Water Markets

• Increasingly relevant in the early implementation stage of the Sustainable Groundwater Management Act of 2014

• Market-based approach to groundwater sustainability

• Effective groundwater markets will:
  • Establish and enforce groundwater allocations
  • Create an accounting system to balance groundwater aquifers
  • Address impacts of land fallowing on local regions by allocating water to most profitable uses
  • Provide transparency on transactions taking place in the market
  • (Hanak et. al, 2021).
Impacts to Private Drinking Water Wells

- Nearly 1,000 Drinking Water Wells experienced outages in 2021
- Households were without running water in their homes for weeks
- California shouldering the costs of replacement water
- Significant impact on communities
- “We could save for a well instead of saving for our daughter’s college, but it would be a gamble. We could never afford a well as deep as those of the farmers.”
  – Lorena Bolaños, Madera Co. Resident
Impacts to Drinking Water Wells

• *Groundwater Management and Safe Drinking Water in the San Joaquin Valley* (Water Foundation 2020)
  - Between 4,000 and 12,000 failed drinking water wells by 2040
  - About 46,000-127,000 Californians

• Critical Aquifer Overdraft Accelerates Degradation of Groundwater Quality in California's Central Valley During Drought (Levy et. al, 2021)
  - “A direct linkage between... aquifer pumpage and groundwater quality on a regional scale”
  - “Relations between over-draft and water quality in the Central Valley are driven by... intensive irrigation and pumpage”
Racial Inequities in California Drinking Water

• *Drinking Water and Exclusion: A Case Study from California's Central Valley* (Pannu, 2012)
  • “Valley counties sought to "starve out" unincorporated communities of color through policies of withholding public support”

• *Inequities in Drinking Water Quality Among Domestic Well Communities and Community Water Systems, California* (Pace, Balazs et. al,
  • “Communities of color statewide are disproportionately affected by arsenic, nitrate, and Cr(VI) contamination of drinking water, both in CWSs and DWAs, with findings most pronounced in DWAs”
California Needs a Safe and Affordable Water Supply
Failing & At-Risk Systems in California

California State Water Resources Control Board’s 2021 *Drinking Water Needs’ Assessment* found:

- 610 Small Water Systems
- 600+ Public Water Systems
- 80,000 Domestic Wells
- Total Cost to address short-term and long-term costs –
  - $4.5B-$10.25B
Climate Change Dwindling Coveted Supply

• *Climate Change in the Sierra Nevada* (UCLA Center for Climate Science, 2018).
  • “Temperatures across the Sierra [could] rise by as much as 10 degrees Fahrenheit”
  • “Warming increases the ratio of rainfall to snowfall, and rain runs off right away”

  • Predicts, “onset of episodic low- to- no snow …in California, emerges in the late 2040s”
Case Study: Tule Sub-Basin Groundwater Sustainability Agency

• One of the first GSAs to implement pumping restrictions with fees
  • Generated $11M from growers/pumpers
• According to DWR’s Household Water Supply Shortage Reporting System, 13 reported failed drinking water wells since 2021
• 13 residents receiving emergency hauled water every 2 weeks through SWRCB-funded program through Self-Help Enterprises.
• $17,224/household annually (SWRCB DFA)
• Costs associated with deepening domestic wells are upwards of $30,000
Multi-Benefits

• Provide GSAs critical information of drinking water wells within their sub-basin

• GSAs lack community engagement – providing drinking water solutions opens a relationship between the agency and beneficial users

• Helps ensure drinking water wells are drilled to minimum thresholds + buffer room for periods of drought

• Access to State Water Resources Control Board and Department of Water Resources grants
Policy Recommendations

• State Water Resources Control Board should recover costs from fee revenues generated by GSAs

• Fee per each drinking water well failed because of lowered groundwater table within the GSA’s purview

• Fees should offset cost of providing emergency bottled water supplies and cost of bringing drinking water wells back into operation