

Recharging Groundwater in the San Joaquin Valley

Preliminary Findings from a Survey of Water Managers

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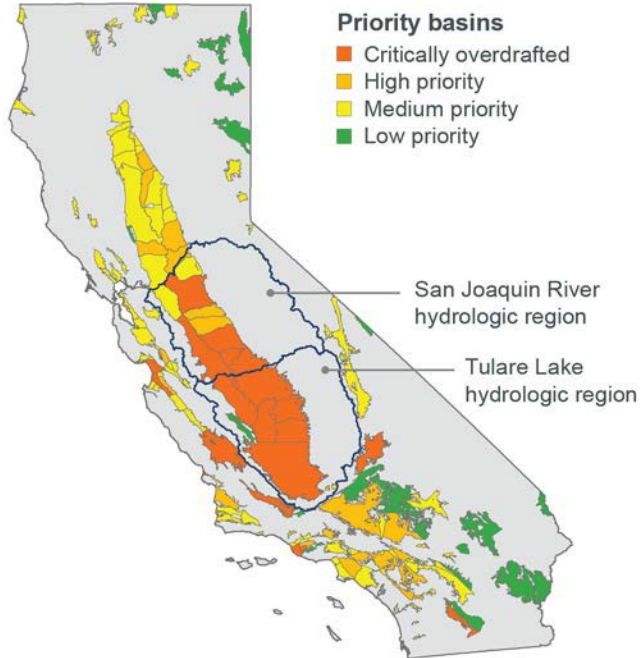


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Most San Joaquin Valley groundwater basins are critically overdrafted



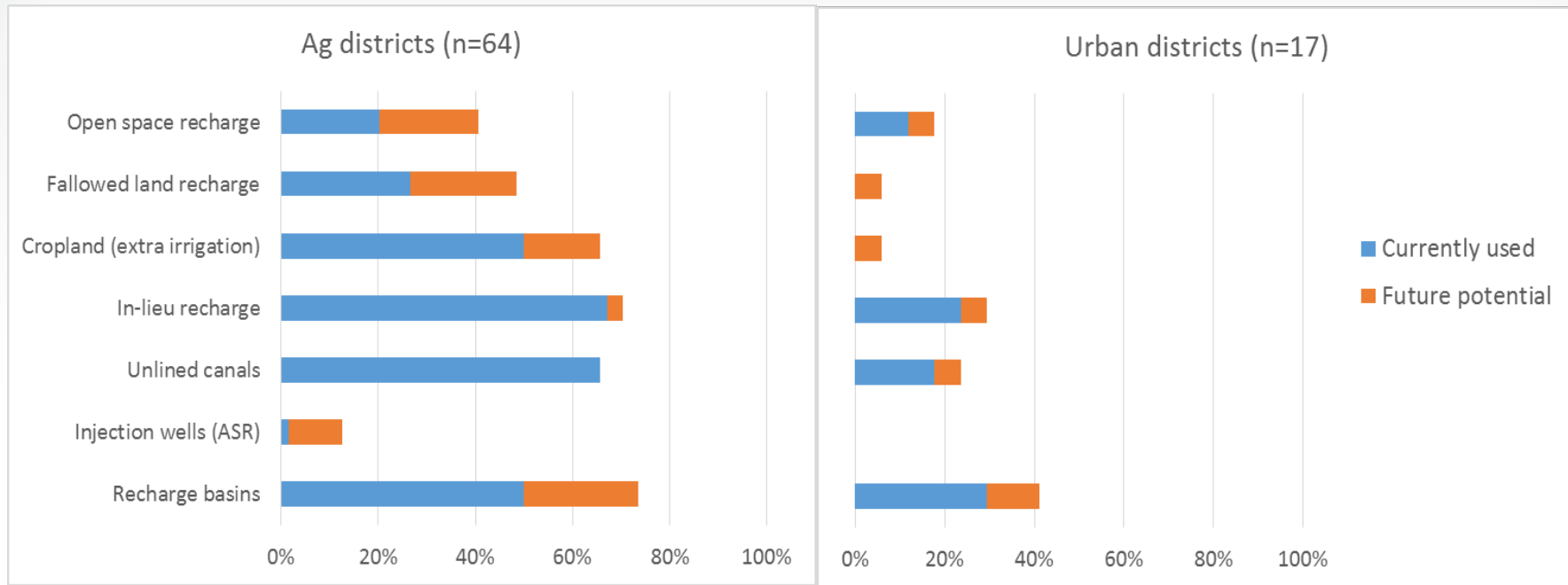
- PPIC estimates ~2 million acre-feet/year average SJV overdraft (1986–2015)
- Consequences are dry wells, sinking lands, reduced supplies for droughts
- 2014 groundwater law (SGMA) requires achieving sustainability by 2040
- Attaining balance means more recharge, less water use, or both

