Water Markets in the Pacific Northwest: Prices, Trading, and Trends

WestWater Research
August 24, 2015
Agenda

• Defining the Water Rights Market
  – Common water right asset classes
  – Types of transactions
  – Buyers and sellers
  – Market drivers
• Sizing the Market
  – Trading activity by region
• State-by-State Market Overview
  – Idaho
  – Montana
  – Oregon
  – Washington
• Water Rights Price Index
• Q&A
WestWater Research

• **Economic and Financial Advisory Firm**
  – Nationwide practice in water valuation, water acquisition planning, water investments, and economic planning.

• **Waterlitix**
  – The most comprehensive database of water right price and sales information.
  – Data on over 15,000 western water rights transactions maintained by a team of analysts.

• **Creating Value Through Innovation**
  – Arizona effluent transaction nominated for 2014 “Water Deal of the Year.”

• **Large Scale Development Experience**
  – Advised on over $750 million in water transactions.
  – Experience in every western state including Alaska.

• **Bringing Investor Perspective**
  – Work regularly with private equity firms and hedge funds in structuring deals and sourcing funds for water development and acquisition projects.

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**Office Locations**

<table>
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<tr>
<th>Main Office</th>
<th>West Coast</th>
<th>Southwest</th>
<th>Intermountain</th>
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<tr>
<td>805 W. Idaho Street, 3rd Floor, Suite 310, Boise, ID 83702</td>
<td>11504 NE 207th Avenue, Brush Prairie, WA 98606</td>
<td>5353 N. 16th Street, 3rd Floor, Suite 320, Phoenix, AZ 85016</td>
<td>418 S. Howes Street, 2nd Floor, Suite 220, Ft. Collins, CO 80521</td>
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</tbody>
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DEFINING THE WATER RIGHTS MARKET
Common Types of Water Assets

Asset classes are highly regionalized based on local legal and regulatory institutions.

**Surface Water Rights**
- Direct use of stream flows when in priority.
- Active Markets:
  - Idaho
  - Oregon
  - Washington

**Groundwater Rights**
- Withdrawal and use of groundwater through wells.
- Active Markets:
  - Oregon
  - Washington

**Storage Water Rights**
- Entitlement to store water for use at a later time.
- Active Markets:
  - Idaho
  - Washington

**Effluent**
- Entitlement to use treated wastewater, generally for irrigation, industrial use, or groundwater recharge.
- Active Markets:
  - Arizona
  - California
  - Colorado

**Groundwater Storage & Recovery**
- Water stored underground in the aquifer to accrue credits authorizing later withdrawal.
- Active Markets:
  - Arizona
  - California
PNW Regional Water Market
PNW Water Market Participants

**Buyers**
- Federal & State Agencies
- Non-profit Conservation Groups
- Municipalities
- Agriculture
- Industrial Facilities

**Sellers**
- Agricultural Producers
- Municipalities
- Native American Tribes
- Industrial Facilities (often decommissioned)
Market Drivers

Environmental
- ESA Protection
- Shifting societal values

Land Development
- Developers must secure reliable water supplies for planned communities

Hydrologic Conditions
- Prolonged drought and increasing supply variability may lead to increased trading activity

Agriculture
- Largest water user
- Expansion of irrigated acreage

Regulatory
- Requirements to demonstrate long-term urban water supplies
- Tribal water rights settlements

Growth
- Population & economic growth leads to new and expanding water demands
Water Rights Transaction Structures

- Markets have evolved to incorporate new and innovative transaction structures.
- Shift from historic “buy and dry” model to flexible agreements supporting growth and/or environmental conservation while preserving historic agricultural uses.

### Demand Sector

<table>
<thead>
<tr>
<th>Preferred Deal Structure</th>
<th>Agricultural</th>
<th>Municipal</th>
<th>Industrial</th>
<th>Environmental</th>
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<tr>
<td><strong>Traditional</strong></td>
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<tr>
<td>Permanent Sale</td>
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<tr>
<td>Spot Market (1-Year Lease)</td>
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<tr>
<td>Multi-Year Lease</td>
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<td>Take or Pay Contract</td>
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<td>Dry Year Option</td>
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<td>Rotational Fallowing</td>
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<td>Conserved Water Project</td>
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<td>Partial Season Lease</td>
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SIZING THE MARKET
Total Market Size
Idaho, Montana, Oregon and Washington

• **2014 Value Traded:** $8.7 million.
  • Volume: Leases account for the majority of annual volume traded.
  • Value: Sales account for the bulk of spending.

• **Market Peak:**
  • Volume: 7.75M AF in 2010.
  • Value: $62M in 2005.
State-by-State Rundown

Value and Volume Traded - 10 Year Total (2005-2014)
Regional Markets

Transaction Size and Frequency

- **Idaho**
  - Mix of sales and leases.
  - Leases are primarily high-volume ESA driven flow augmentation.

- **Oregon**
  - Majority of transactions are leases, with some sales.

- **Montana**
  - Limited trading activity.
  - Primarily environmental leases.

- **Washington**
  - Most developed market among the Pacific Northwest states
  - Active sale market, with some leasing activity.
STATE-BY-STATE OVERVIEW
Washington Surface Water Market

Market Overview

- Lease market primarily driven by environmental demand
- Permanent sale market driven by industrial & land development
- Both sale and lease prices rose substantially in 2014
- Trading activity peaked in 2013
  - Number of large environmental transactions
Washington Surface Water Market

Market Overview

• Lease market primarily driven by environmental demand
• Permanent sale market driven by industrial & land development
• Both sale and lease prices rose substantially in 2014
  – Number of large environmental transactions
Large environmental lease deals at low lease rates
  – Bureau of Reclamation
  – Idaho Power Company

Some municipal trading activity

Average sale prices fell significantly after peak in 2009

Lease prices have remained relatively flat

*WWR data current through 2012
Sale prices have steadily risen since 2010
  - Average price of $750/AF in 2013

Sizeable lease market, 63,000 AF traded in 2013.
  - Primarily environmental
Montana Surface Water Market

Market Overview

- Limited trading activity
  - Primarily environmental transactions
  - Limited urban water demand
- Average sale prices have declined in recent years
- Lease prices have generally ranged between $10 and $25 per acre-foot

Montana Prices and Trading

- Average Permanent Price ($/AF)
- Average Lease Rate ($/AF)
- Volume Traded (AF)

2010 2011 2012 2013 2014

Montana Prices and Trading

Sale  Lease

Average Permanent Price ($/AF)

Volume Traded (AF)

2010 2011 2012 2013 2014

Average Lease Rate ($/AF)
PNW Water Market

Regional Market Summary

Average Sale Price, 2010-2014

Average Lease Rate, 2010-2014
WATER RIGHTS PRICE INDEX
Water Rights Price Index (WRPIx)

- Tracks annual performance of water rights prices in the western United States.
  - Base year: 2002.
  - Composite price index using transactions from 14 water right markets.
- 36% CAGR, 2012-2014.
- Recent uptick driven by:
  - Severe drought
  - Housing market recovery
  - Agricultural demand firming
QUESTIONS