Water Marketing and Groundwater Banking in California

Ellen Hanak
Public Policy Institute of California
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PPIC

What are these tools and why do they matter?

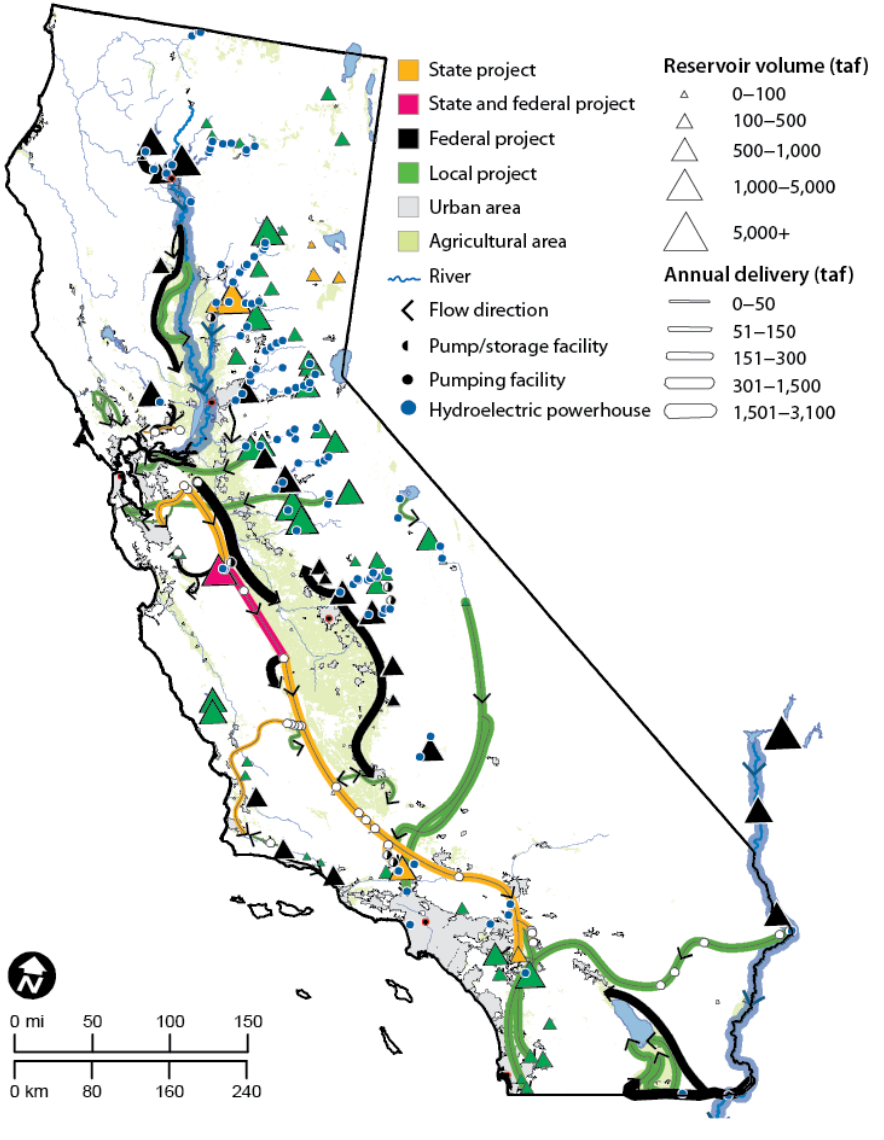
- **Water marketing:** temporary, long-term or permanent trades of water-use rights
- **Groundwater banking:** storage of surface water in aquifers in wet years for use in dry years

- Why these tools matter for California:
  - Reducing costs of drought
  - Accommodating shifts in demand
  - Adapting to a changing climate

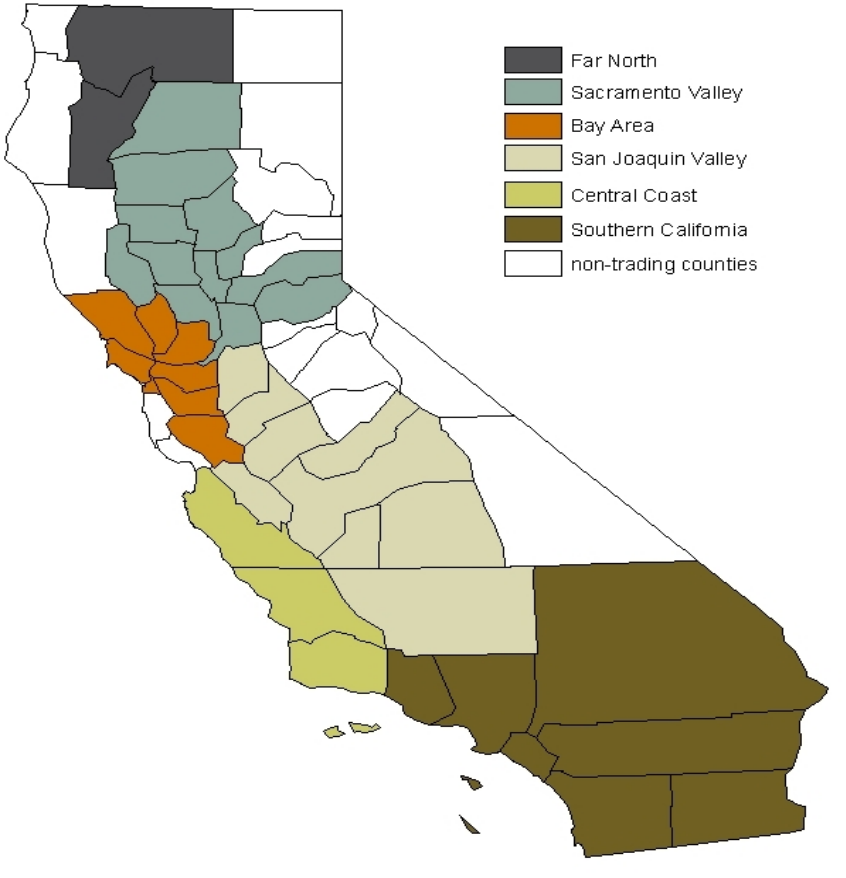
Marketing and banking have requirements and constraints