Source: *Water Stress and a Changing San Joaquin Valley* (Hanak et al., PPIC 2017)

Survey sought manager input on recharge experiences in 2017, first wet year since SGMA enacted

- Survey questions:
 - Recharge tools used currently and with future potential
 - Active recharge this year: volumes, tools, sources
 - Barriers encountered and priorities for expanding recharge
- Broadly representative sample, leaning toward larger districts
 - 81 districts of 202 contacted (40%)
 - 64 agricultural districts (42%) and 17 urban districts (33%)
- Survey in September, focus group discussion in October

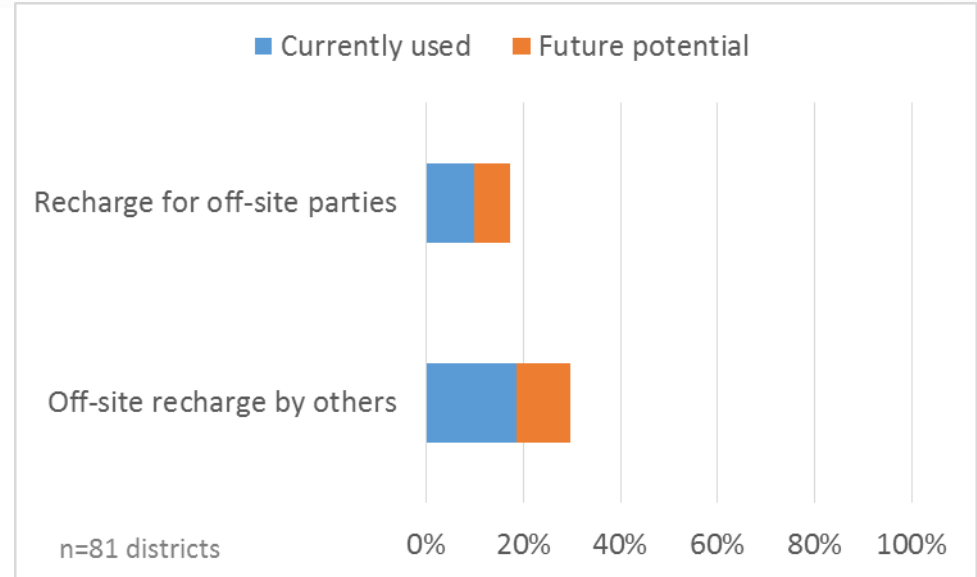
Ag districts currently use wider range of on-site recharge tools, see more potential for expansion



Note: "n" denotes sample size.

