Managing Drought Risks Through Water Banks: Who Pays and Who Benefits?

Bonnie Colby, University of Arizona

Bonnie Colby is a professor in the University of Arizona's College of Agriculture, where she has been a faculty member since 1983 in the Departments of Agricultural and Resource Economics and Hydrology and Water Resources. Bonnie's work focuses on voluntary, incentive-based arrangements to improve water supply reliability and reduce regional economic losses during drought. Over the past 35 years, Bonnie has served on multiple design, implementation and evaluation teams for the leading drought impact mitigation and water banking programs across the western U.S.

Bonnie has provided invited testimony to state legislatures, the Western Governors Association and the U.S. Congress. She has taught water resource economics at Harvard University's Executive Training Programs and has provided water economics trainings for the coalition of federal and state water judges and water masters, as well as for many professional associations. She works with private firms, water districts, NGOs and public agencies to develop and implement new strategies to improve regional resilience to drought and to resolve conflicts over water.

Dr. Colby has authored over one hundred journal articles and eight books, including Risk And Resilience: The Economics Of Climate, Water and Energy In The Arid Southwest, Water Markets in Theory and Practice, and Braving the Currents: Resolving Conflicts Over the Waters of the American West.

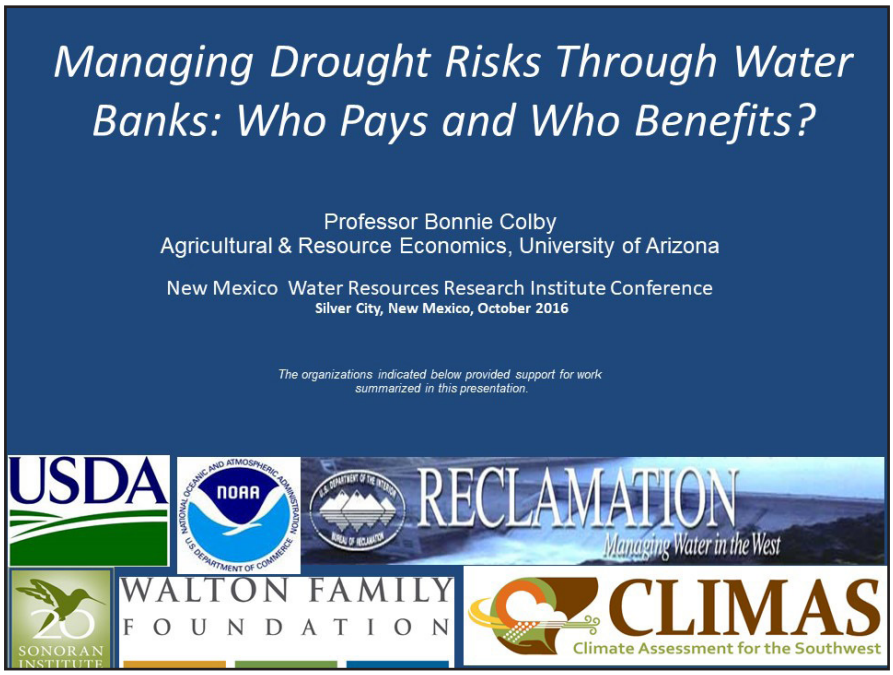

Figure 1. Introduction.

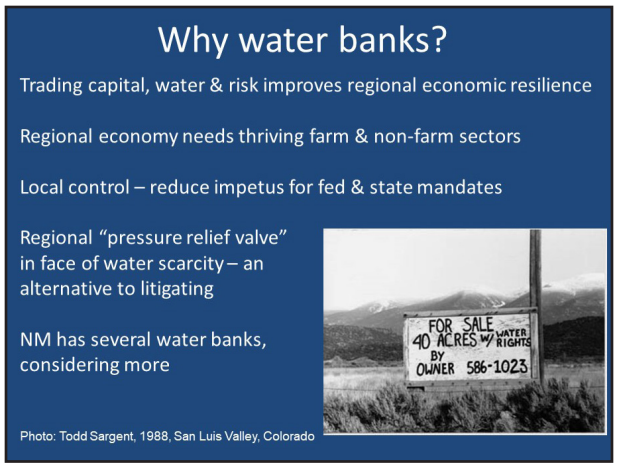

Figure 2. Importance of water banks.

