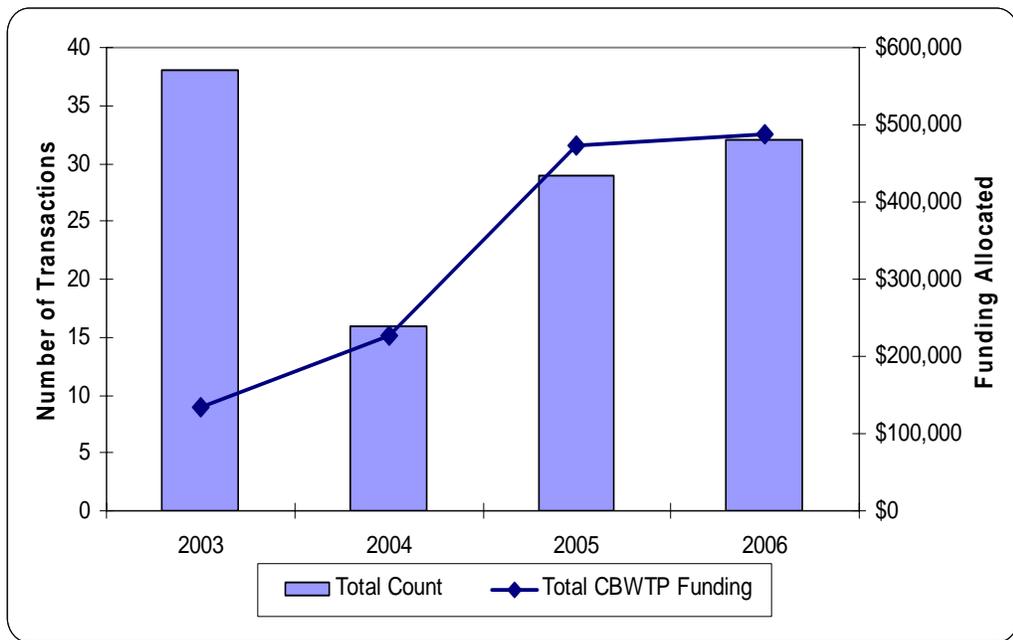
Figure 9
Short Term Lease Rates 2003 - 2006



Expenditures

Short term transaction funding has increased each year of the program. Figure 10 displays the annual expenditure and number of transactions by year. Short term transaction funding from BPA in 2006 was more than three times the amount in 2003. The lowest rate of increase was between 2005 and 2006, at approximately three percent. Short term transaction funding was \$487,539 in 2006 with a total for all years of approximately \$1,323,209.

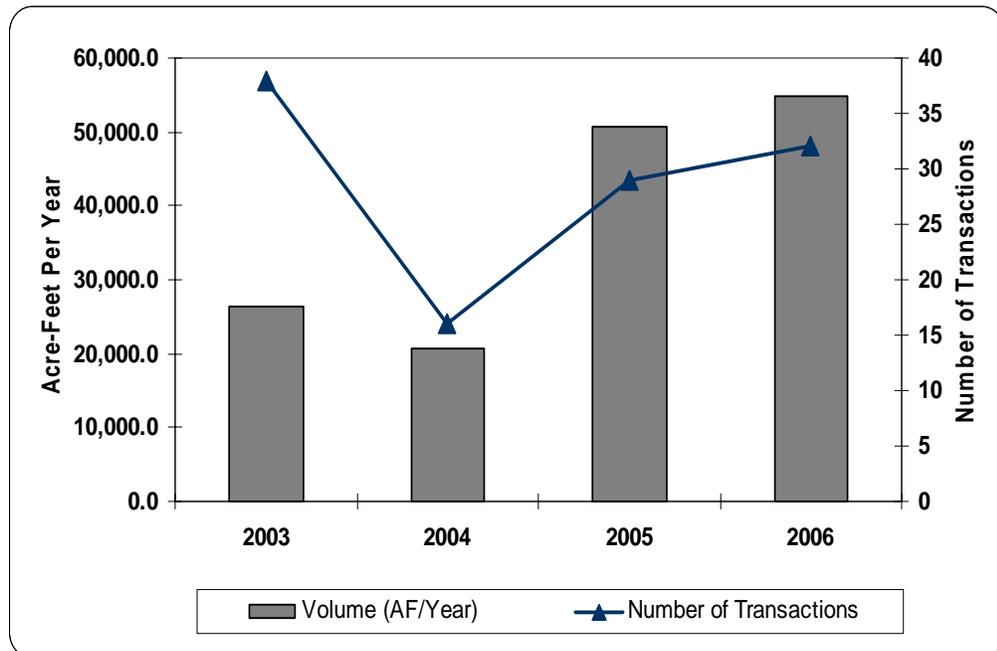
Figure 10
CBWTP Short Term Transaction Expenditure 2003 - 2006



Annual Volume

The total annual volume of water leased through short term agreements increased slightly in 2006. As displayed in Figure 11, the total annual volume water placed under short term leases in 2005 was approximately 50,600 acre-feet. In 2006 the quantity increased over 4,000 acre-feet to approximately 54,900. The number of short term transactions increased by three in 2006 to thirty-two.

Figure 11
2003 – 2006 Short Term Transaction Volume

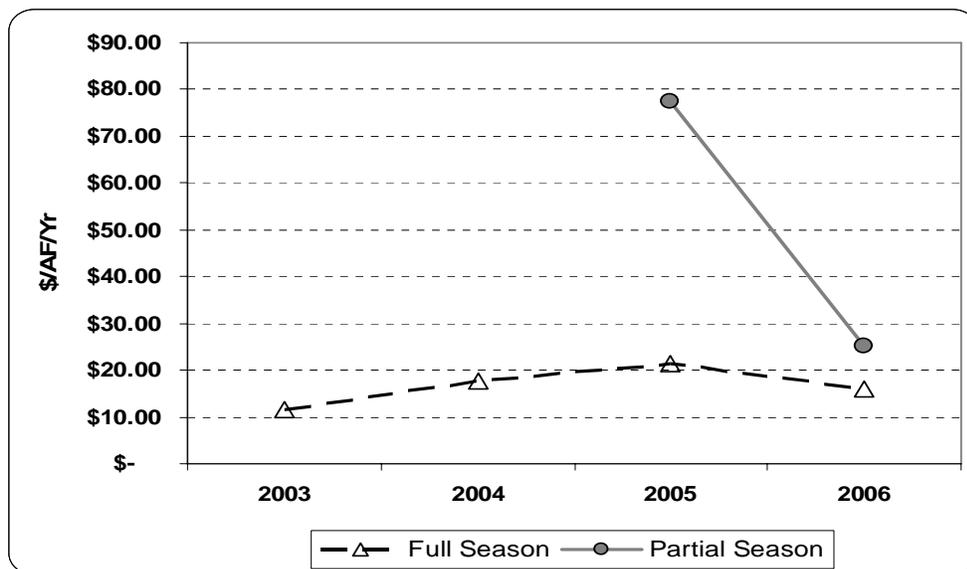


Long Term Leases

Lease Rates

Rates on full season, long term leases, (those longer than five years) are the lowest in the CBWTP. These rates have also been the most stable in the program. Figure 12 displays long term lease rates from 2003 through 2006. The range of rates by year is from \$11.46 to a high of \$21.34 per acre-foot. There has not been enough long term, partial season leases to establish a trend. However, based on 2005 and 2006 it would appear that these rates can vary significantly. Thus far there have only been four of these transactions, therefore, each one can affect the average price. The range in rates per year for all four is a low of \$9 and a high of \$141 per acre-foot.

