8. Water Marketing

- The term "water marketing" applies to natural water only
  - unprocessed, except possibly for onstream storage
  - does not apply to infrastructure
- "water pricing" is a different topic – better applied to wholesale and retail water
- marketers might sell, lease, option, bank, or be original

1

Water Market "Options"

- also called dry-year options
- The permanent owner of a water right agrees to temporarily give the buyer use of the right if a certain, predefined event occurs.
  - The buyer ordinarily pays an up-front option price,
  - plus possibly a recurring (e.g. annual) fee,
  - and will pay an additional charge should the option ever be exercised.
  - The contract terms set either these payments or the mechanism for their future computation.

2

Water Market "Banking"

- The term water "banking" is sometimes used in nonmarketing ways, but for clarity, we will only use "banking" when trade is occurring.
- An intermediary contracts for water rights from some agents, and then agrees to contract from this assembled pool to other agents.
  - thus far, these intermediaries have been public agencies or districts
  - thus far, both sides of this activity have been leases

3

Foundations of Water Marketing

- Water property must first be assigned, quantified, enforced, and tradable for any of this to happen.
  - Which legal doctrines might qualify? surface or ground?
- Where water rights have not been legally "severed" from land, we do not have true water markets.
  - We might have land-based marketing in these cases for the prime purpose of water exchange, but such transfers are really "water access transfers" since quantified water property does not exist.
  - Water access markets still involve common/state property in water

4

Achievements of Water Marketing

✓Creating gainers out of losers

✓Closing the gaps between the MBs of natural water (i.e. econ. eff.)

✓Accommodating the differing risk preferences agents have

- Because of these accomplishments, the demands for other scarcity strategies can be reduced, potentially saving money and hardship.

5

Challenges of Water Marketing

✓flow-caused interdependencies with third parties – externalities

✓underrepresented demand for nonrival water – public goods

✓inadequate private regard for depletion – overdiscounting

- Responding to these challenges leads governments to select institutional blends of markets and administrative regulation.
  - The resulting transaction costs influence all trading – more later on this.

6

Three basic tool sets for practitioners

$$V_1^{\infty} = v \bullet \sum_{t=1}^{\infty} \frac{1}{(1+d)^t} = v \bullet \frac{1}{d}$$

$$V_0^{\infty} = v \bullet \frac{1+d}{d}$$

$$V_0^{T} = v \bullet \frac{(1+d)-(1+d)^{-T}}{d}$$

1. for relating sales value (V) to recurring lease values (v)

(obtained from Chapter 3's appendix)

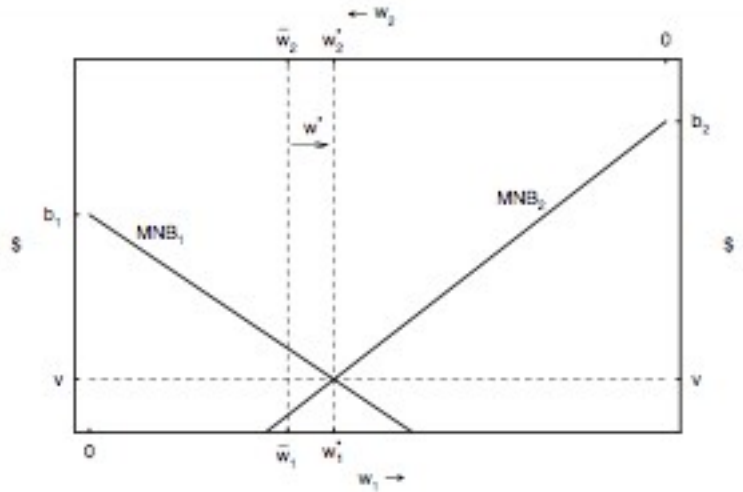
7

Equivalent Single Price

$$ESP = \frac{PV(\text{economic terms})}{PV(\text{water terms})}$$

2. for comparing differing contract terms, conservation investments, & other scarcity-fighting options

8



3. for thinking about "why trade?," price possibilities, net gains, effects of transaction costs, lots of things

9

A Common Challenge: Return Flow Externalities

- Rights are normally first quantified in law as allowed "diversions,"
- Yet, diverters are more directly affected by their "consumptive use"
- And even converting all rights to consumptive use rights isn't a full fix as the next graphic can demonstrate.
  - Problems tend to stronger for (but are not limited to):
    - transfers from downstream to upstream (3rd party diverters)
    - impacts on instream flows (nondiverting 3rd parties)

10

Flows ⇒ lots of potential third parties

	I. Initial Conditions	II. C sells 250af to A	III. C sells 100af to A
Streamflow	1000	1000	1000
Urban Diversion	-500	-750	-600
Streamflow (Segment 1)	500	250	400
Urban Diversion	-400	Harm	-400
Streamflow (Segment 2)	100		0
A's Return Flow (60%)	+300		+320
B's Return Flow (75%)	+300		+300
Streamflow (Segment 3)	700		620
Agricultural Diversion	-500		-400
Streamflow (Segment 4)	200		220
C's Return Flow (20%)	+100		+80

11

- Therefore, most jurisdictions have established a process whereby proposed trades can gain approval.
- A bureau or agency might be able to do this on its own, but western U.S. states have generally installed a process in which vested and potentially injured parties can voice their displeasure.
- Who is vested?
  - ✓Other diverters? Yes.
  - ✓Instream users? Maybe. Or maybe this is ignored. Or maybe a state agency is assigned to fill this role. Or maybe trades are allowed if they won't broach minimum streamflow standards. Or ...