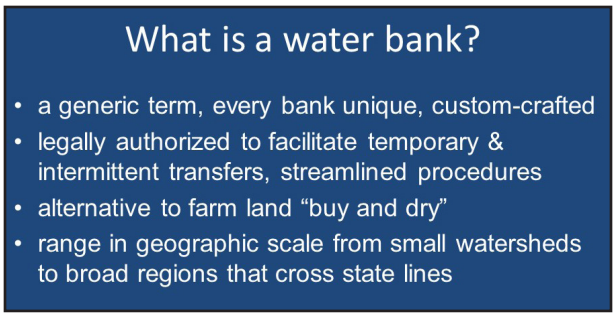

Figure 3. Defining a water bank.

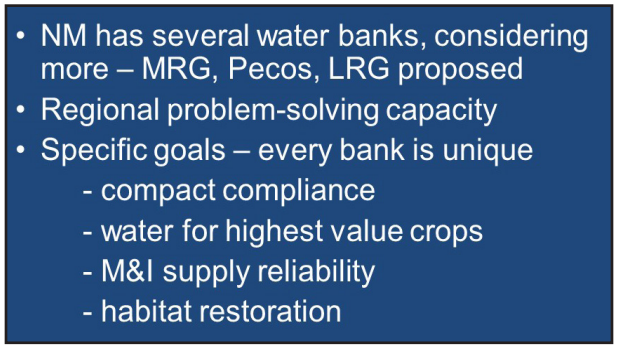

Figure 4. Water bank objectives.

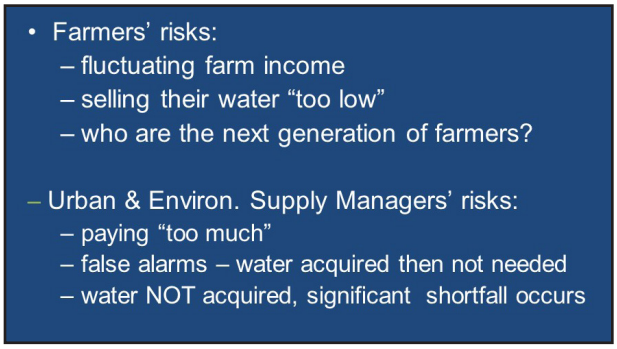

Figure 5. Water banks are all about managing risk.