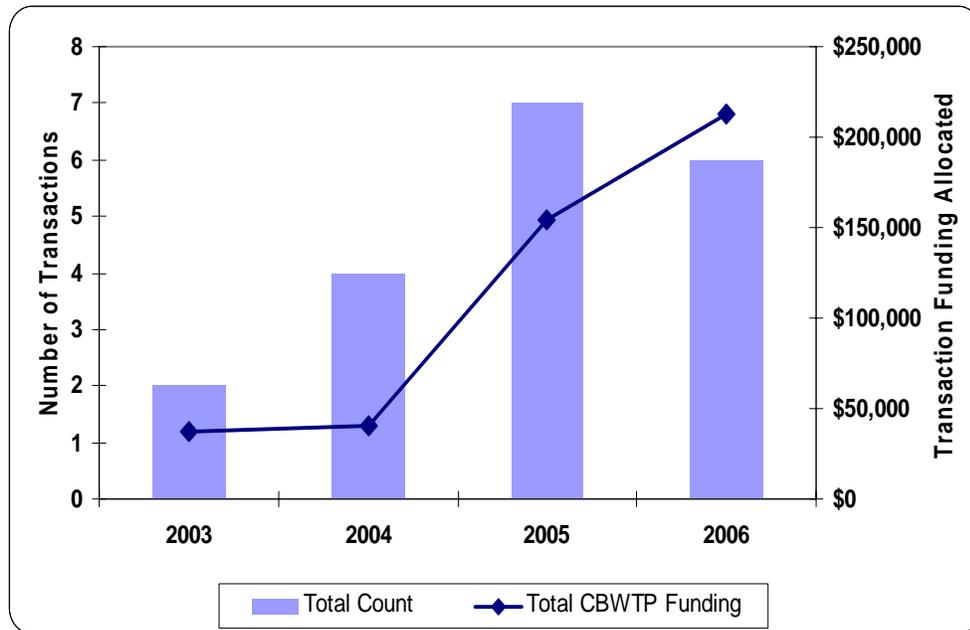
Figure 12
Long Term Lease Rates 2003 – 2006



Expenditures

Bonneville Power Authority's funding of long term transactions has increased each year of the program. Expenditures on long term transactions increased thirty-eight percent in 2006 from 2005. Figure 13 displays BPA's expenditures through the CBWTP on long term transactions from 2003 through 2006. Long term transaction expenditures have increased significantly the past two years. In 2006 the programs funding for this type of lease is approximately \$212,433.

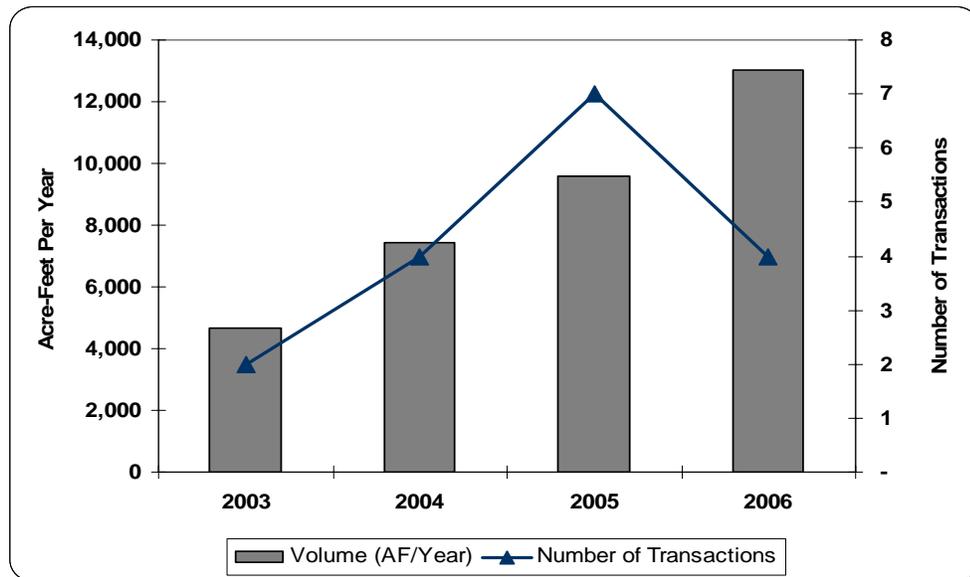
Figure 13
CBWTP Long Term Transaction Expenditure 2003 - 2006



Annual Volume

The quantity of water leased through long term transactions has increased each year of the program. The annual increase has been consistent each year. The largest annual increase, approximately 3,100 acre-feet, occurred between 2005 and 2006. The total annual quantity of water leased though long term transactions in 2006 is approximately 12,750 acre-feet for the year.

Figure 14
2003 – 2006 Long Term Transaction Volume



Permanent Purchases

Purchase Prices

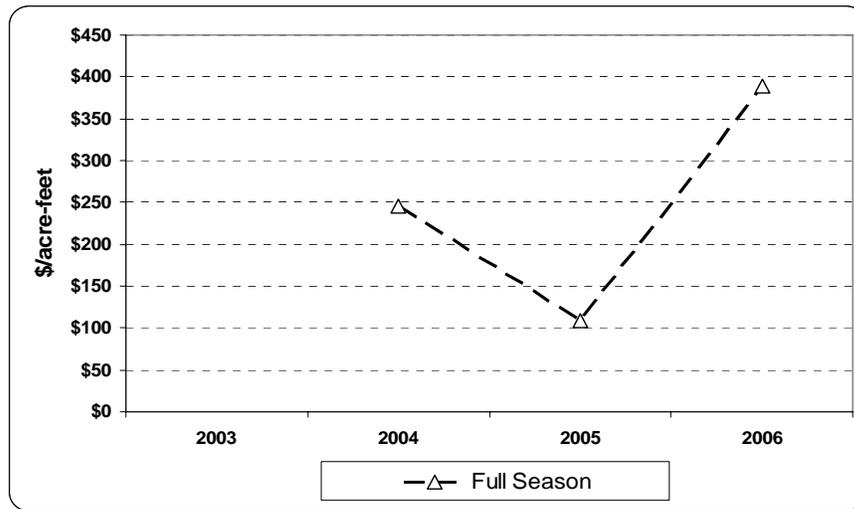
Permanent purchase prices have varied by year and have not exhibited a clear trend. Prices did increase significantly in 2006. Figure 15 displays the average permanent purchase price by year from 2003 through 2006. There were no permanent purchases in 2003. Furthermore, there has been an average of about five purchases per year from 2004 through 2006, too few to provide a robust data set. However, the type of permanent acquisition appears to strongly influence price.

In 2005, the year with the lowest average purchase price of \$108 per acre-foot, the method of acquiring water was diverse. Each of the six 2005 permanent acquisitions acquired water in a different manner and the price ranged from \$21 to \$185 per acre-foot.

In 2006, four of the six acquisitions were conserved water projects with an average price of \$390 per acre-foot. The average permanent acquisition price in 2006 was \$403 per acre-foot.



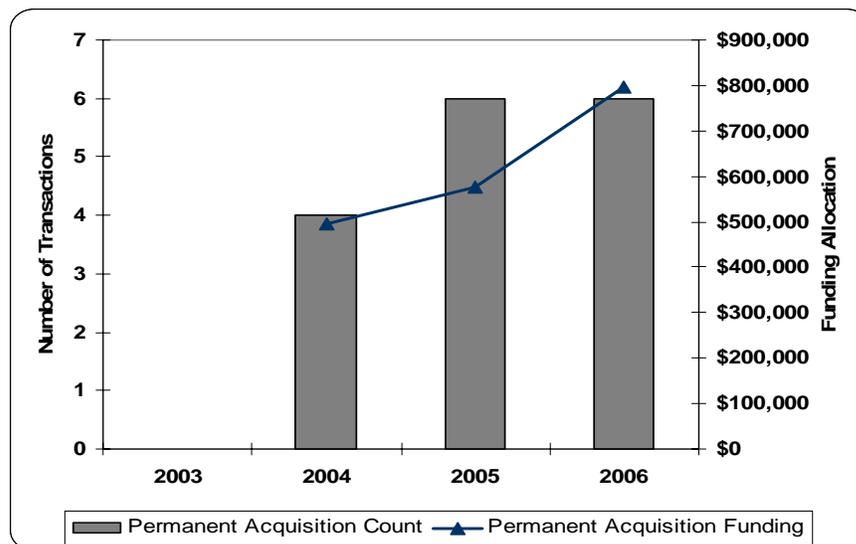
Figure 15
Permanent Purchase Prices 2003 – 2006



Expenditures

Permanent acquisition expenditures by BPA through the CBWTP in 2006 were higher than any other year. The number of acquisitions was the same as 2005. Figure 16 displays CBWTP permanent acquisition expenditure from 2003 through 2006. There were no permanent acquisitions in 2003. Permanent acquisition funding in 2006 is \$795,400.