- Infrastructure
  - To connect source/destination
  - To get/store/retrieve water from banks
- Protections
  - Shouldn't sell someone else's water (incl. water for fish & wildlife)
  - Need to protect water in "bank accounts"
  - Aim to prevent local economic harm

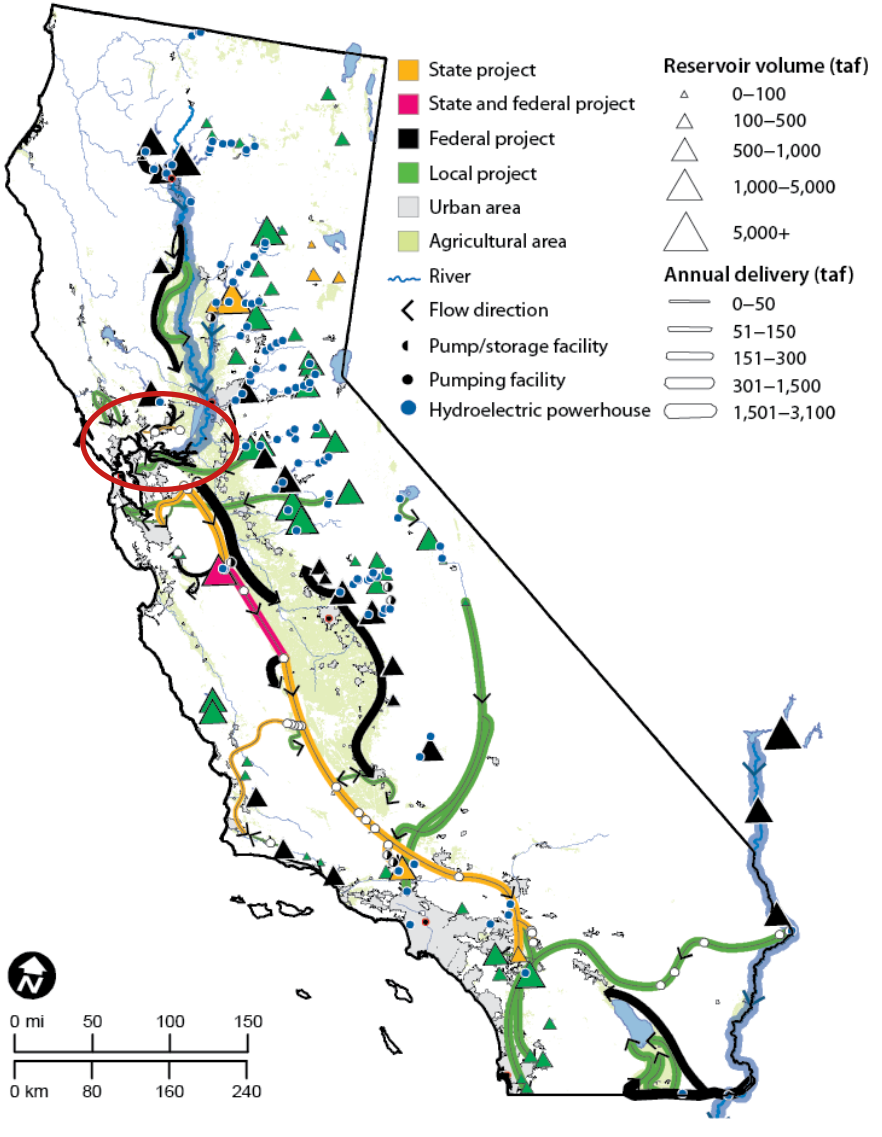
California's extensive infrastructure facilitates marketing and banking