Off-site recharge through partnerships is still relatively limited

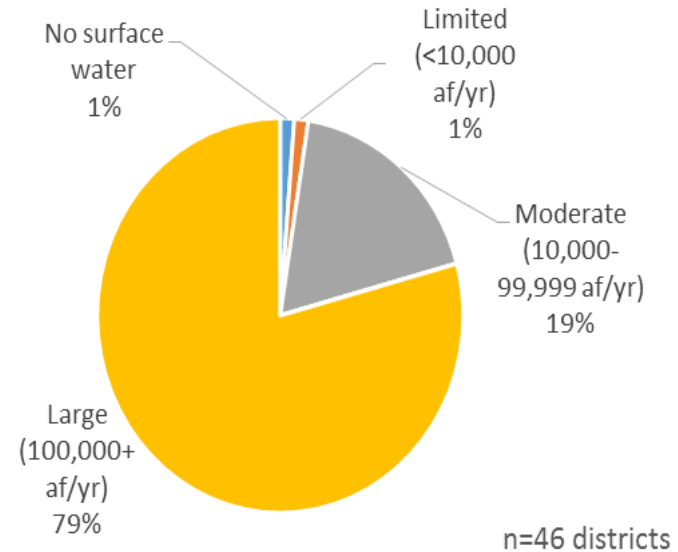
- Enables cost-effective recharge in areas with good capacity
- Useful for districts with poor local recharge conditions
- Occurs mainly in southern valley



Recharge was substantial in 2017, concentrated in districts with more surface water

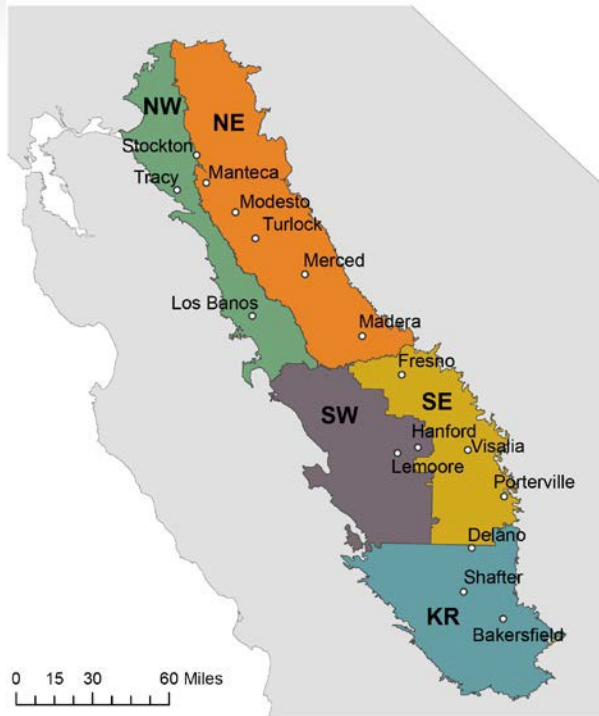
- ~75% of districts reported active recharge programs
- ~75% of those provided volume estimates
- Total on-site recharge: 4.1 maf
- Total off-site recharge: 0.5 maf

Total 2017 onsite recharge by surface water access

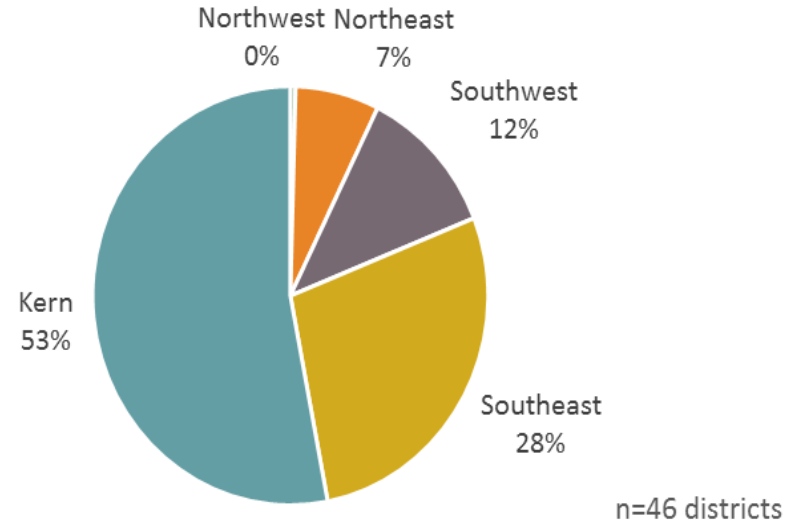


Note: Surface water access is based on average water deliveries for 2005-08. The 81 responding districts are roughly evenly split among these four categories.

