Water Banking for a Resilient Colorado Economy

Water Resources Review Committee

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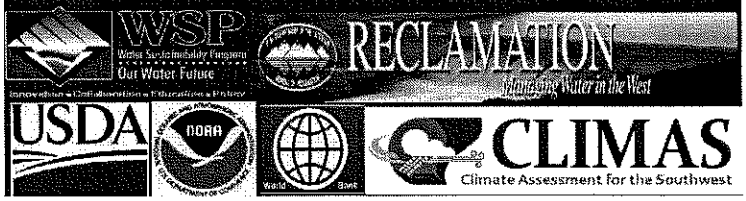

Water Banking - Why Bother?

- Reduce drought economic losses
- Stimulate both rural and urban economies
- Spread benefits across participating sectors: ag, urban, environmental, recreation

Issues Water Bank Can Address

- Aging ag water infrastructure
- Next generation of farmers
- Water for high value crops
- Improved M&I supply reliability
- Preserving ag amenities – open space, habitat
- Improved water quality
- Compact compliance

An effective water bank is worth the trouble it takes to get it going

To Succeed

- Water bank MUST reduce costs and delays in meeting intermittent water needs
- Provide real-time flexibility through menu of "pre-approved" types of transfers
- Facilitate seasonal, temporary trades (which are easily swamped by high approval costs & delays)

Water bank: contingent transfer agreements

- multi-year contracts negotiated in advance of need
- rapid response when water needed
- contract limits frequency of ag forbearance

Contingent contract examples

- 4 summer weeks, cease pasture irrigation, triggered by low flows, high temperatures for fish
- Field crop irrigation forbearance to sustain orchards through fall harvest, triggered by shortage for junior orchards
- Compact compliance in dry periods, triggered by low reservoir levels

Water Banking Examples

Nebraska Platte Basin NRDs

- NRDs must meet streamflow targets for compacts and ESA requirements
- Farmers paid for reduced water use per unit of effect on flow (using GW-SW models)
- Twin Platte NRD: New online trading platform calculates transferrable quantities and matches buyers and sellers
- Central Platte NRD: now pays $8,000 per "acre-foot of depletion to the river", up from $3,750

North-central Oregon

- Banking motivated by city growth, salmon
- USDA, Reclamation and other outside funds for irrigation system improvements
- Canal lining, ditches-to-pipes, on-farm technology and precicion irrig scheduling
- Increased crop yields and farm profits
- Avoided costs and acrimony of Klamath Basin

Idaho Snake River Basin

- Banking motivated by salmon recovery and hydropower needs
- Use remote sensing to facilitate and monitor changes in ag CU
- Large benefits in ag sector from banking
  - drought losses in farm profits reduced by 80%
  - 75% of trades ag-to-ag

Scott River Trust, Ca

- Pay irrigators not to divert during low flows to preserve fish
- No lease or purchase of water right – contract is to refrain from diverting
- Price per acre-foot varies by the water year (dry, very dry, average)
- Price bonuses for neighbors who enroll collectively so water remains instream for longer stretches

Division 3 San Luis Valley

- Offer incentives on top of USDA-CREP payments to temporarily idle irrigated land
- Seek to balance aquifer, compact compliance
- Groundwater sub-districts and approved GW Management Plans
- May need 20% reduction in consumptive use for multiple years to stabilize aquifer

Pilot programs - test it out

- Financial aid for water right legal advice
- Compare profitability - are fields where irrigation is reduced/halted the least profitable?
- Document crop yield changes, not only changes in irrig acreage and acre feet

(yields can increase substantially with sprinkler, drip and precision irrigation timing)

Pilot programs - test it out

- Pay for reduced consumptive use – NOT per acre or per acre foot diverted
- Test protocols for quantifying reduced CU
  - in regulated deficit irrigation
  - remote sensing
- Observe effects of varying spatial scales and trading zones

Water Bank Design Principles

- Bigger trading area = bigger benefits from bank
  - Pilot with smaller trading areas, build experience
  - Need "enough" potential participants
  - Need differences in value per acre-foot consumptive use (orchard vs pasture)
- Use federal money – USDA, Reclamation

Water Banking in State Water Plan

- budget for water bank pilot projects
- emphasize advantages to communities and state economy
- temporary, intermittent, seasonal transfers give valuable flexiblity - but full change in water right process is too costly

Colorado global leader in water management

- Specialized water judiciary
- Alternative Ag Transfers Program
- High level professional expertise in public agencies, private sector, universities and NGOs

Creating effective water banking ....

a worthwhile challenge

Guidebooks: Innovative Water Trading

- Prioritizing Water Acquisitions for Cost-Effectiveness, 2013
- Measurement, Monitoring and Enforcement of Irrigation Forbearance Agreements, 2012
- Understanding the Value of Water in Agriculture, 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.

Google: Colby water guidebooks

http://www.climas.arizona.edu/research/innovative-water-transfer-tools-regional-adaptation-climate-change