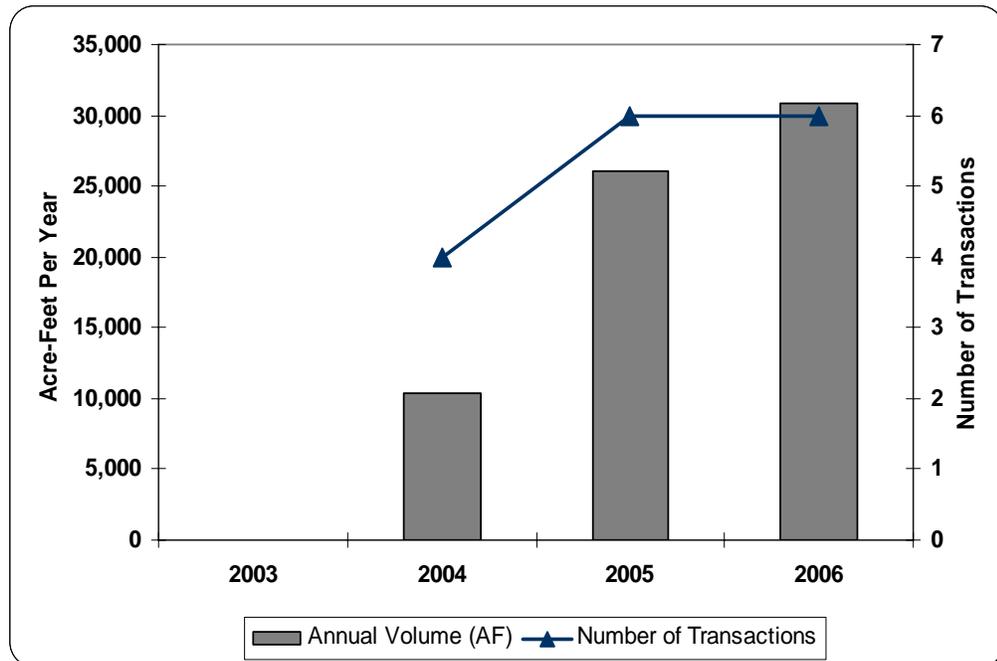
Figure 16
CBWTP Permanent Purchase Expenditure 2003 - 2006



Annual Volume

Annual volume of water instream through permanent purchase has increased each year of the program. The quantity instream in 2006 was approximately 30,800 acre-feet. The total annual volume instream for acquisitions in 2006 was approximately 4,730 acre-feet. This is the lowest annual increase in permanent instream flow volume for the program.

Figure 17
2003 – 2006 Permanent Purchase Annual Volume



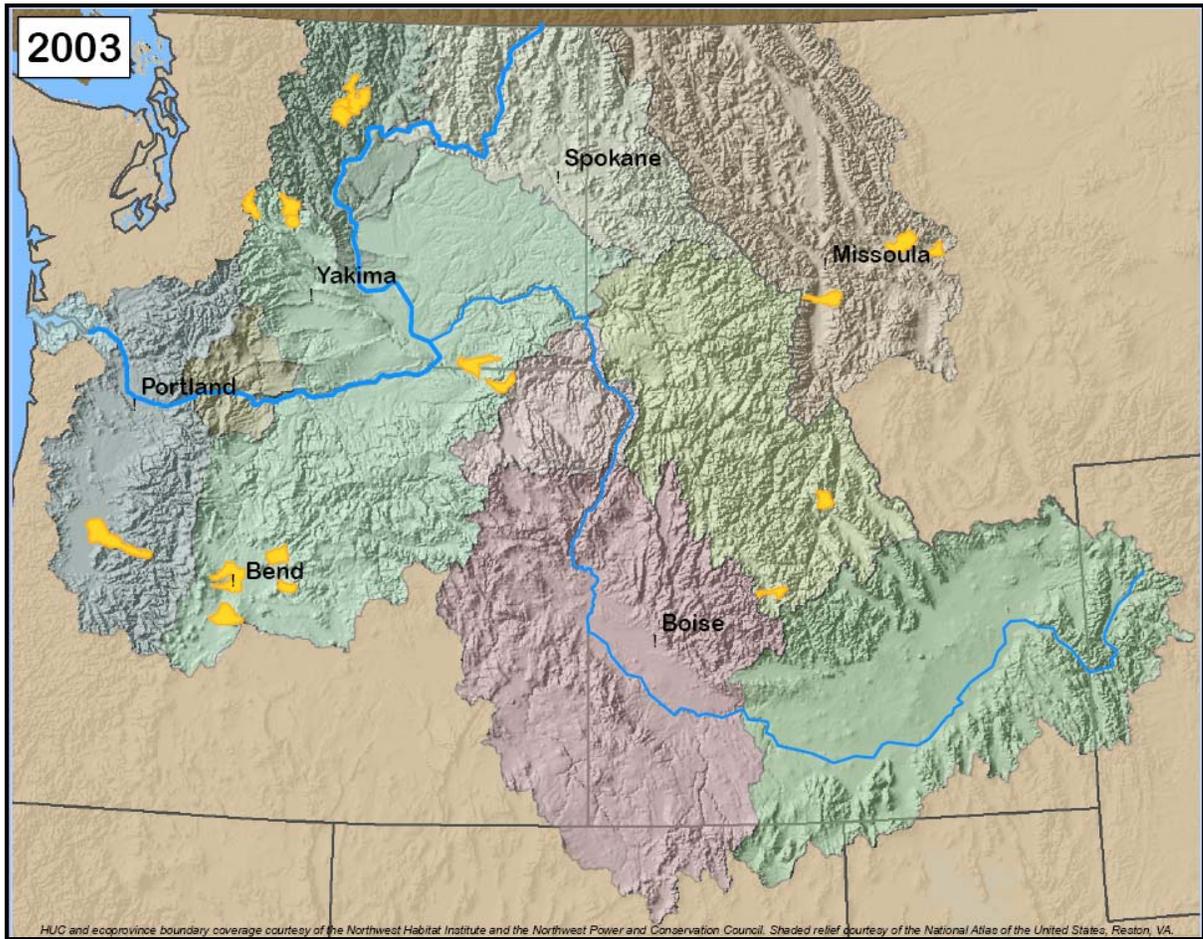
Geographic Area

Growth of the Program

The growth of the CBWTP can be measured geographically as well as with metrics such as volume instream and transactions funded. By analyzing transactions according to location, the geographic growth of the program can be displayed. Using the fifth field Hydrologic Unit Codes (HUCs), a geographic delineation of sub-watersheds, the number and location of HUCs with transactions can be displayed. In 2003, the first year transactions were funded, eighteen fifth field HUCs had transactions, as displayed in Figure 18.