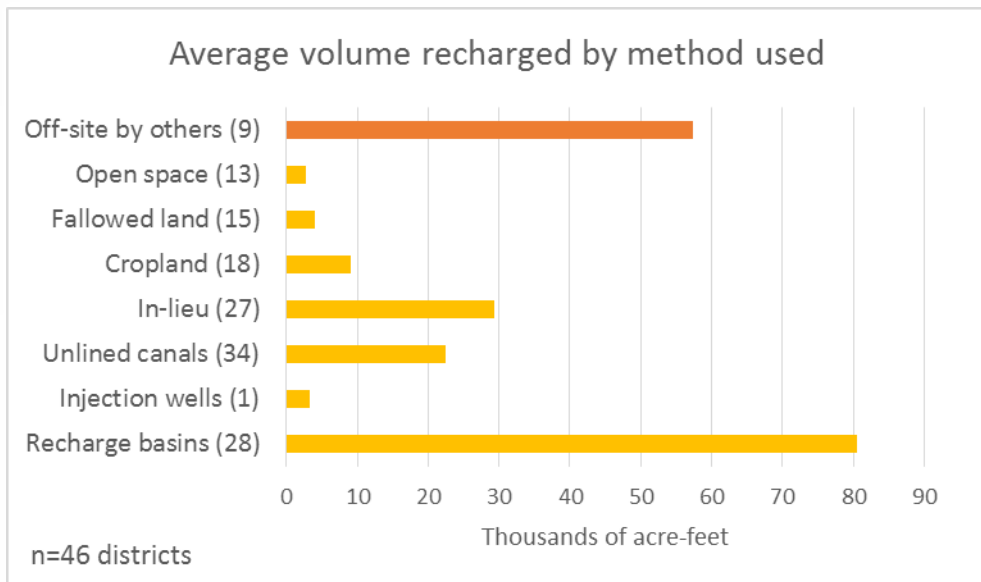
Recharge is concentrated in Kern basin and Southeast



Total 2017 onsite recharge by region



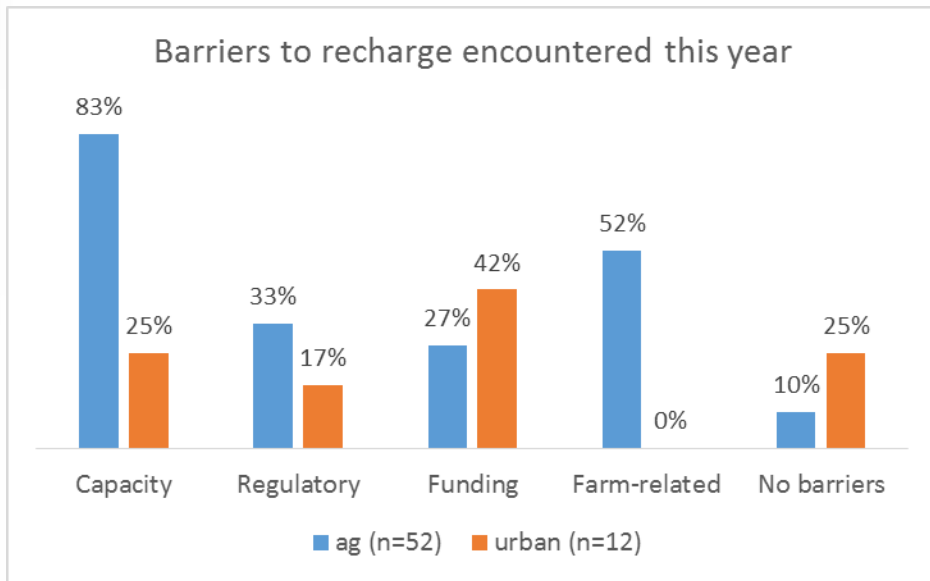
Recharge basins store the most water



Note: Numbers in parentheses show districts reporting volumes for each method. Off-site storage typically uses recharge basins or in-lieu methods.

