Managing Water and Farmland Transitions in the San Joaquin Valley

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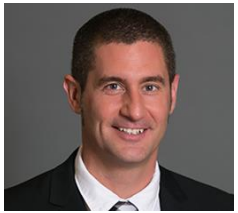
Report team


Ellen Hanak


Andrew Ayres


Caitlin Peterson


Alvar Escriva-Bou


Spencer Cole


Zaira Joaquin Morales


Amy Mahler


Shayan Kaveh


Annabelle Rosser


Sarah Bardeen

Other project partners


Joy Collins


Mitchelle de Leon


Elisa Gonzalez


Sarge Green


Abigail Hart


John Herter


Jaymin Kwon


Mark Lundy


Josue Medellin-Azuara


Sarah Moffatt


Cameron Pittelkow


Laura Ramos


Curtis Seymour


Kristina Solberg


Darcy Wheeles

We benefitted from input from a broad advisory group

- Paul Adams
- Reyn Akiona
- Julie Allen
- Stephanie Anagnoson
- Laura Angell
- Lynne Ashbeck
- Eric Averett
- Ashley Boren
- Keali'i Bright
- Kimberly Brown
- Emmy Cattani
- Vito Chiesa
- Casey Creamer
- Vernon Crowder
- Ruth Dahlquist-Willard
- Vicky Espinoza
- Craig Fourchy
- Michael Frantz
- Aaron Fukuda
- Nataly Escobedo Garcia
- Amrith Gunasekara
- Abby Hart
- Ann Hayden
- Kara Heckert
- Nicole Hernandez
- Matt Hurley
- Andrew Isner
- Genelle Taylor Kumpe
- Ian LeMay
- Rey León
- Eric Limas
- Jim Maxwell
- Cork McIsaac
- Cannon Michael
- Lauren Miller
- Amanda Monaco
- Greg Norris
- Eddie Ocampo
- Will Oliver
- Jessica Olsen
- Lorelei Oviatt
- Amanda Peisch
- Katie Patterson
- Jared Plumlee
- Meg Prince
- Anja Raudabaugh
- Jon Reiter
- Mark Riley
- Jesse Roseman
- Steven Springhorn
- Natalie Stork
- Emily Tibbott
- Julie Vance
- Leland Villalvazo
- Nancy Vogel
- Keith Wallace
- Earl Withycombe
- Stuart Woolf