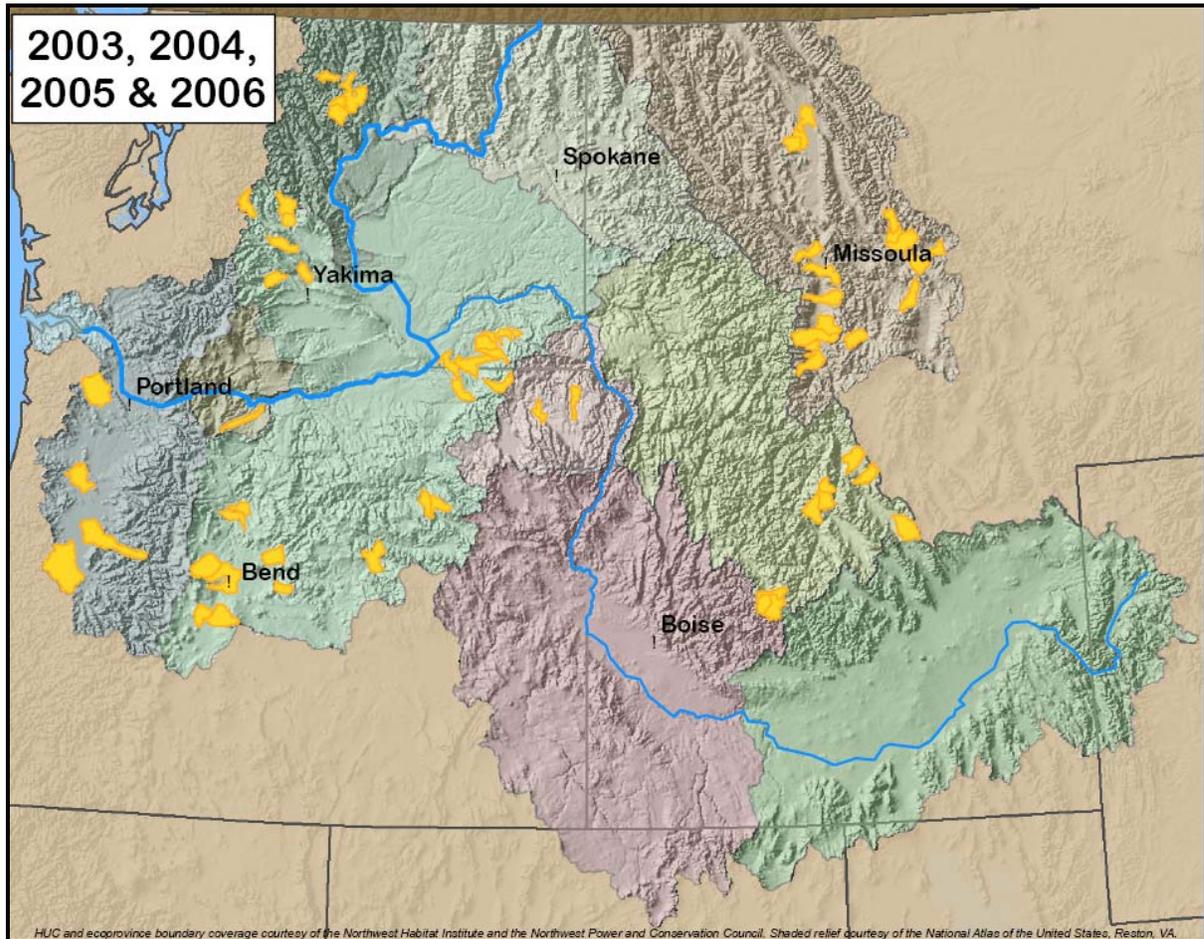


Figure 18
CBWTP Transactions by Fifth Field HUC in 2003



By the end of 2006, sixty-one HUCs had at least one transaction with most HUCs displayed in Figure 19, containing more than one transaction. The annual average of new HUCs with transactions was approximately fifteen. The lowest number of new HUCs, ten, occurred in 2006. This may signal that the geographic growth rate measured by fifth field HUCs is slowing.

Figure 19
2006 CBWTP Transactions by Fifth Field HUC in 2006



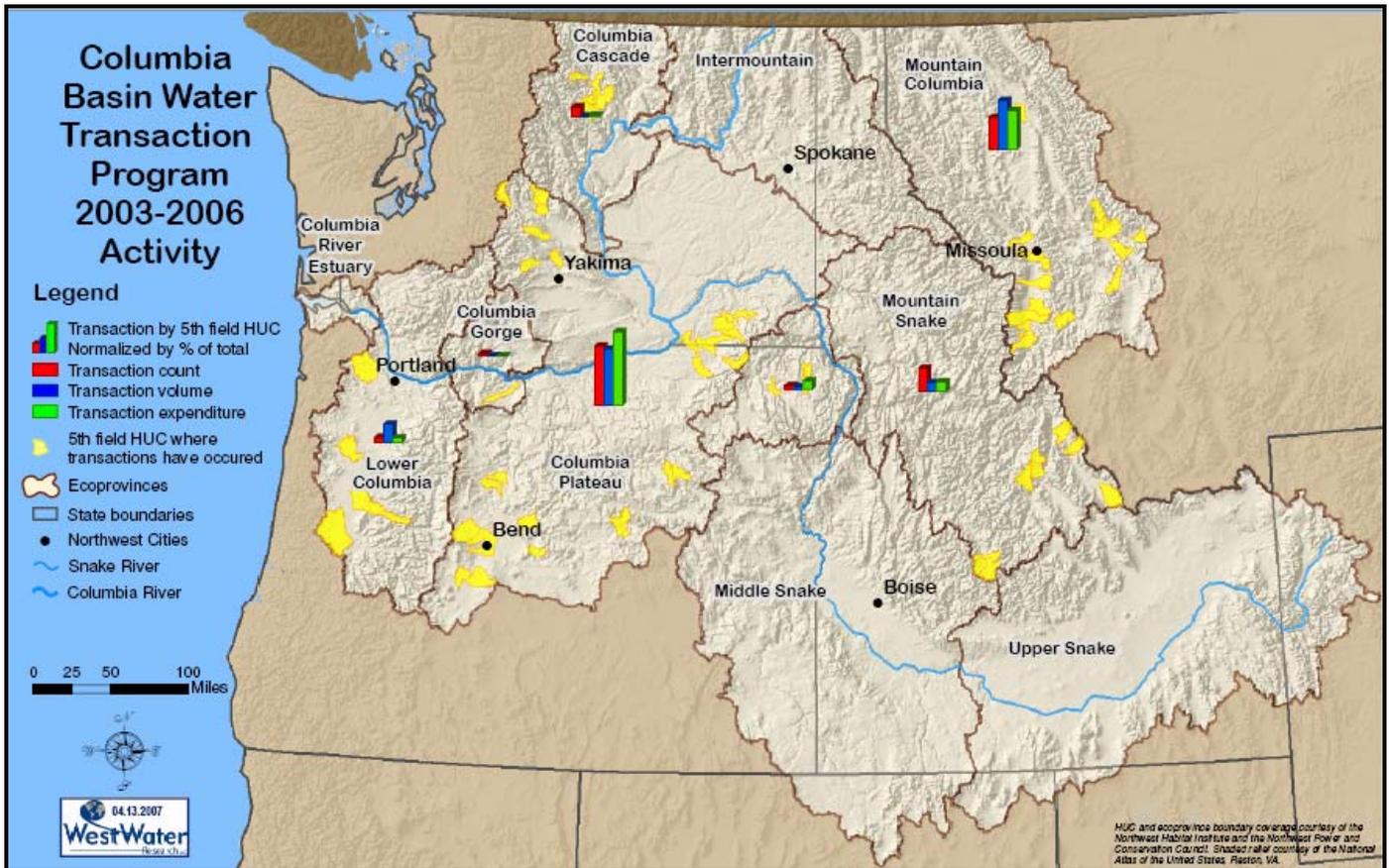
Eco-Province Summary

Displaying summarized transaction activity by Eco-Province reveals two regions with the majority of the transactions, funding and volume instream. The two Eco-Provinces are the Columbia Plateau and the Mountain Columbia.

