TRANSACTION COSTS AND WATER TRANSFERS
Policy Challenges and Recommendations

Professor Bonnie Colby
University of Arizona
Western Governor’s Assoc Workshop, October, 2011

The Walton Family Foundation
Key points covered

- Background on water transactions in Colorado
- What are transaction costs (TC)? Why do we care?
- Creating balanced transfer review procedures
- Importance of TC for temporary transactions
- Recommendations
Colorado Sales - Average Annual Price

Average Price (2008 $)

$/Acre Feet (2008)

- 25,000
- 20,000
- 15,000
- 10,000
- 5,000
- 0


- Quantity Weighted Ave. Price 2008
- Linear (Quantity Weighted Ave. Price 2008)
Colorado Leases Average Annual Price

Weighted Average Price (2008 $)

$/Acre Feet (2008)


Quantity Weighted Ave. Price 2008
Colorado Leases - Annual Volume Transacted

Annual Quantity Traded through Leases

Acre Feet

- 10,000
- 20,000
- 30,000
- 40,000
- 50,000
- 60,000
- 70,000
- 80,000

Total Quantity Traded
What are transaction costs?

- Costs of engaging in transfer of water entitlements, beyond price paid to seller/lessee
  - hydrologic and engineering studies
  - verifying title/ownership
  - identifying suitable entitlements/owners
- Policy induced transaction costs – costs of satisfying state/federal procedural requirements for transfer approval and implementation
Change of Water Right Process

change of application submitted

reviewed by state agency; modifications, supporting materials are requested and submitted

change of application filed

public notice provided

protests filed

private resolution

state agency rules on change application approving, modifying, or denying the application

agency ruling appealed

judicial review of agency ruling

change in water use implemented and certified

no protest filed

hearing

no appeal of ruling
# TRANSACTIONS COSTS:

## COMPARISON AMONG STATES

From data collected in the 1980s, no recent studies available

<table>
<thead>
<tr>
<th></th>
<th>% Protest</th>
<th>% Approved</th>
<th>Months to Approval</th>
<th>Applicants’ TC/Af</th>
<th>TC/Water Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado</td>
<td>60</td>
<td>80</td>
<td>21</td>
<td>$187</td>
<td>.12</td>
</tr>
<tr>
<td>New Mexico</td>
<td>5</td>
<td>95</td>
<td>6</td>
<td>$54</td>
<td>.06</td>
</tr>
<tr>
<td>Utah</td>
<td>15</td>
<td>90</td>
<td>9</td>
<td>$66</td>
<td>.06</td>
</tr>
</tbody>
</table>
Why do transaction costs matter?
How transaction costs affect water transfers

**UPPER BOUND** -- What is the **most** the buyer could reasonably pay?

**LOWER BOUND** -- What is the **least** the seller could reasonably accept?
How transaction costs affect water transfers

**Upper Bound** -- What is the most the buyer could reasonably pay?

**Lower Bound** -- What is the least the seller could reasonably accept?

$100 per acre foot CU, new development

$15 per acre foot CU, pasture irrigation
How transaction costs affect water transfers

Difference in value, $85/af CU, motivates transaction

$100/af CU, new development

$15/af CU, pasture irrigation
How transaction costs affect water transfers

Transaction costs “erode” bargaining space -- reducing motivation to engage in transfers

**Diagram:**
- **Upper Bound:** What is the most the buyer could reasonably pay?
- **Negotiated Price**
- **Lower Bound:** What is the least the seller could reasonably accept?
Transaction costs – policy dilemma

- Incomplete consideration of transfer consequences reduces TC, but allows third-party econ and environ impacts
- Thorough review of proposed transfers increases TC, may reduce third-party impacts
- We want transfer review procedures that encourage “desirable transfers” and screen out “undesirable transfers”
Effective transfer review procedures

- all steps in review process evaluated for effectiveness in screening third-party impacts
- policies clearly identify third-party impacts to be screened in review process
- policies clearly identify who can participate in review process – file objections, testify at hearings, etc.
Temporary transfers essential for adapting to hydrologic extremes

- Seasonal transfers to maintain fish flows, water quality
- Dry year transfers for urban supply reliability

Temporary transfers particularly dampened by transaction costs! Need streamlined procedures.
Transfer review procedures – 3 recommendations

1) Rebuttable presumption for transferable quantity, varies by sub basin
2) Rebuttable presumption for third-party economic impacts and compensation, varies by county
3) 0.5% admin. fee on price paid to buy/lease water (half of one percent)
Transfer review procedures – recommendations

Example:

1) Transferable quantity for water used to irrigate pasture in Sub-basin X = 5.3 af/year

2) County-of-origin econ impacts for transfer of water used to irrigate pasture in County Z = $20 af/year, payable to County Z Economic Impacts Fund
   (County IMPLAN model used to determine standardized econ impact)

3) 500 af acquired at $4,000/af = $2 million total.
   Admin fee = 0.5%, $10,000
Final points: “burden of proof” and price info really matters in economics of water transactions!

Rebuttable presumption approach places burden of proof of those objecting to standardized calculations

Reduces transaction costs while still accounting for important transfer consequences

Admin fee based on price paid to buy/lease:
- funding for superb water admin
- public info on water prices helps develop market
Six Guidebooks on Water Transfers

- **Measurement, Monitoring and Enforcement of Temporary and Seasonal Irrigation Forbearance Agreements**, forthcoming, December, 2011
- **Understanding the Value of Water in Agriculture**, August, 2011
- **Entendiendo el Valor del Agua en la Agricultura**, October, 2011
- **Water Banks: A Tool for Enhancing Water Supply Reliability**, 2010
- **Dry-Year Water Supply Reliability Contracts: A Tool for Water Managers**, 2009

Bonnie Colby and various co-authors, University of Arizona, Department of Agricultural and Resource Economics.

http://ag.arizona.edu/people/profiles/colby/html
Six Guidebooks on Water Transfers

- *Understanding the Value of Water in Agriculture*, August, 2011
- *Entendiendo el Valor del Agua en la Agricultura*, October, 2011

Bonnie Colby and various co-authors, University of Arizona, Department of Agricultural and Resource Economics.

http://ag.arizona.edu/people/profiles/colby/html