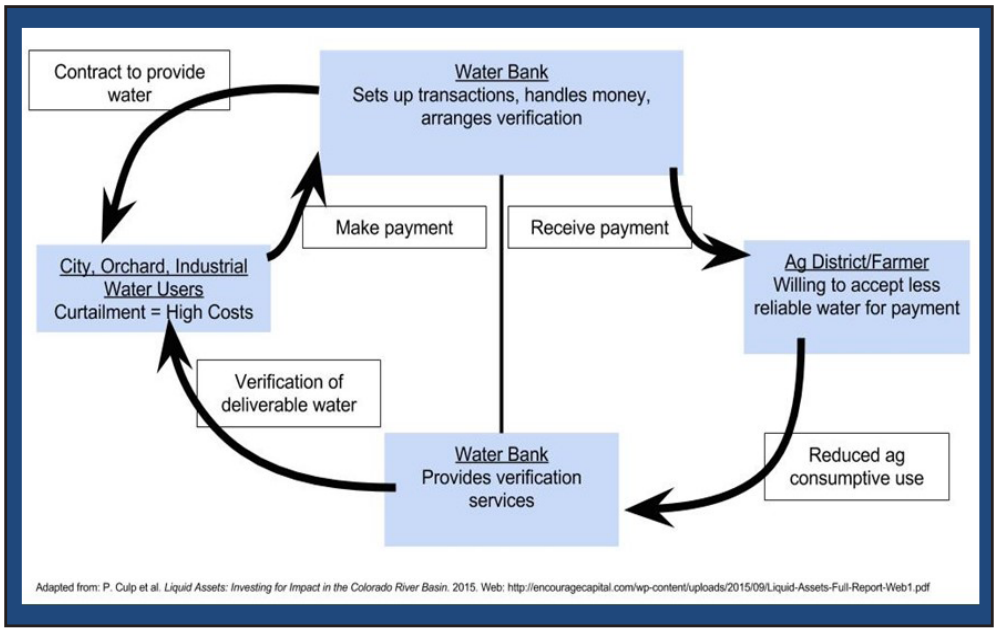

Figure 6. Simple water bank.

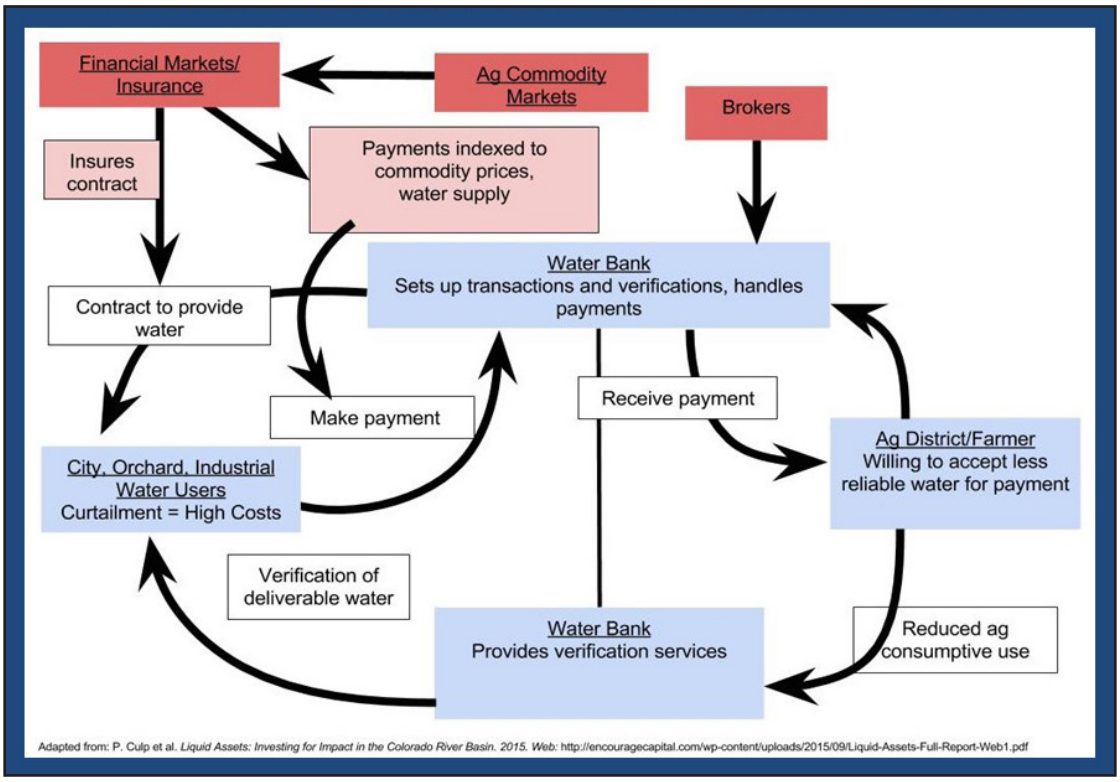

Figure 7. More parties enter water bank.

- "friction" in the system, "grit in the gears"
- finding trading partners, determining price, obtaining approval, implementing
- high TC erode impetus for trading, especially seasonal & temporary trades

Figure 8. Transaction costs.

- serve diversity of water uses with varying WTP to reduce risk of curtailment
- cost-effectively provide seasonal, temporary trades
- provide timely response to curtailment of juniors
- maintain hydrological integrity in water accounting

(WTP = willingness to pay)

Figure 9. Qualities for water banks to succeed.