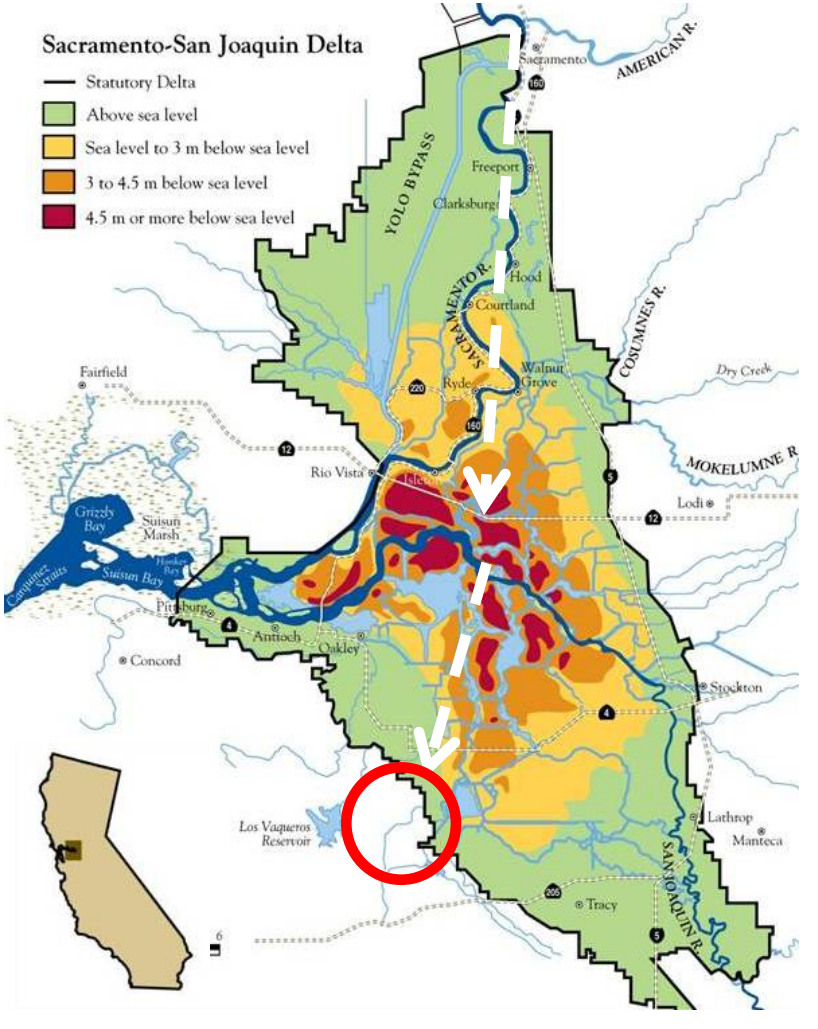


Counties in the market

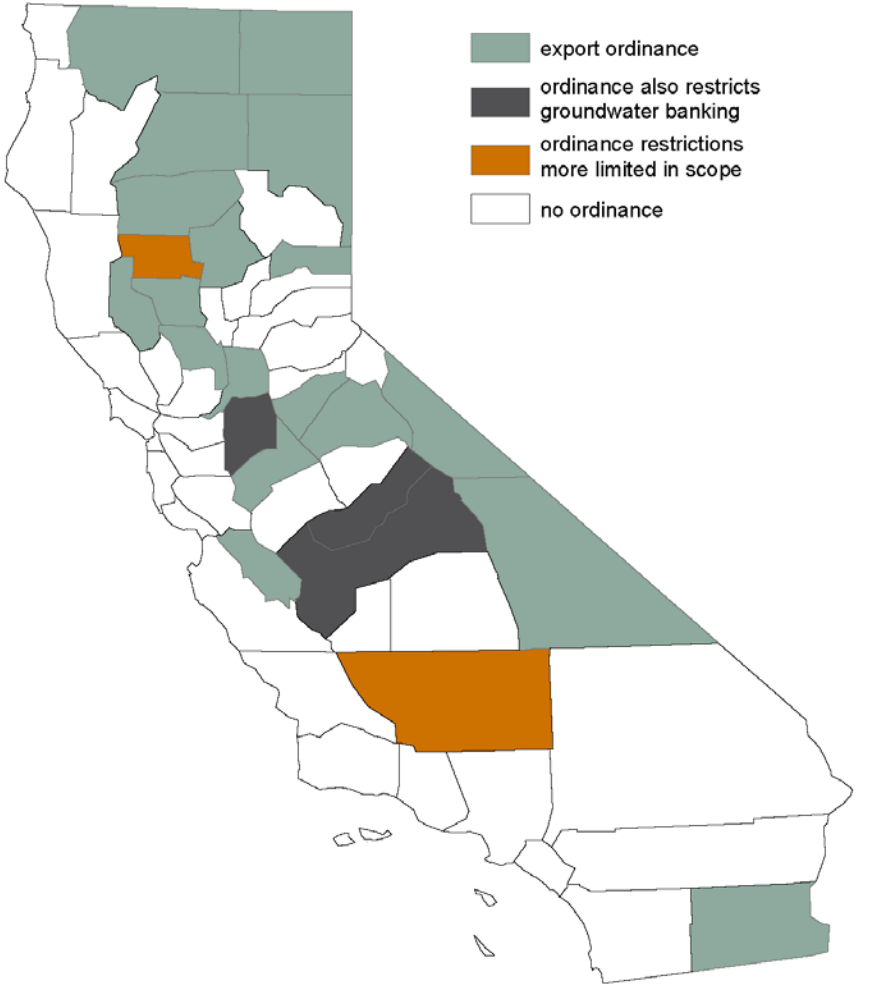


But Delta is a fragile hub for north-south and east-west transfers