The Columbia Plateau Eco-Province encompasses three areas of localized transaction activity, the Upper Deschutes River basin, the Yakima basin, and the Walla Walla River basin. Through sixty-three transactions from 2003 through 2006, the total volume of water instream in the Columbia Plateau Eco-Province is approximately 104,400 acre-feet. For the same period and geography the CBWTP expenditure on transactions is approximately \$1,949,000 with an additional \$1,555,000 from cost share sources.

Two of the largest single transactions in the CBWTP occurred in the Mountain Columbia Eco-Province. The transactions were each for approximately 10,000 acre feet per year (2004 Trout Unlimited on Painted Rocks, and 2005 Montana Water Project on Rock Creek). There have been thirty five transactions in the Mountain Columbia Eco-Province for a total of 90,760 acre feet of water instream. The CBWTP has contributed approximately \$824,000 towards transactions in the Mountain Columbia. Cost share contributions in the Mountain Columbia have totaled approximately \$1,020,000.

Figure 20
CBWTP Activity by Eco-Province



Summary by Anadromous and Resident Fisheries

Ultimately, the primary goal of Bonneville Power Authority's (BPA) support of CBWTP is to enhance tributary instream flows in the Columbia Basin for the benefit of anadromous salmonid species. Instream flow enhancement in tributary basins without anadromous salmonid species has been funded by the CBWTP since its inception. Some basins that previously had salmonid species have the potential for the return of the species if activities (like tributary reconnects) are implemented. In other cases, instream flow enhancement in a tributary without salmonids may improve conditions throughout the basin, therefore, benefiting salmonids.

From 2003 through 2006, there has been more funding available for transactions than eligible transactions on an annual basis. The successful growth of the CBWTP will likely result in the converse: more transactions than available funding. Because of lack of funding, the higher priority for BPA will likely be on transactions in basins with anadromous fish.

This section of the report provides a historical summary of CBWTP funding expenditures and instream flow volume by fisheries with and without anadromous fish. Any changes in available BPA funding for resident fisheries may impact the growth of the CBWTP. This summary is intended to provide information useful in considering the potential impacts.

Expenditures

Partner cost share has been significant in the success of the CBWTP. During the first two years of the program, partner cost share was nearly equal to BPA funding invested in stream flow through the CBWTP. In analyzing expenditures for anadromous fisheries and resident fisheries, this analysis compares BPA and cost share expenditures for instream flow through the CBWTP. Partner cost share funding is not typically limited by anadromous fish presence. Therefore, priorities in transaction funding by partner cost share sources may not be the same as BPA funding priorities in the CBWTP.

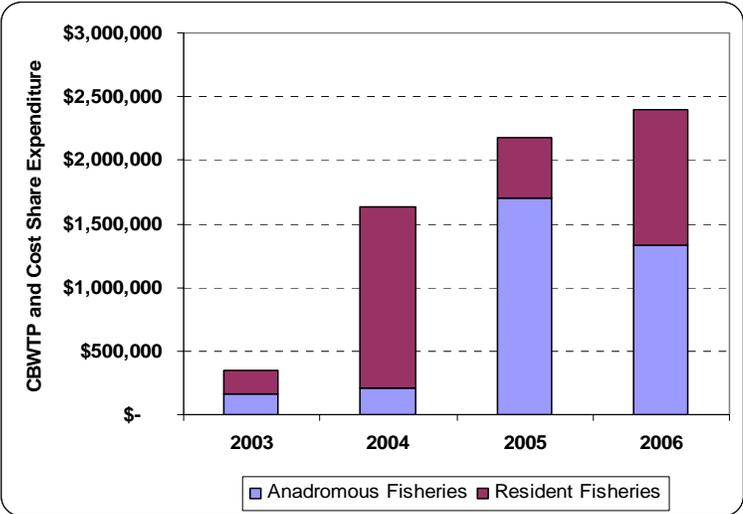
BPA and Cost Share Expenditures

Figure 21 displays the total transaction expenditures by year by anadromous and resident fisheries. The largest annual expenditure on anadromous fisheries was in 2005 at approximately \$1,708,000. The largest annual expenditure on resident fisheries was in 2004 at approximately \$1,417,500. In 2006 approximately



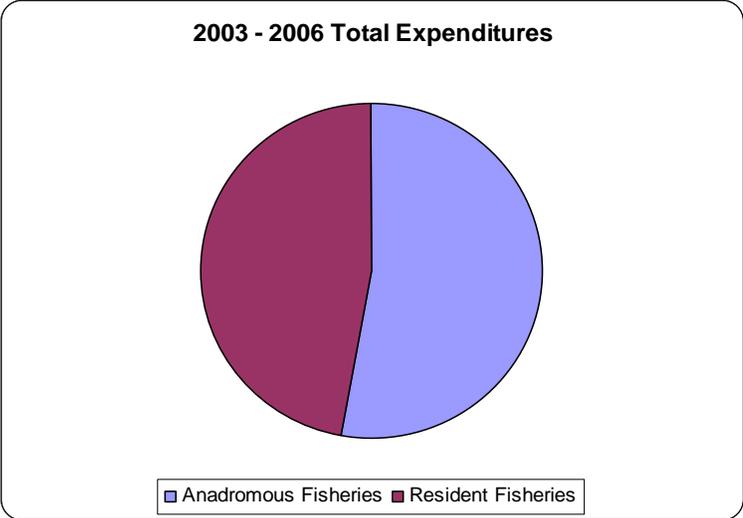
\$1,057,000 was spent on resident fisheries transactions and approximately \$1,336,000 was spent on anadromous fisheries transactions

Figure 21
Annual CBWTP and Partner Cost Share Expenditures
by Anadromous and Resident Fisheries 2003-2006



Total expenditures for the period from 2003 through 2006 was nearly equal between anadromous and resident fisheries. Figure 22 displays the total transaction expenditures on anadromous fisheries compared to resident fisheries from 2003 through 2006. Approximately \$3,136,000 was spent on resident fisheries while approximately \$3,420,000 was spent on anadromous fisheries.

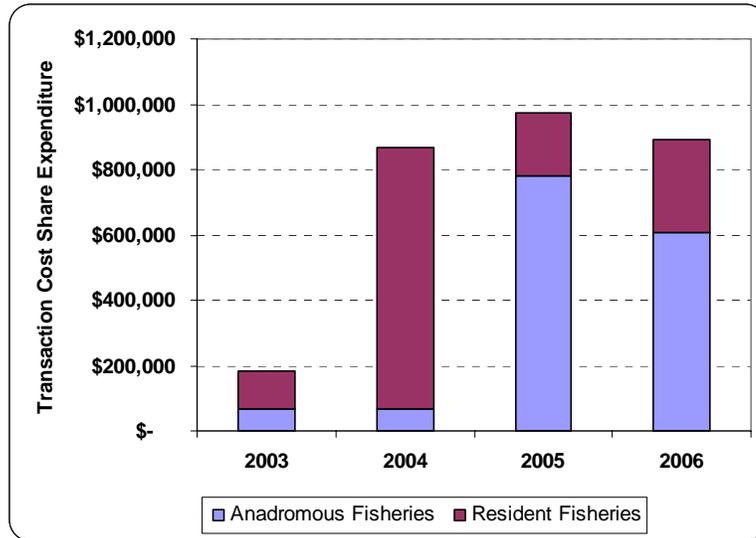
Figure 22
2003-2006 Total CBWTP and Partner Cost Share Expenditures
by Anadromous and Resident Fisheries