- and many others

Widespread fallowing brings both risks and opportunities

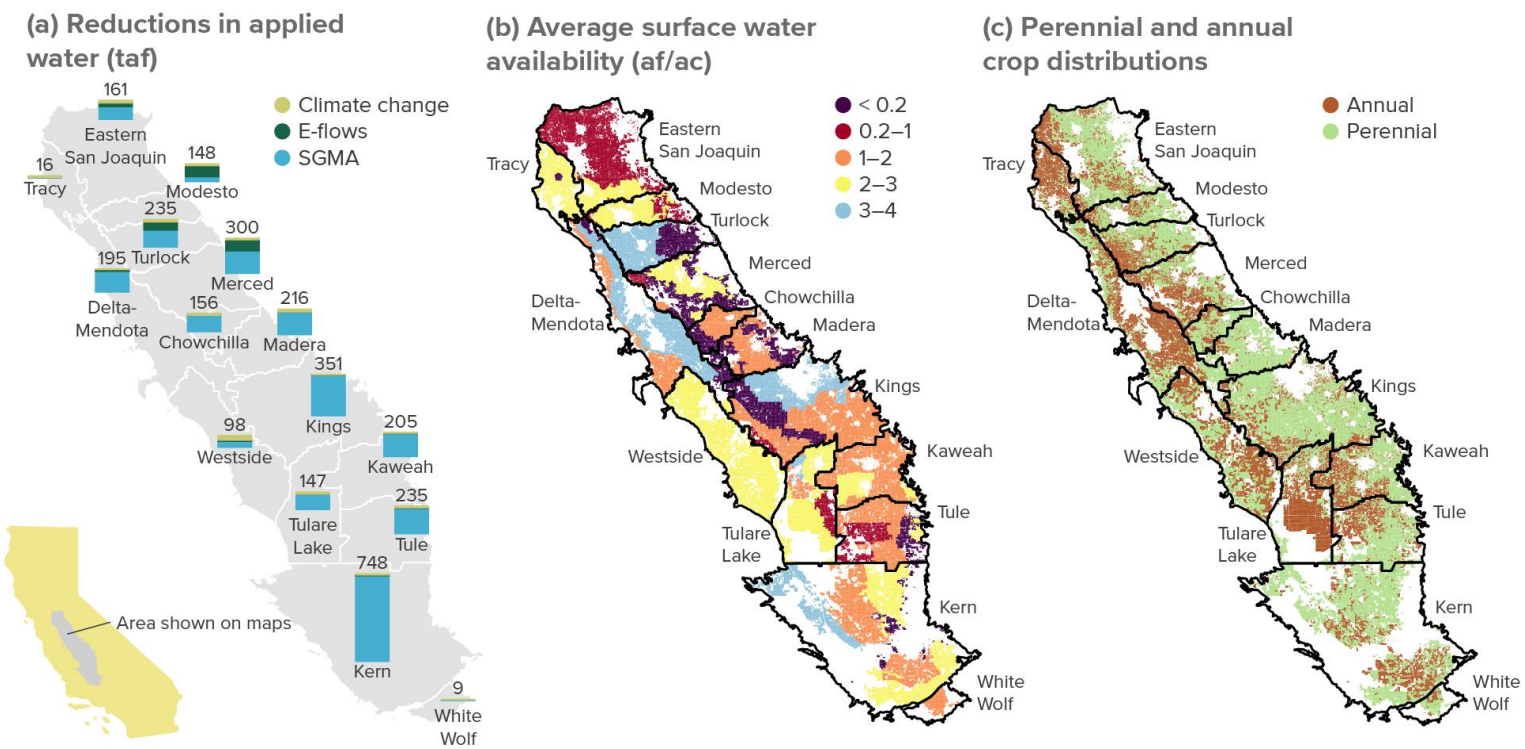
- SGMA is key to valley's future
- But even with new supplies, 500,000+ acres will need to come out of intensely irrigated production
- What happens to these lands?
  - Economic, public health, environmental risks
- Project goal: inform best land use transitions
  - Benefits/drawbacks of alternative land uses
  - Funding, incentives, institutional considerations