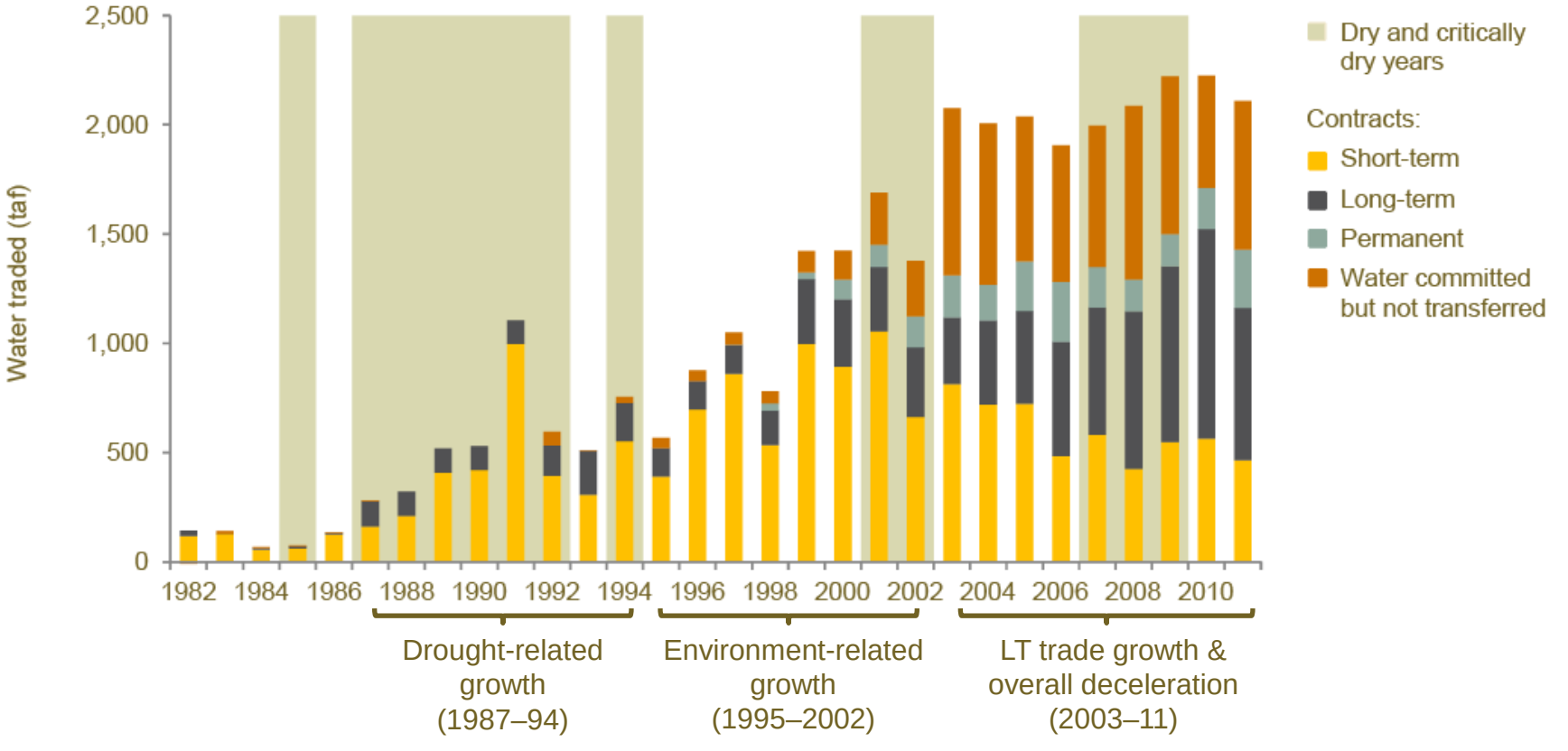




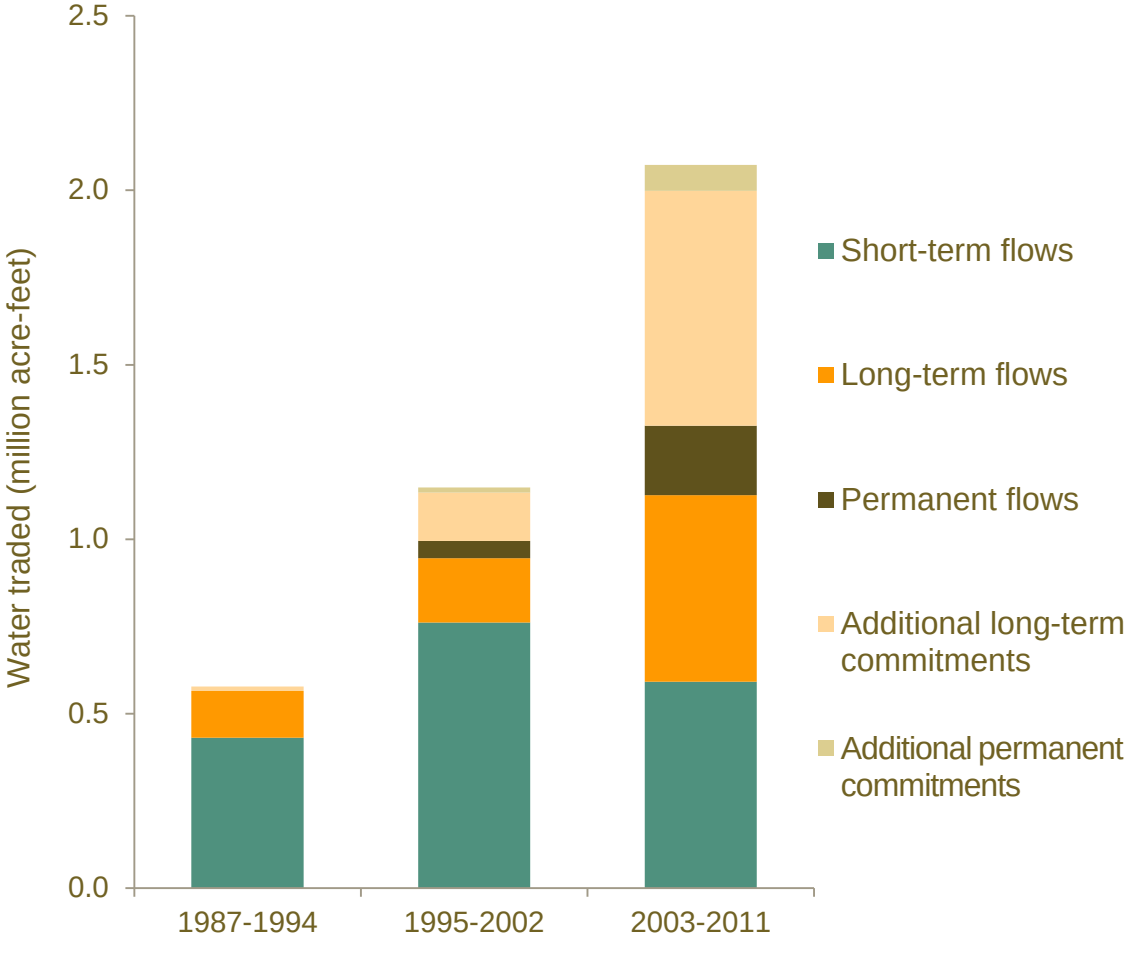
State groundwater law has gaps; many rural counties restrict exports



Three phases in water market development

