Water Market Development in Texas: A Prescription for Economic Efficiency

Milton L. Holloway, Ph.D.

Resource Economics, Inc.

Austin, Texas

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Holloway.L@sbcglobal.net

I. Long-Term Issues

- Water is a commodity
- Our current system is dominated by the public sector
- The economy of 100 to 150 years ago that placed the responsibility for water development (along with flood control and power generation) in public sector agencies was a much different economy from today
- Is there continued justification for subsidizing public sector investment in water **development** and **transmission** facilities (tax exempt status, subsidized interest rates, grants, loans, and direct tax dollar expenditures) to the exclusion of the private sector?
- How much of the production, transmission, treatment and distribution functions need to be in the public sector in the future?

II. Short-term Issues: Market Based Solutions to Water Problems

- **Two Needed Changes:**
- A. Uniform redefinition of groundwater property rights
- B. Creation of a short-term lease market for surface water

Problems with the Current System Prior to SB 1 & SB 2

- **Surface Water System**
  - routinely produced shortages of surface water
  - placed barriers in the way of open market exchanges
  - had high transaction costs for exchanges
  - created a monopoly position for river authorities in surface water exchanges
  - used public subsides to finance much of the system
- **Groundwater System**
  - allowed one pumper to pump his neighbor's water without consent or compensation
  - the courts are a poor recourse for the neighbor

SB 1 (75th Legislature) & SB 2 (77th Legislature) Made Major Improvements

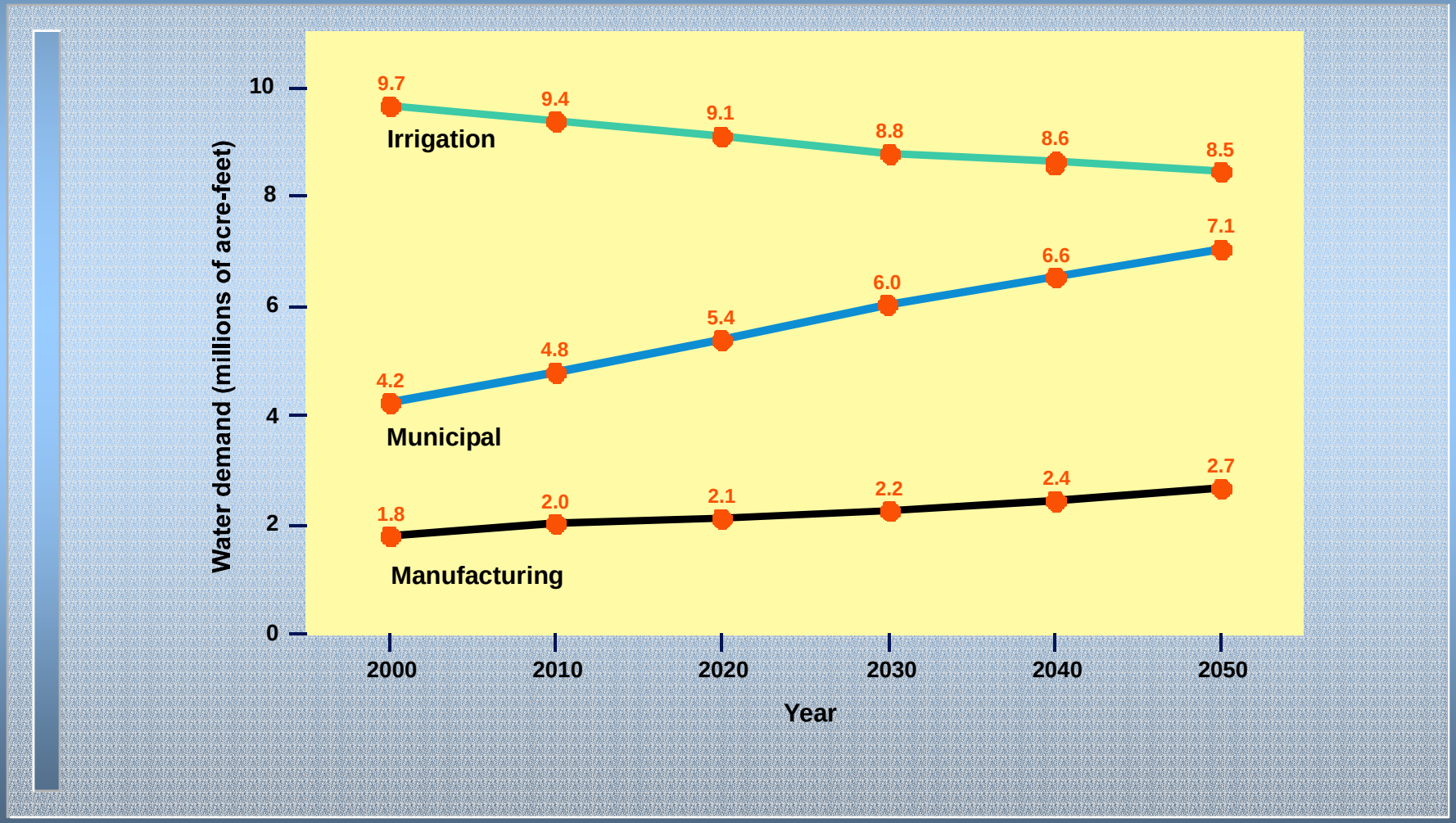
- Created a local consensus building process for developing water supply conservation projects
- Decreased the prospect of costly future shortages
- Created an atmosphere for transfer of groundwater from rural to urban users
- But, did not provide adequate incentives for market development
- Increased the institutional constraints on surface water right holders to transfer water out of basin
- Did not create adequate mechanisms for preserving and promoting the economic value of environmental resources