Cost Share Expenditures

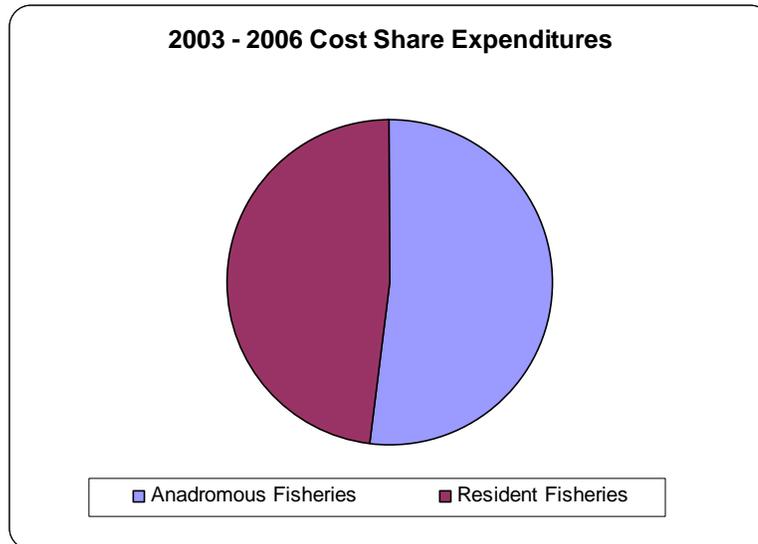
In 2003 and 2004 cost share expenditures on resident fisheries exceeded expenditures on anadromous fisheries. However, in 2005, cost share expenditure on anadromous fisheries was more than four times that on resident fisheries. Figure 23 displays the annual cost share expenditure on transactions by resident and anadromous fisheries from 2003 through 2006. The largest cost share expenditure on anadromous fisheries, approximately \$781,000, contributed to the largest total annual cost share expenditure of \$972,000.

Figure 23
Annual Partner Cost Share Expenditures
by Anadromous and Resident Fisheries 2003-2006



Cost share expenditures on anadromous fisheries exceeded expenditures on resident fisheries by approximately nine percent for the period from 2003 through 2006. Approximately \$124,000 more has been spent on anadromous fisheries by cost share partners. Figure 24 displays the cost share transaction expenditures on anadromous fisheries compared to resident fisheries from 2003 through 2006. Expenditures on resident fisheries for the period were approximately \$1,396,000. Expenditures on anadromous fisheries were approximately \$1,520,000. Total cost share expenditures on CBWTP transactions was over \$2,916,000.

Figure 24
2003-2006 Partner Cost Share Expenditures
by Anadromous and Resident Fisheries

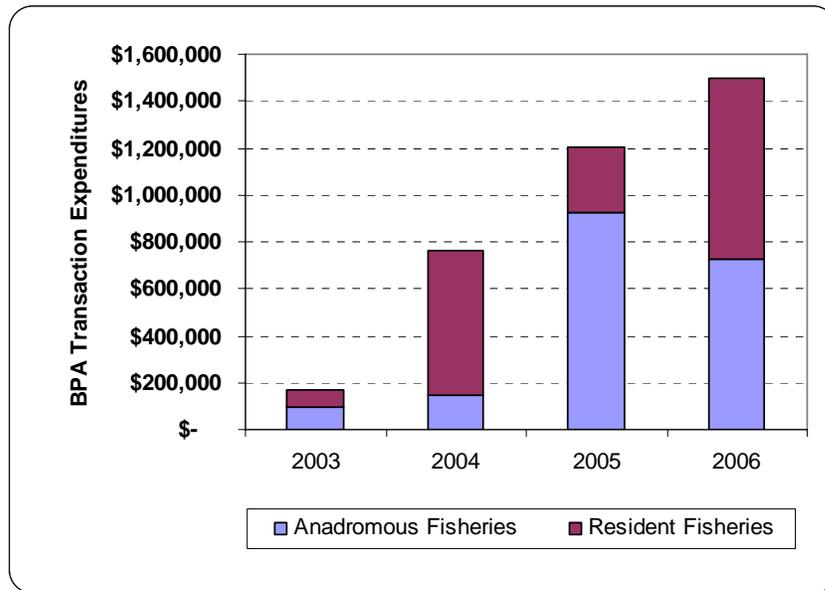


BPA Expenditures

Two out of the four years of the CBWTP, BPA transaction expenditures on resident fisheries has exceeded expenditures on anadromous fisheries. In 2004 approximately \$617,000 went toward resident fisheries and approximately \$147,000 went toward anadromous fisheries. In 2006 approximately \$768,000 went toward resident fisheries and approximately \$728,000 went toward anadromous fisheries.

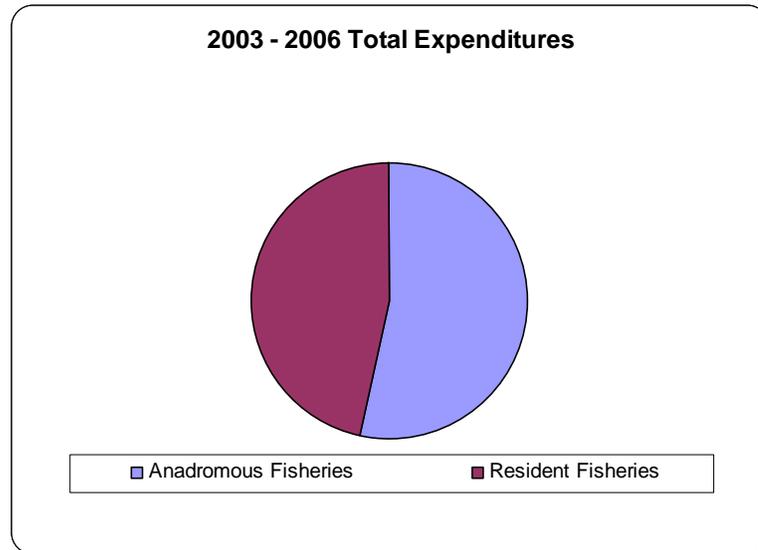
The difference in 2006 is primarily based upon water instream through transactions that did not require funding for the year. Figure 25 displays the annual CBWTP transaction expenditures by anadromous and resident fisheries. The largest BPA expenditure on transactions was in 2006. BPA funding on transactions was almost as high in 2005 but the percentage going toward anadromous fisheries was greater, about seventy-seven percent compared to fifty percent in 2006.

Figure 25
Annual CBWTP Expenditures
by Anadromous and Resident Fisheries 2003-2006



Total BPA transaction funding for anadromous fisheries has exceeded expenditures for resident fisheries from 2003 through 2006. Anadromous fisheries have received approximately \$157,000 more than resident fisheries over the life of the program. Figure 26 displays the BPA transaction expenditures by anadromous fisheries compared to resident fisheries from 2003 through 2006. Approximately \$1,987,000 has been spent on water transactions in anadromous fisheries by BPA. Resident fisheries have received approximately \$1,740,000 over the same period.

