Penn State Talk

Ecst. looks at wtr. res. research

Needs: to evaluate w. experience
to modify for e. needs.

Variable supply and excess claiming

Vert. intn. Every man his own supply. Need for pooling.

a. Ecs. of scale in developing & xptg & storing

b. Pool variability of supply & demand

c. Handle drainage & ground water; & int. w. flood control

d. Promote compact settlement, leads to other gains – give us rural life + the advantages of urban

e. Makes small farms viable

f. Integrate -- multi-purpose.

Ecst looks. Goals.

Effic. allocn.

Distrib. eq. Raise pub. rev. from wtr., not sink

Max. benefits, net of costs

Macro – min. capl. requmt.

Competitive – help small bus.

Flexibility

Share common costs

Min. xptn. – of wtr. & other things

Use best first

Timely devmt.

~~What~~ Ecst. looks at wtr. res. research — in the east.

~~At~~ Res. needs to evaluate w-u. exp; & modify to meet needs of c.

What have we learned from w.?

1. Need for community action. Can't have a mkt., bec. xpt. cost is so hi, ecs. of scale throughout, is natural mopy.
(Use mkt. price, but that doesn't mean unreg. free mkt.) on

A. Local Comm. I.D.s.

B. State

Define propty rts. in wtr. Assert its own equity, by price or tax.

Wholesale, interreg. trunks, storage -- do for I.D.s what they do for members

C. Fed, define interstate prop. rts.

Give M -- better off w/o.

D. Giant pvt. firms don't move as fast as munics., are no solution.

2. Rip. doctrine n.g. when wtr. is scarce.

Criteria:

Initial allocn
Motive to develop
Constraint on unec. use
Response to scarcity
Flexibility, Transferability

Pooling, coop. community action

Investment in development works - storage, distrib.

Management of aquifers

Containment of service area

Distrib. equity

1. D.s., fns. & rationale.

1. 3 basic powers

2. Achieve ecs. of scale for smaller farmers.

Pool ~~xxxx~~ supplies, reduce variability. (pool w+r. +ts from same supply)

" demands, " "

Storage

Diversion

Conveyance, distribution

Peak - need standby capacity, method to finance by fixed charges, like insurance.

Borrowing capl. Extends credit to settlers, by tax capn. Finances early developmental cities by land taxes.

Synchronize devmt. of area, so needed supply, services, processing plants, shipping, storage, packing, cell comm. "Total community": Heavy charges on land forced ~~xxxx~~ many to highest use, advantages of regional specializn.

Distrib. is major cost.

Compactness of service area. (So compact, avoided peak labor problem of specialized regions. Diversified demand in small areas.)

Manage aquifers - pool benefits from deep perc., e.g. Can't control w+r. after it's applied

Drainage - no money in that.

Internalize externalities - both tech. & pec.

W+r. spillover is tech.

City l.v. is pec.

Also Δ fm. l.v.

Multiple dev.: flood control, power, urban supply.

Cal. ag. has had powerful impact on whole nation. I.Ds. a big factor. Heavy fixed charges on land prompt intensive devmt., fast.

Compactness forced by ~~xx~~ community w+r. supply created environment for superior labor pooling, supply, educ. & extension, packing, marketing, & rural community life. Total Comm.

Made small farming ecly. viable. Everywhere, big are (over)

swallowing small. Except I.D.s. They always mean subdiv., when formed or issue bonds. (As bonds paid off, consolidate farms again.)

3. Approp. doctrine has bugs, too.
   Same list

4. Aquifer storage is cheapest, purest. Aquifer mgmt. is modern frontier.
   Calls for law that recognizes aquif. as common warehouse. No special position for overlying landowners.

5. Wtr. is rent-bearing. Developing wtr. needn't be a public deficit - can yield surplus.

6. Distribn. is major cost
   Need for compact settlement

7. ✱ Non-synchr. is major cost.
   Need for synchr. mechanisms.
   Need to cut down lead-time
   " " min. cap. req.
   " " " instability

8. Crises overcome inertia; they are opps., not catastrophes. The continuing wtr. crisis of S. Cal. makes it more productive.

9. Wtr, sharply dim. rets.
Elec charges cut needs drastically
"Vote for wtr, but pay for power."

9A, corollary.
Standby needs are great. Insurance. Permits great intensification, this insurance.
Is sort of thing that shd be paid for like ins. — periodical fixed charge. For peak needs.
But having the peak capac., might as well use it. So use charges shd. be low, except at peak times.

9B. Prices need to be flexible, and very changeable, due to peaking aspect.

10. Public investments require multiple pvt. expl. to complement.
Compact, synchronized, is best.

10A. Pub. ~~wtr~~ inv., ecs. of scale, ahead of demand. Crisis — needs rapid pvt. response.

Wtr. supply

11. ~~Vertical integration~~ cannot come thru wtr. place. Nat. supp.
Comes in 2 ways
a. Pvt. vert. int.
b. Make wtr. supply a utility
(a) kills the small farmer. And comes slowly.

12. Wtr. supply is variable
Calls for flexible responses
Leads to excess claims on natural supply, to cover drought.
Claimants need to pay for that insurance, to constrain them.

13. Failure to ecze on rentable wtrs. leads to costly. destruct. of mgnl. wtrs.

14. Improved wtr. supply is capl. intensive & durable, all by itself.
It also raises best use of lands served by a multiple, large capl. requirements.
Is it, nothing to begin when hi i prevail.

No sound sweeter — —