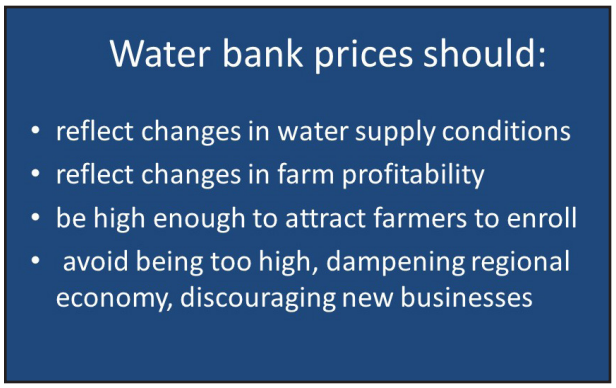

Figure 10. Pricing water banks.

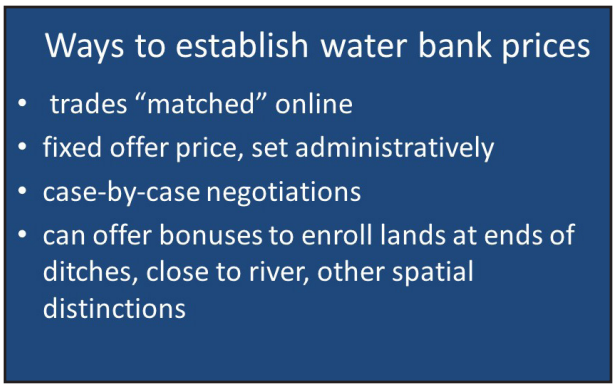

Figure 11. Establishing water bank prices.

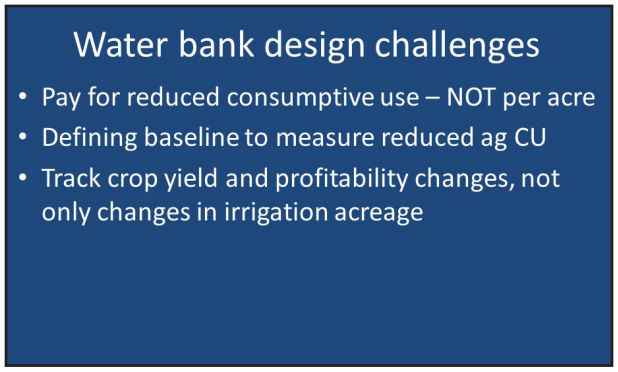

Figure 12. Challenges in designing water banks.

Figure 13. Methods for reducing agricultural consumptive use (CU).

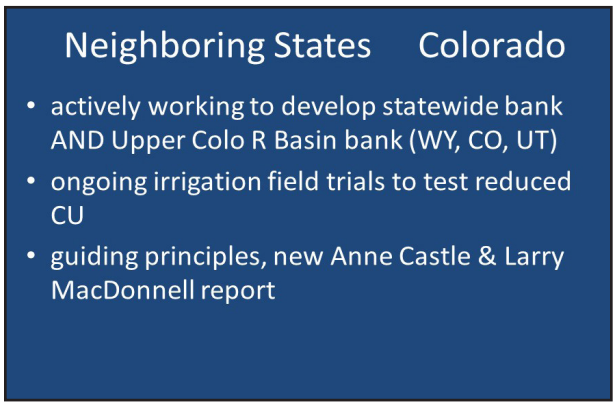

Figure 14. Water banks between neighboring states.

Figure 15. Nebraska Platte Basin NRDs.