Approximate Raw Water Purchase Prices (equivalent price for currently flowing water per acre foot)

- **The only active competitive market in Texas is in the Rio Grande Valley and the Edwards Aquifer where special conditions exist.**
- **Groundwater**
  - **San Antonio**
    - **Groundwater Purchases**
      - **$51 per acre foot in the ground (6% amortization for 30 yrs)**
  - **Amarillo**
    - **Groundwater Purchases***
      - **$22 per acre foot in the ground (6% amortization for 30 yrs)**
- **Surface water**
  - **LCRA**
    - **Garwood Irrigation District***
      - **$36 per acre foot run-of-river in the stream (6% amortization for 50 yrs)**
    - **Rio Grand Valley**
      - **$109 per acre foot in the reservoir (6% amortization for 30 yrs)**

***Rough estimates--not strictly comparable due variation in time of delivery and other special conditions**

The Future is Mostly About Redistribution of Water Supply: Major Groundwater Aquifers Will Provide A Major Part of New Urban Supplies



Water Market Typology

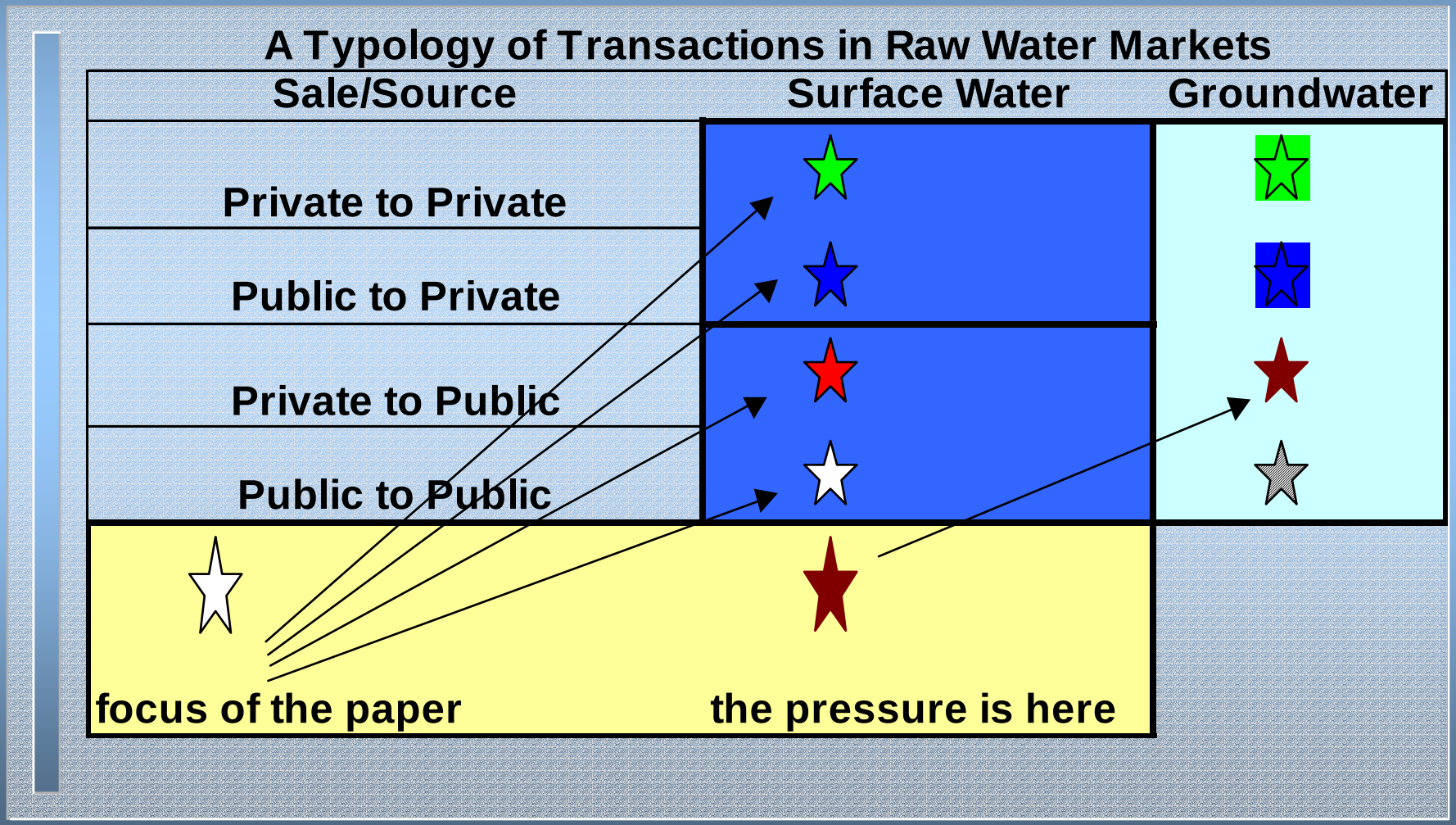


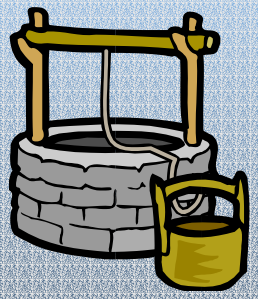
Illustration of New Urban Water Costs with 200-300 Mile Pipeline from Remote Groundwater

Prices ($/acre foot)

Well Head*	Transmission	Treatment & Distribution	Consumer
$100	$600	$350	$1,050

* $50 for water in the ground plus $50 lift cost

The first two functions (production & transmission) will be readily provided by the private sector without risk to users if the "playing field" is level: i.e., in-lieu-of-tax payments by public entities, power of eminent domain for private pipelines and lack of interest rate subsidies to public entities.



Key Characteristics of Competitive Markets

- well-defined and (legally) enforceable property rights
- a reasonable degree of homogeneity of the product
- non-exclusivity of participants
- the absence of significant externalities

A. Redefining Clear Enforceable Property Rights to Groundwater

- A share of annual recharge
- A share of the current stock (quantity in the aquifer)
- An annual rate of decline limit for the aquifer
- Practical means of initial assignment
  - historical use
  - land area above the aquifer

B. Creating An Annual Lease Market for Surface Water

- Flex water would be defined as consumable water under a permit (withdrawals minus return flows)
  - allow annual sales without TCEQ hearing approval