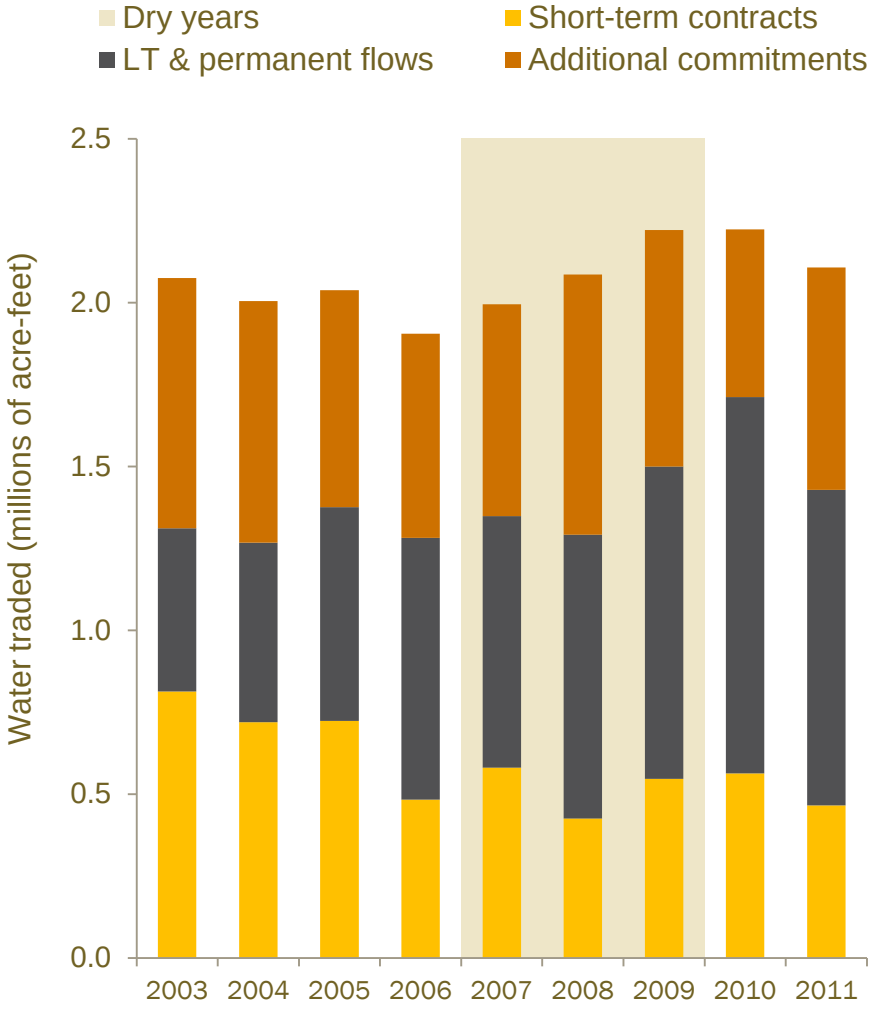


Long-term and permanent trades now dominate the market



- Mostly for cities
- But also for high-value farms
- And some environmental uses