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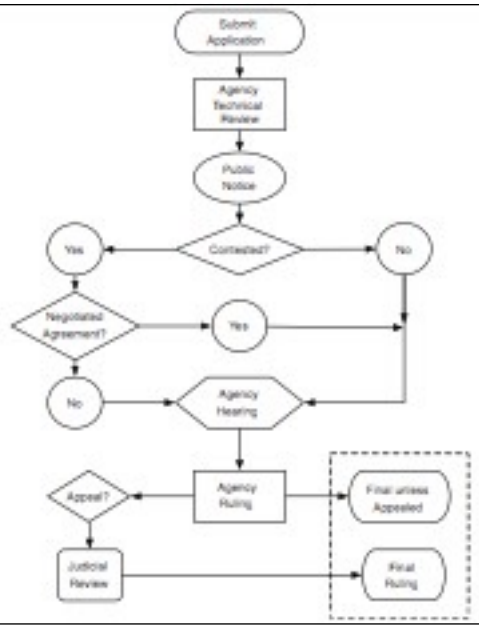

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Real, Live Water Markets

- Four exceptional markets reviewed in text
  - Colorado Big-Thompson Project
  - Texas lower Rio Grande basin
  - California quagmire
  - Australia's Murray-Darling
- They are unique markets in multiple ways
- They have produced many million$ in net benefits

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NCWCD

- created in 1937
- shares; not seniority
- no return flow obligations
  - infers much reduced transaction costs for traders

($23000/af) × d (0.05) = $1150/af/yr

($1150/af) × 0.00307 = $3.53/1000 gal

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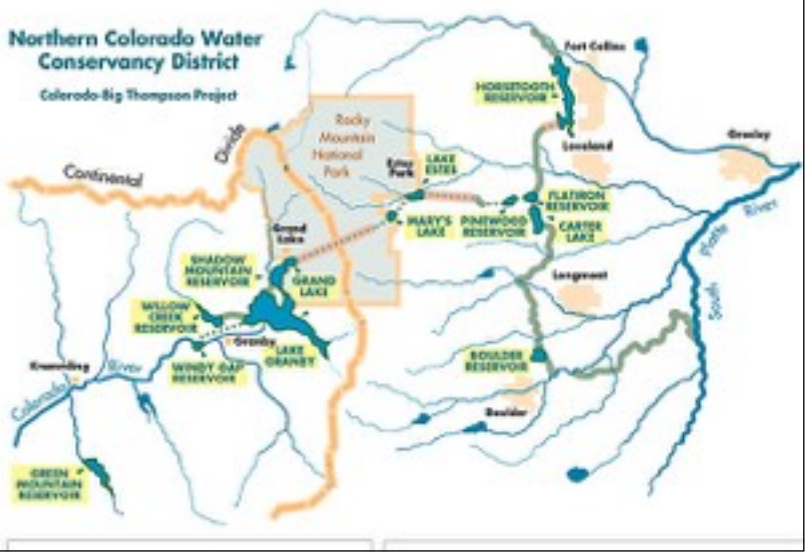

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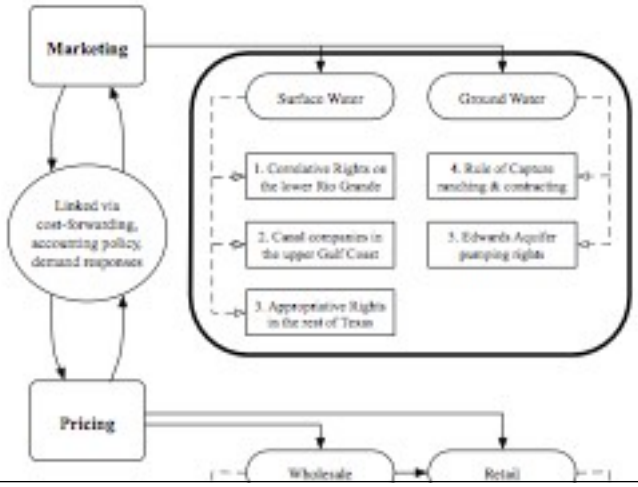
across Texas



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LRGV

- marketing commenced ~1970
- this part of basin uses correlative shares
- no return flow obligations or impacts
- sizable population growth has been assisted by this market
- ag shares have to be converted to municipal quantities
- municipal purchase rules changed in 2007