Key takeaways

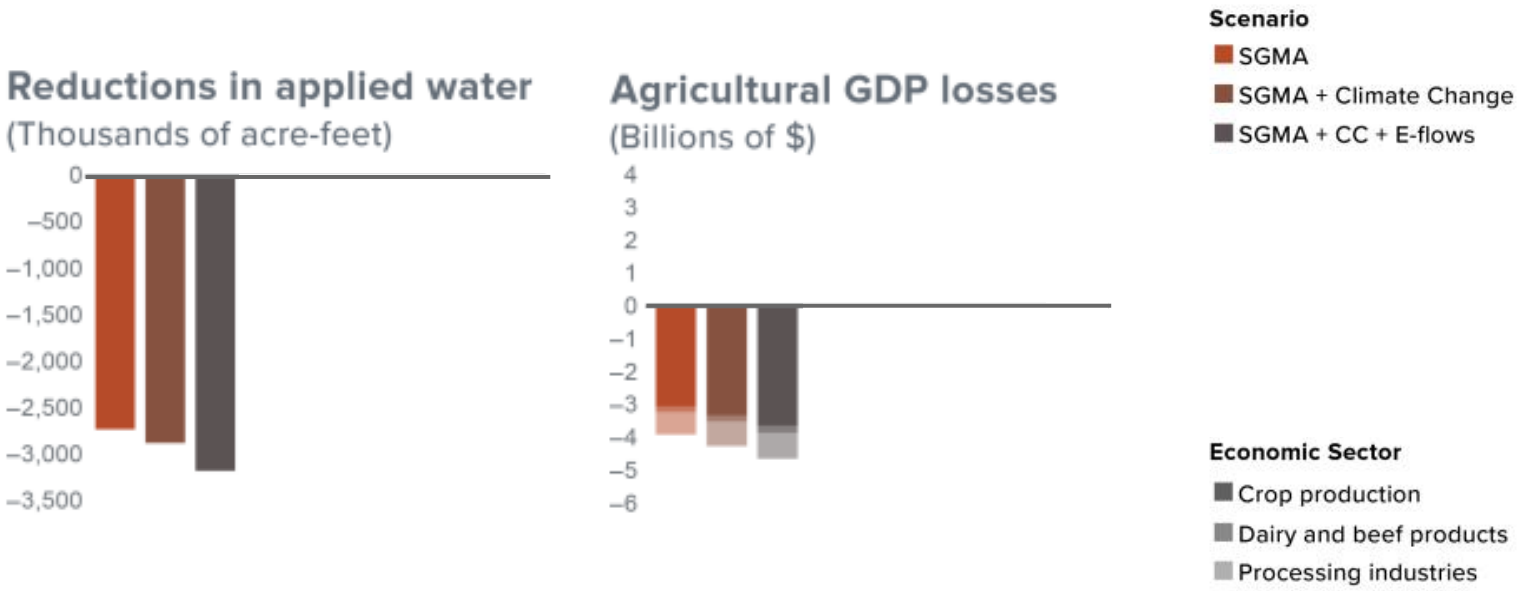
- Water trading will be crucial to a successful transition
- Smart farmland repurposing will help to ensure SGMA's success
- Unprecedented partnerships and robust coordination will be essential
- Investments and incentives—including supportive regulations—will grease the wheels of progress

Water Scarcity and Trading

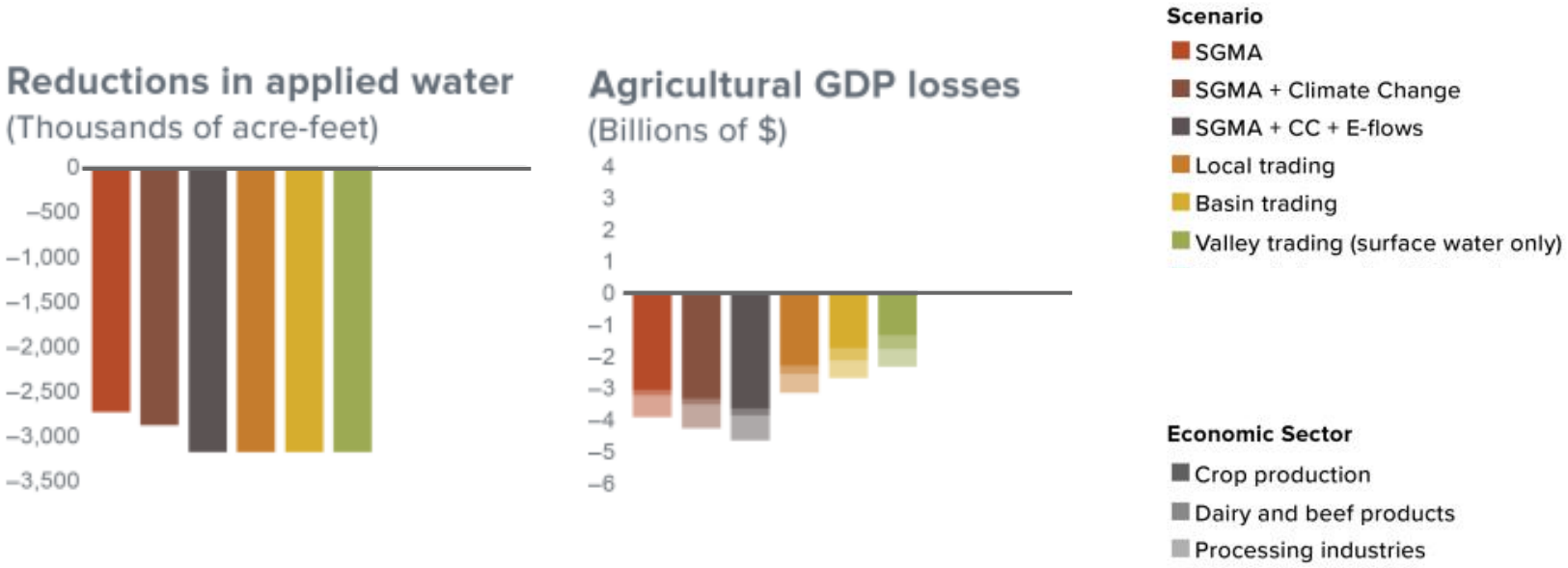
Water scarcity impacts will vary across the valley