Slowing market was unable to provide much drought relief

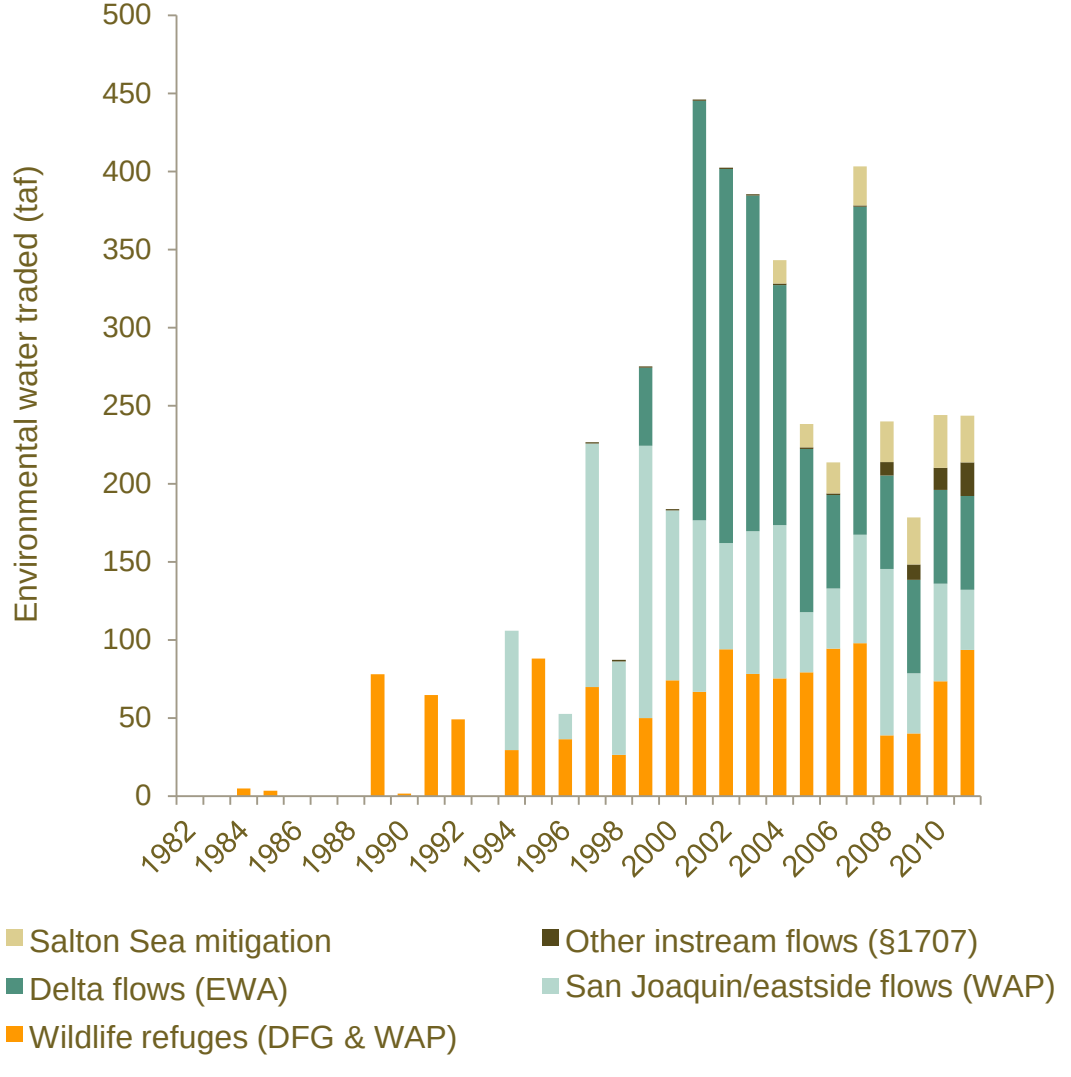


- Infrastructure constraints: Delta
- Institutional constraints: complex, frequently changing approval process
- In all, 500,000–600,000 acre-feet dry-year supplies from 2007–2010

North-south trades are down; San Joaquin Valley is now net exporter

* non-environmental trades (actual flows)