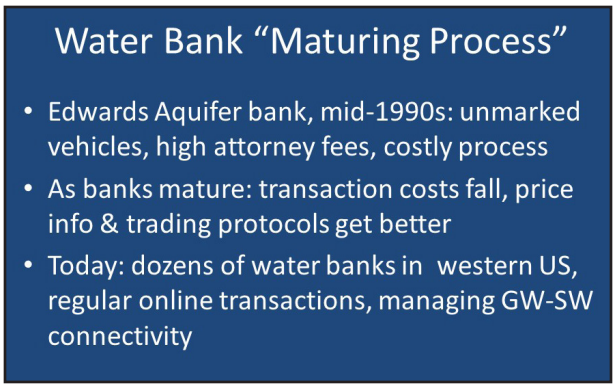

Figure 16. Water bank "Maturing Process."

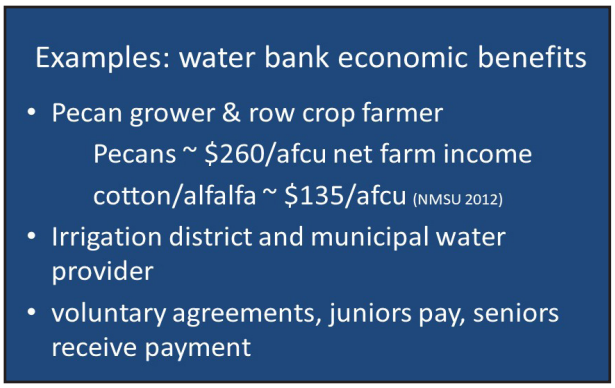

Figure 17. Economic benefits of water banks.

Figure 18. Water trading exercise for conference participants.

Figure 19. Water trading exercise: trading and scoring.

Figure 20. Trading money, risk, and water = resilient regional economies.

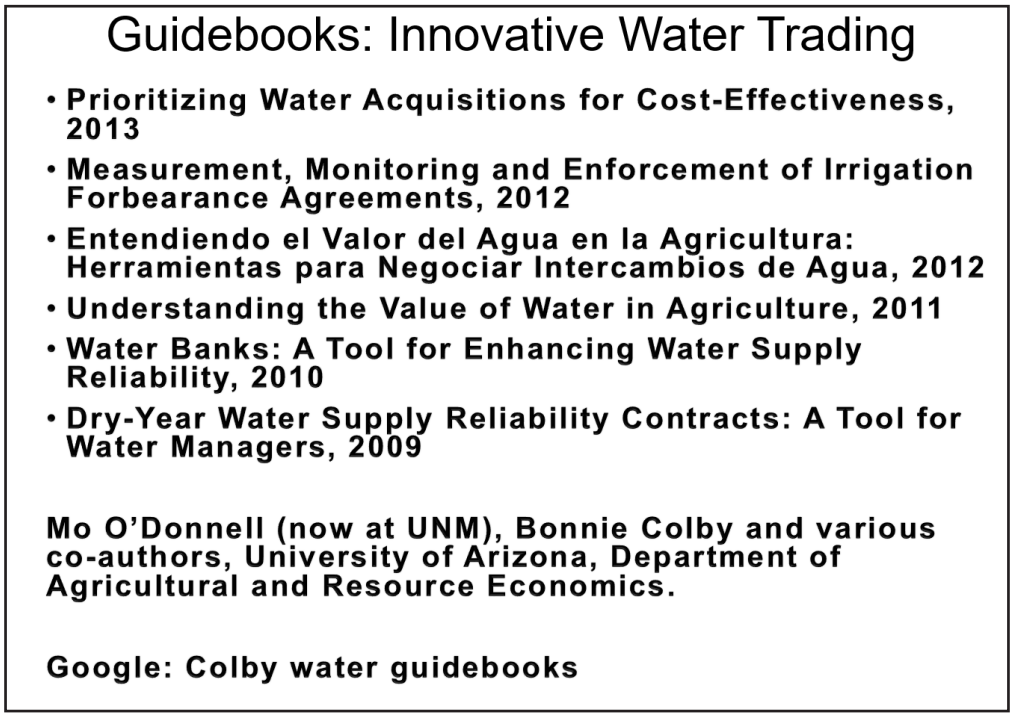

Figure 21. Guidebooks to innovative water trading.

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Figure 22. References.