- Volumes less likely to be reported for recharge via:
 - Cropland
 - In-lieu
 - Unlined canals

Infrastructure issues were most significant barriers to recharge this year



Barriers to recharge	Ag	Urban
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Capacity issues

System conveyance	37%	8%
District basin capacity	50%	25%
District conveyance	44%	17%
Timing of water	63%	8%

Regulatory issues

Construction approvals	29%	8%
Water rights	15%	0%
Conveyance approvals	10%	0%
Water quality	10%	8%

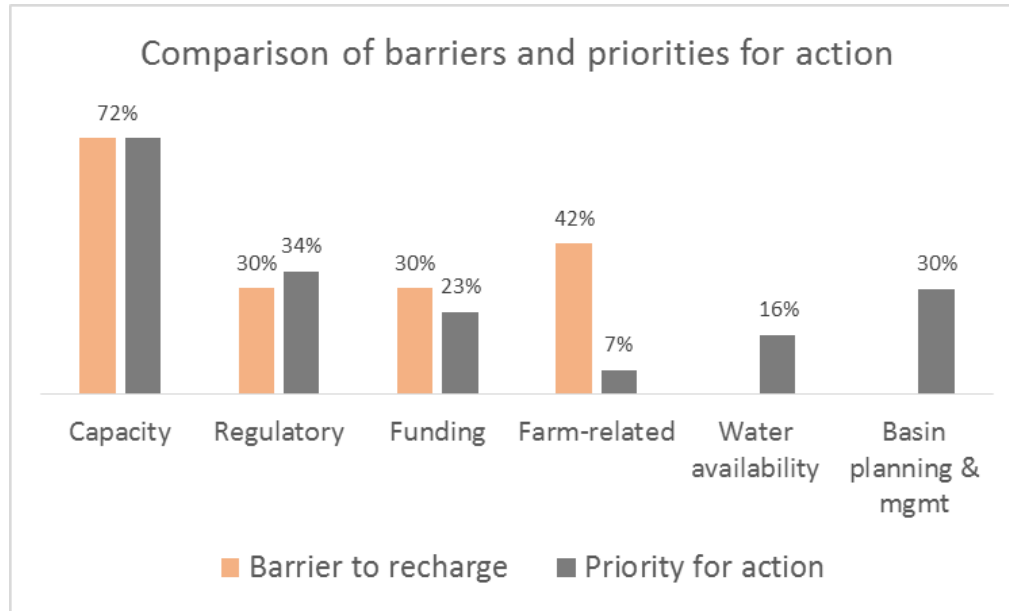
Funding issues

Proposition 218	17%	0%
Price of water	12%	0%
Migration out of district	0%	42%

Farm-related issues

Irrigation system	46%	0%
Benefits for farmers	13%	0%
Crop health	29%	0%

Managers also emphasized capacity improvements as top priorities for action



Note: Priorities were coded from open-response answers.

Key Takeaways

- Most districts recharge, but districts with large surface supplies and formal programs store most water
- Interest in expanding recharge is widespread
- At least in a wet year, capacity constraints loom larger than regulatory issues
- SGMA will encourage:
 - Better accounting of recharge
 - Joint programs between surface and groundwater districts
 - And maybe more offsite recharge for parties lacking good local conditions

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:

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For more information, see www.ppic.org/water

Thank you for your interest in this work.