Purchases of water for the environment are now falling



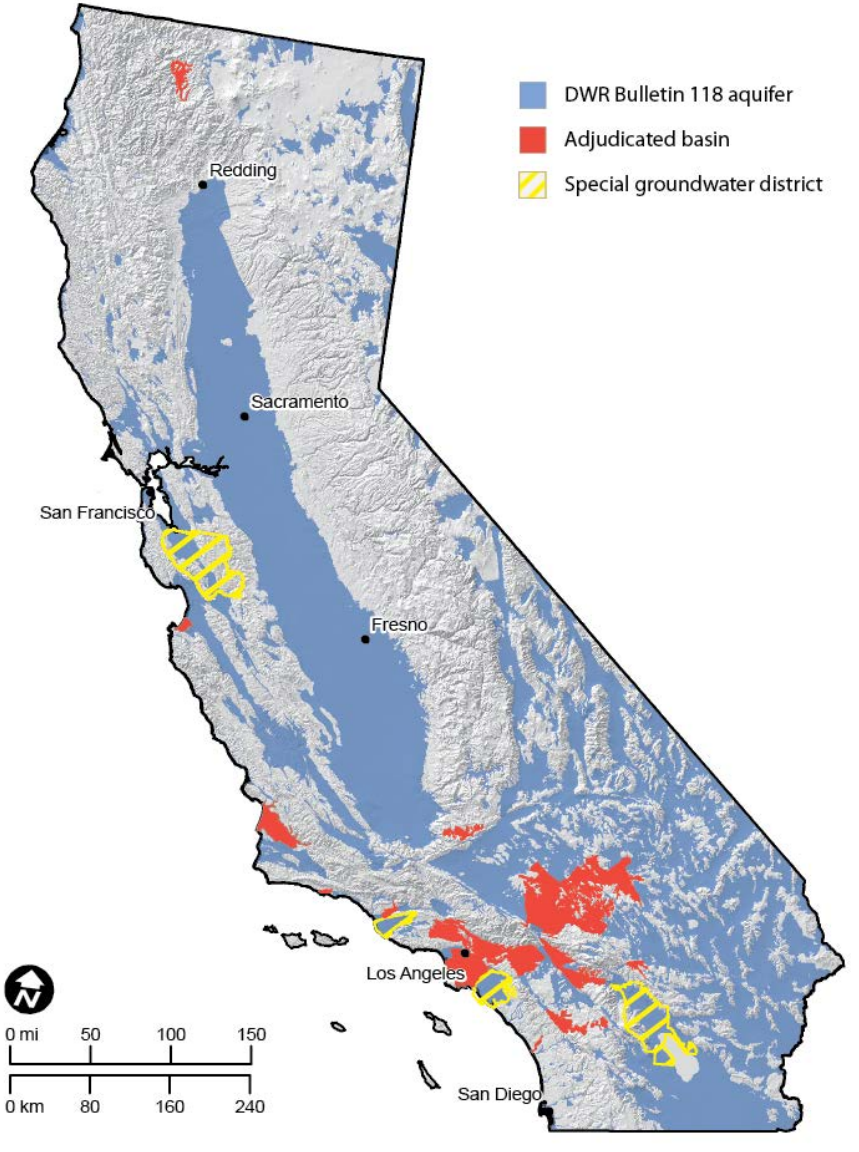
- Can lessen conflicts and raise efficiency
- But cash running out (~50% was from state bonds)

Several types of groundwater management and storage in CA

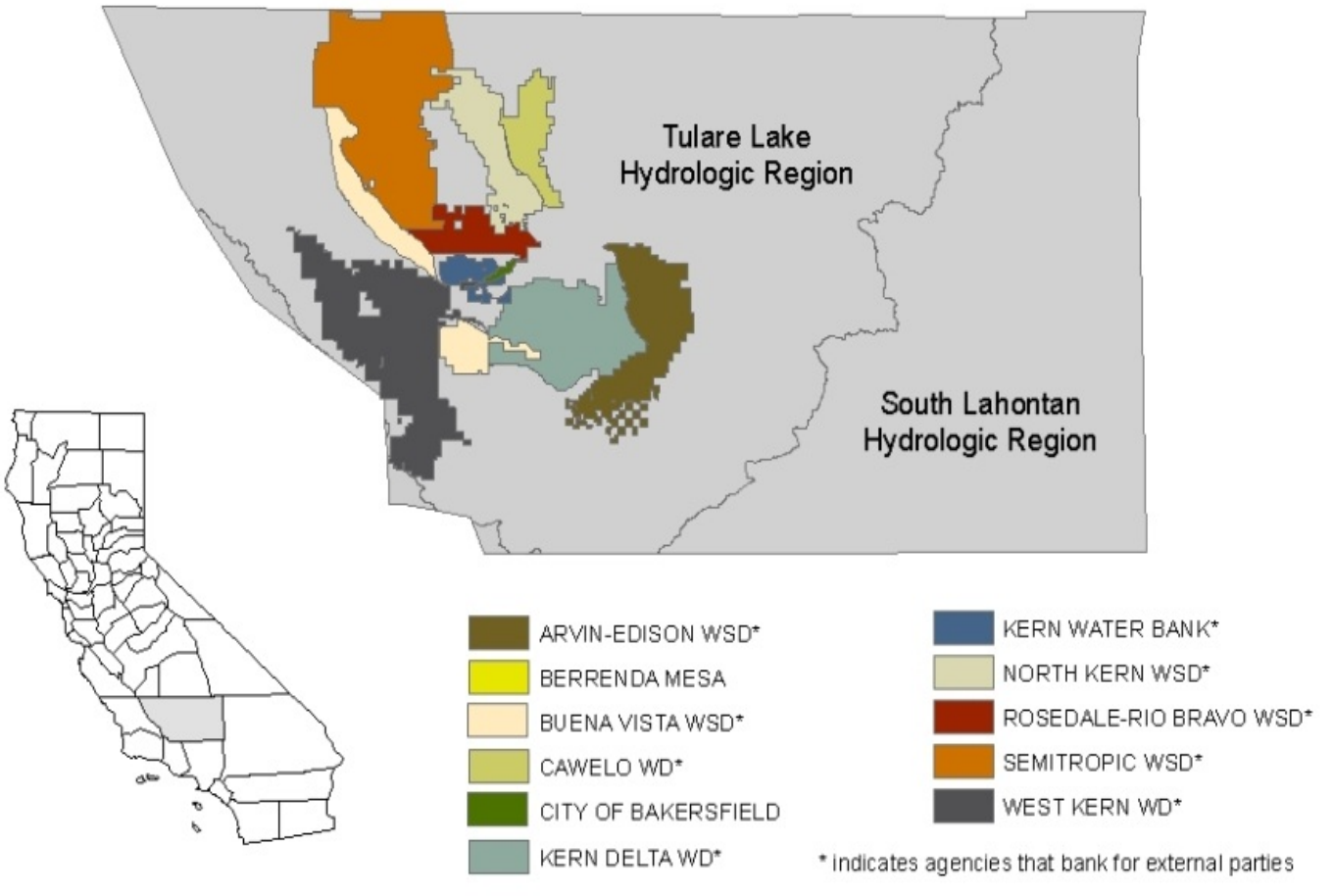
- **Formal:** adjudicated basins and special districts with accounting for pumping/recharge (So Cal, Silicon Valley)
- **Informal:** voluntary, price incentives but no accounting (most common)
- **Semi-formal:** accounting for bank members, not for other local pumpers (Kern County)