  - verification of that quantity does not exceed consumptive use
  - reporting requirement is place and quantity of withdrawal and return flow changes under the lease sale and (confidentially) the price
  - TCEQ publishes statistics on quantity & prevailing price
- Management of return flows through control of recycling
  - assign the responsibility of return flow management to river authorities
  - with sole ownership of new recycling plants
  - active program of planning and development of new recycling projects
  - financed through interruptible contracts for recycled water
  - interruption of recycling as needed for instream flow maintenance

B. Creating An Annual Lease Market for Surface Water (Conti)

- A tax on the sale of flex water
  - flows into water trust fund within the current Texas Water Trust for environmental flows
  - trust fund used to target purchases of water rights and/or leases to augment flows
  - where ever needed in the State
  - administered by TWDB with interagency and environmental community advise

B. Creating An Annual Lease Market for Surface Water (Conti)

- Expected Results
  - increased flexibility for water users; revenue when excess water is available and opportunity to satisfy short-term demands when the user is short
  - incentive for utilities to price flex water at the margin (pass along higher or lower flex market transactions costs to peak users--primarily summer lawn watering)
  - net economic gain to Texas could easily amount to several hundred million per year under drought conditions
  - several million per year to fund environmental flow augmentation

III. Long-term Again

- **Market Approaches to Environmental Problems**
- 1. Water quality
- 2. Instream flows

Long-Term Market Approaches to Water Quality & Instream Flow Problems

- Tradable pollution rights for water quality maintenance & improvement
  - patterned after tradable emissions permit system in air quality
- Instream flow policy
  - instream flow rights, **or**
  - improved management of river systems & conjunctive use with groundwater by river authorities
  - the economic management test or standard is the “rational man” test of economics under a concept of a basin-wide firm operating in a competitive market

END

- Reference: Holloway, Milton L. , *Water Market Development in Texas: A Prescription for Economic Efficiency (Draft)*, Austin, Texas, January 2004.