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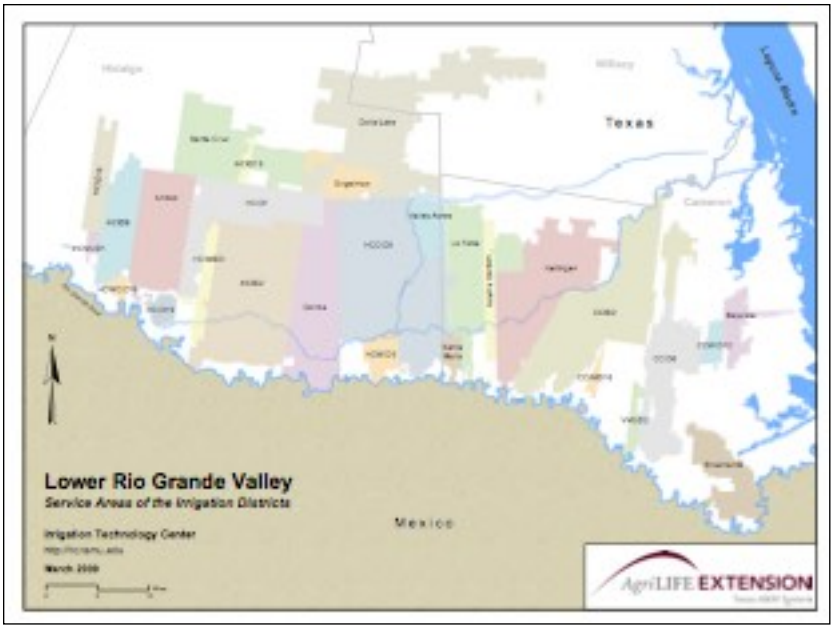

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California Bank

- a several year drought sparked a policy change that allowed trade
- statewide due to manmade conveyances
- 1991 bank was a lease market brokered by DWR
- sw leasing is no longer unusual in California
  - mainly ag-to-urban and ag-to-environment in recent years
- great political sensitivity for secondary effects

20

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Australia Murray-Darling

- previously riparian doctrine
- drought-driven reform
- US severs water rights and land rights; AU unbundles them
- very advanced rights with the usual foundations for leases and sales
- lots of transparency through gov't website & provided data
- futures market has emerged

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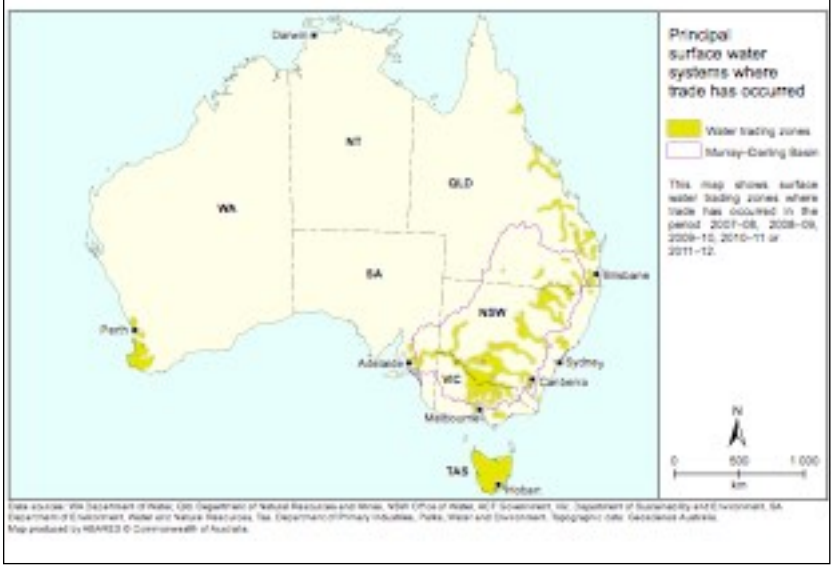

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"Area of Origin" Issue

- Areas of origin are regions (mainly agricultural) from which a water market would transfer water, unless such exports are prohibited.
- Permanently shifting water (or any resource) out of a region may limit that region's future development opportunities.
- Should trade be constrained so as to protect areas of origin?

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What should a water market count?

Areas of origin & areas of receipt too?

	Traders	Other Direct	Secondary
Costs:	Seller	Return flow & water-linked agents such as instream flow users	Economically linked agents such as businesses or labor
Benefits:	Buyer		

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Should rules be used to protect Areas of Origin?

Examples: "prohibiting harm" or "limiting to 50%" or taxing exports.

Protect?

1. From a large-accounting-stance (areas of receipt included) aggregate efficiency perspective, NO.

2. From a fairness-driven or even a neutral efficiency perspective, MAYBE.

   a. Such rules help areas of origin but harm water right owners, buyers, and areas of receipt.

   b. Such rules limit a scarcity-fighting policy tool.

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Ground Water Markets

- ground water ranching
- ground water access contracting
- true ground water marketing of severed ground water rights (Edwards (one deed), prior appropriations, two deed system)

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