Figure 26
2003-2006 Total BPA Expenditures
by Anadromous and Resident Fisheries

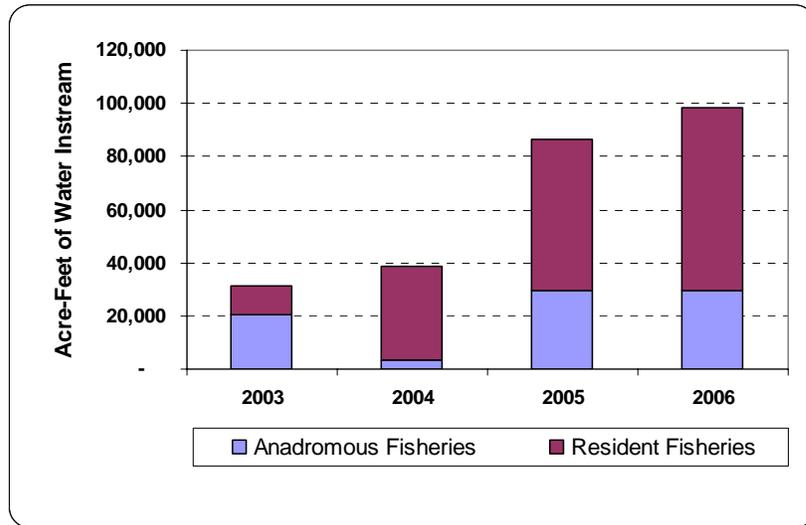


The previous sub-sections of this report have focused on transaction expenditures for anadromous and resident fisheries. Combining the BPA expenditures and the partner costs share expenditures, anadromous fisheries have received approximately \$284,000 more transaction funding than resident fisheries. This is about four percent of the combined expenditures of approximately \$6,556,000. Partner cost share funding on anadromous fisheries has exceeded resident fisheries by approximately \$124,000. BPA funding for anadromous fisheries transactions has exceeded resident fisheries by approximately \$157,000. The next sub-section will summarize the volume of water instream by anadromous and resident fisheries. Between the two types of fisheries, volume of water is not as equal as funding.

Annual Volume

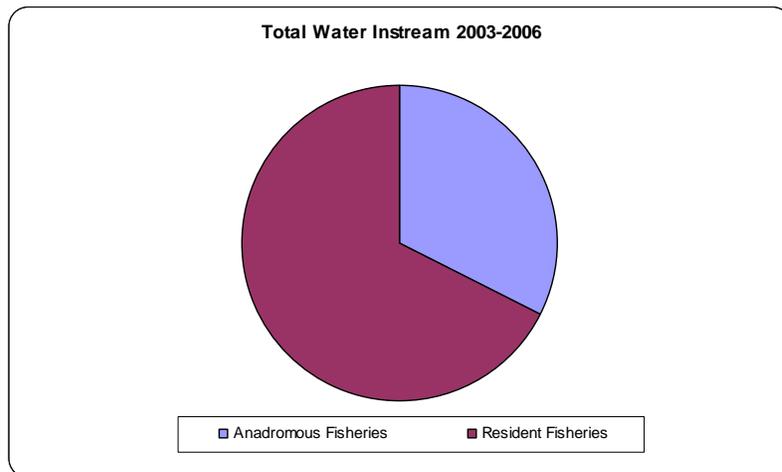
The annual volume of water instream in resident fisheries has exceeded the amount in anadromous fisheries in every year of the CBWTP except 2003. From 2004 through 2006, the annual amount of water instream through the CBWTP in resident fisheries has been double or more compared to anadromous fisheries. Figure 27 displays CBWTP annual water volume instream by anadromous and resident fisheries. The year with the largest annual volume of water instream is 2006 at approximately 98,000 acre-feet. About thirty percent of the 2006 instream volume was in anadromous fisheries. The year with the largest instream volume in anadromous fisheries was 2006 at approximately 29,600 acre-feet.

Figure 27
Annual Transaction Volume
by Anadromous and Resident Fisheries 2003-2006



The total volume of water instream in resident fisheries, through CBWTP transactions, is more than twice the amount in anadromous fisheries. From 2003 through 2006 instream volume in resident fisheries is approximately 171,000 acre-feet. For the same period in anadromous fisheries, the instream volume is approximately 83,000 acre-feet. Figure 28 displays the total volume instream through CBWTP by anadromous and resident fisheries from 2003 through 2006. The total volume instream through CBWTP activity is approximately 254,000 acre-feet.

Figure 28
2003-2006 Total Transaction Volume
by Anadromous and Resident Fisheries



The big difference between transaction instream flow in resident fisheries compared to anadromous fisheries is the result of five large transactions, three in the Upper Deschutes in Oregon and two in Montana. These same transactions were also primarily funded through partner cost share.

The Deschutes River Conservancy (DRC) has an annual lease program on the Deschutes River and its tributaries above Lake Billy Chinook. The dam creating the lake is a barrier to anadromous fish passage. As a result, transactions occurring above the dam are not considered to be in anadromous fisheries. The DRC began this specific annual program in 2004. Instream volume leased since 2004 is 63,000 acre-feet. Cost share expenditures on these three transactions exceeded CBWTP expenditures by \$124,000.

Trout Unlimited's Montana Water Project has had two large transactions in resident fisheries. The first of these two transactions occurred in 2003 and was a long term, conserved water transaction of 4,578 acre-feet per year on Poorman Creek. The CBWTP contributed \$16,327 to this transaction while the cost share contribution was \$107,000. The second transaction is a permanent contract for release of stored water from Painted Rocks Reservoir. The contract provides releases of 10,000 acre-feet annually. The CBWTP contributed \$400,000 to this transaction while the various cost share sources contributed \$1,200,000.

Combining these five resident fisheries transactions, the total volume instream is 111,091 acre-feet. The total cost share funding of these transactions is \$1,608,636. Table 7 displays the volume instream and category of funding for the five specified transactions. Cost share funding on these transactions is \$1,014,673 higher than CBWTP funding.

Table 7
CBWTP Large Resident Fisheries Transactions

Transaction	Volume Instream (AF)	CBWTP Funding	Cost Share Funding
DRC Annual Lease Program 2004	10,125	\$61,636	\$61,636
DRC Annual Lease Program 2005	23,453	\$56,000	\$112,000
DRC Annual Lease Program 2006	29,203	\$60,000	\$128,000
TU-MWP Poorman 2003	18,310	\$16,327	\$107,000
TU-MWP Painted Rocks 2004	30,000	\$400,000	\$1,200,000
Total	111,091	\$593,963	\$1,608,636

Summary and Conclusions

By looking at the trends in economic measures of transactions, 2006 may be the first year of a mature CBWTP. Overall, the program grew in 2006 but at much lower rates than previous years. By some measures the program remained at 2005 levels or declined.

- The number of short term transactions in 2006 increased by three from 2005, and the number of long term deals decreased by one.
- Total annual volume instream increased but not at previous growth rates.
- Short term lease funding increased at a lower rate than previous years.
- Permanent acquisition funding increased significantly.
- BPA transaction expenditures increased by approximately twenty-four percent in 2006; yet cost share expenditures decreased by eight percent.
- Geographic growth of the CBWTP by fifth field HUC grew by ten HUCs, the lowest in the four years of the program.

Another example of the maturation of the CBWTP is that QLEs are now able to bring more transactions to the CBWTP than is available for BPA funding. Therefore, competition for limited BPA funding may require the CBWTP to prioritize which transactions to fund.

However, based upon historical transactions in resident fisheries, this may lower in the total annual quantity of water instream. Cost share expenditures on instream flow transactions has been relatively even between anadromous and resident fisheries.



Correspondingly, over the life of the CBWTP, the water instream in resident fisheries has more than doubled that in anadromous fisheries. Another result may be the reduction in permanent transactions as many have been in resident fisheries.

The goal of the CBWTP is to use market-based mechanisms to improve flow in key stream reaches within the Columbia River Basin. As the program matures, measuring the success of the program will become more complex. Success is not necessarily constant financial, geographic, and quantitative growth. The program endeavors to enhance instream flow conditions on tributary streams at critical times for survival of anadromous fish. Perhaps success will be achieved through a consistent number of transactions annually, in specific tributaries, with relatively small quantities of water that may not be inexpensive.



Appendix A: CBWTP Background

CBWTP Origin and Mission

The CBWTP was established in 2002 to support innovative and voluntary water transactions that increase flows to tributary streams and rivers of the Columbia Basin. The program grew out of a collaborative effort between the Bonneville Power Administration (BPA) with the Northwest Power and Conservation Council (NPCC) to create and support innovative market based mechanism for improving tributary flows in the Columbia Basin.