- Our focus: banking for off-site parties in Kern and So Cal

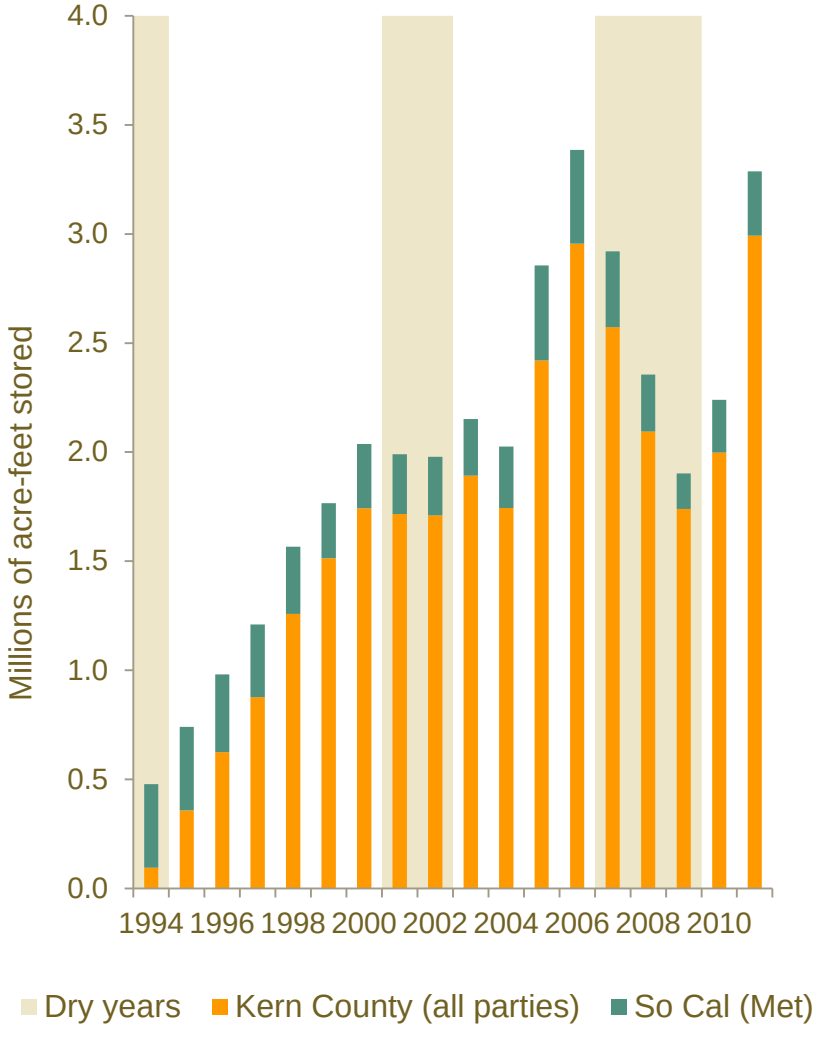
Formal systems: mainly in urban areas, rely on imported recharge



Kern County banks involving off-site parties



New groundwater banks were very useful during recent drought



- Total withdrawals 2007–10: 1.9 maf (3x more than water market)
- Rapid recharge thanks to post-drought rains
- But some conflicts in Kern County over falling groundwater tables

How can we work out the kinks in these important tools?

- Address infrastructure gaps
- Make institutional review process more consistent, transparent, predictable
- Strengthen local groundwater management
- Develop models to mitigate local economic impacts
- Pursue more environmental transfers
- Engage high-level leaders who can take needed risks and break through barriers

For more information

- Hanak and Stryjewski (2012) *California's Water Market, By the Numbers: Update 2012*, Public Policy Institute of California. Available at www.ppic.org

Notes on the use of these slides

These slides were created to accompany a presentation. They do not include full documentation of sources, data samples, methods, and interpretations. To avoid misinterpretations, please contact:

Ellen Hanak: 415-291-4433, hanak@ppic.org

Thank you for your interest in this work.