BPA and the Pacific Northwest office of the National Fish and Wildlife Foundation (NFWF) manage the CBWTP through a cooperative funding agreement. NFWF is a nonprofit organization dedicated to the conservation of fish, wildlife and plants, and the habitat on which they depend. NFWF is authorized to accept federal funds and leverage them with non-federal funding partners.

The CBWTP recognizes the importance and need for local cooperation to restore stream flows. The program is structured to achieve local support by funding and supporting state water agencies and nonprofit groups that specialize in market-based flow restoration efforts. A number of not for profit organizations and governmental agencies applied to the CBWTP in 2002 to become Qualified Local Entities (QLEs) eligible for applying to the Program for project and transaction funding. Ten QLEs were selected by BPA in 2002 based upon demonstrated potential to implement tributary flow improvements in the four primary Columbia Basin states (Idaho, Montana, Oregon and Washington). The QLEs seek out and create transactions to enhance tributary flow at the local level with irrigation districts, individual water users and local organizations. The selected entities are displayed in Table 8.



Table 8
2005 Qualified Legal Entities

State	Qualified Local Entity
Idaho	Idaho Department of Water Resources (IDWR)
Montana	Montana Water Trust (MWT) Trout-Unlimited – Montana Water Project (TU-MWP)
Oregon	Deschutes River Conservancy (DRC) Oregon Water Trust (OWT) Oregon Water Resources Department (OWRD)
Washington	Washington Water Trust (WWT) Washington Department of Ecology (DOE) Walla Walla Watershed Alliance (WWWA)
All Basin States	Bonneville Environmental Foundation

The nonprofit organizations have a strong local community presence. Local water users and community leaders often serve as board members for these organizations. The state government agency QLEs are responsible for water rights administration in their states. These agencies process transfers and changes to water rights. The state agencies are active in local watershed advisory groups and work with local water users. The QLEs lease, purchase, and assist in water conservation opportunities most often with individual irrigators and irrigation districts. Nearly all of the QLEs were in existence prior to the founding of the CBWTP. However, instream flow enhancement capabilities have improved through additional funding, technical support, and transaction information provided through the CBWTP.

Transaction Proposal and Funding Process

The program has developed a comprehensive process for funding individual transactions. During each fiscal year, the program solicits and receives detailed water transaction proposals from QLEs. The proposals provide information on the proposed deal; including information on the water right, stream reach, fish species, deal structure, price and terms, and other relevant factors. A volunteer review panel called the Transaction Advisory Committee (TAC) consisting of water, conservation, and legal experts evaluate project proposals using BPA and NPCC approved criteria to make funding recommendations. The TAC’s funding recommendations are scientifically appropriate, consistent with federal, state, and local policies and are economically justifiable. Upon approval, project implementation is tracked through monitoring reports provided by QLEs. Ongoing monitoring activities performed by

QLEs include water measurement, site visits, satellite imagery analysis, and habitat measurement, depending upon the project and the QLE.

QLEs are able to submit requests for project funding at several points during each year. Multiple rounds of project proposal reviews are required prior to funding. Proposals can be rejected due to inconsistency with the Program's objectives, high costs, and incomplete information. The CBWTP transaction proposal, and funding process is described below:

1. QLEs prepare a transaction proposal based upon their activity with local land and water right holders.
2. The proposal is submitted electronically to the CBWTP and the transaction information is stored in a database. The QLE is able to confer with the Program during the proposal formation to ensure the proposed transaction satisfies the Program criteria.
3. Once a final proposal is submitted to the Program, it is analyzed and summarized by NFWF and then forwarded to the Transaction Advisory Committee (TAC) for review and comment.
4. With the TAC comments incorporated, the CBWTP submits the proposal to BPA and the NPCC for approval. If approved, the Program authorizes the QLE to invoice for the transaction funding; the QLE receives the payment and secures the water.

Interpreting Report Prices in this Report

Lease rates and purchase prices conveyed in this report are generally lower than other observed market prices throughout the Columbia River Basin. There are several reasons why reported prices are systematically lower than other observed market prices. First, water rights purchased or leased for non-instream use are generally limited to transfer of the consumptive use quantity of the water right. The consumptive use quantity is generally forty to seventy-five percent of the authorized or historical diversion quantity. Instream transactions are often able to utilize the authorized or historical diversion quantity of a water right through a limited portion of primary stream reach immediately below the original diversion point. In some instances, one objective of an instream transaction may be to restore flows immediately below the original diversion point. Therefore, the transaction benefits from the full diversion quantity, not just the consumptive use quantity, for the initial primary stream reach. Most non-instream transactions (and many instream transactions) require a water right to be moved downstream and past other water right diversion points. Under those circumstances, it is common for the transfer to be



limited to the consumptive portion of the water right (i.e., the secondary instream reach). The following section describes the difference in pricing consumptively used water and water that includes both consumptive and non-consumptive water use.

Definition of Consumptive Use

Water diverted which is no longer available for use because it has evaporated, transpired, been incorporated into products and crops, or consumed by man or livestock is considered to be consumptive use water. Water losses due to leakages during the transport of water between the diversion point (or points) and the place (or places) of use are generally excluded from consumptive use.

Definition of Non-Consumptive Use

Non-consumptive water use occurs when water is diverted and at some point returned to the source in the same quantity as diverted. Examples of this classification include the following.

- Hydroelectric projects when the water is not diverted away from the natural confines of the river or stream channel. This type of hydroelectric project is commonly called run-of-the-river;
- Beautification ponds, fish hatcheries and off channel hydropower generation when the outflow is returned to the system.
- Irrigation in excess of the consumptive use amount that returns to the river below the original diversion point.

Definition of Instream Use

Instream use is a type of non-consumptive use that often pertains to a precise flow that is maintained in a waterway and is protected from diversion by consumptive and non-consumptive uses during a defined period of time. Examples of instream uses are typically associated with recreational, navigational, water quality, ecosystem preservation or restoration uses.

Market Water Transaction

In most other market sales and transfers of water rights the value of the water right is based upon the consumptive use quantity of the right, not the authorized or historical diversion quantity of the right. Transferring only the consumptive use of the water right, which is less than the authorized or historical diversion quantity, prevents injury to other downstream water right holders that divert from the same source. The



potential for injury from transferring the non-consumptive use portion is based upon that portion of water being legally available for other downstream uses.

CBWTP Instream Flow Transactions

Water rights purchased or leased for instream flow often include the consumptive and non-consumptive portions of a water right, at least for the initial primary stream reach. In other words, for instream flow transactions, the authorized or historical diversion quantity is often the volume of water transferred to instream use in the primary reach. This amount is sometimes reduced to the consumptive use quantity for the secondary reach of the instream use. Even diversion reduction agreements may allow both consumptive and non-consumptive portions of a water right to remain instream for some initial primary stream reach.

CBWTP Transaction Prices

A water right will have a different unit price if the value is based upon the authorized or historical diversion quantity rather than the consumptive use quantity of water. Inclusion of non-consumptive water in unit prices effectively decreases the unit price of a given water right. The water rights purchased and leased in the CBWTP are not necessarily of a lower total value than those leased and purchased in the general market. However, the difference in the unit price may be of significant importance to water right holders that have participated in the CBWTP, those considering participation and those comparing water market prices to the prices in this report. Further complicating the issue is the manner in which QLEs report water transactions. Each state in the Columbia Basin has its own water transfer policies which affect the amount of water involved in instream flow transactions.

For this report, water unit prices are based upon the total cost of the water and the QLE's estimated quantity of water added instream. The methodology of the estimated quantity of water added instream varies by QLE and by state and typically includes some non-consumptive water. Therefore, water right unit prices in the CBWTP are lower than other observed market prices for water rights. To effectively compare unit prices of instream transactions to other market transactions would require an analysis of the consumptive use quantity of each CBWTP water right. This type of analysis is beyond the scope of this report and the CBWTP data currently available.