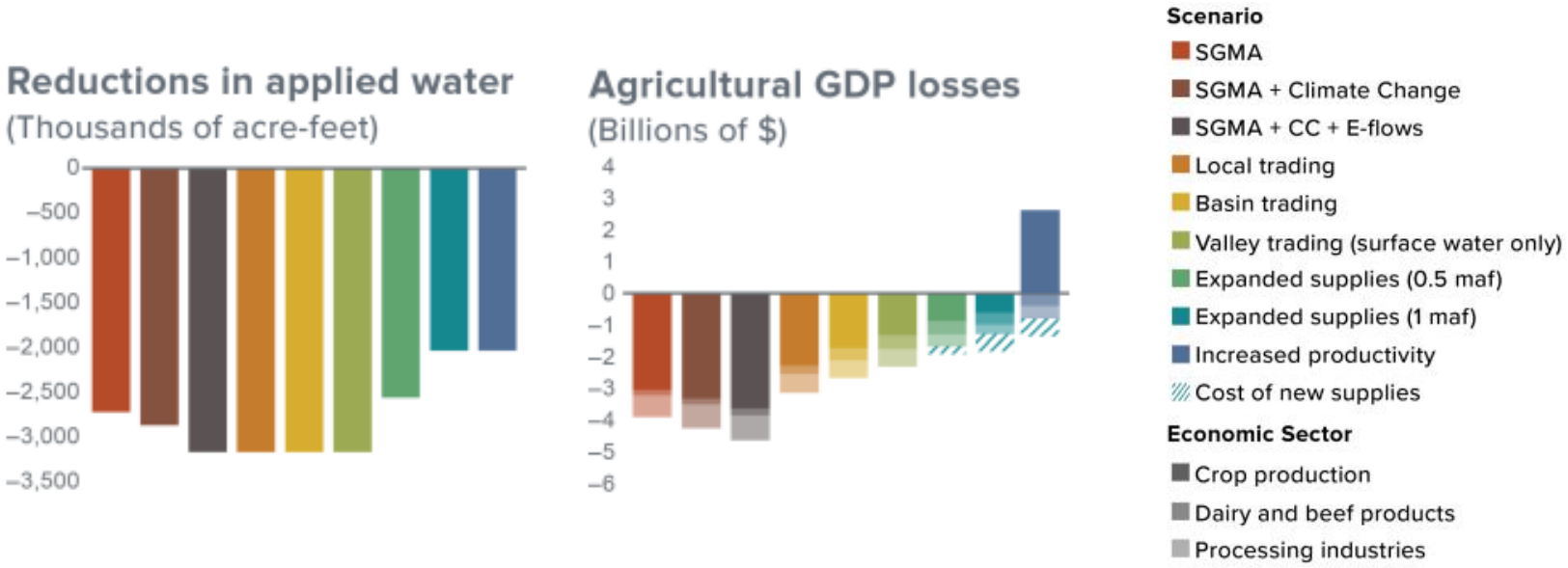
Water reductions by 2040 will reduce farm GDP (and jobs)



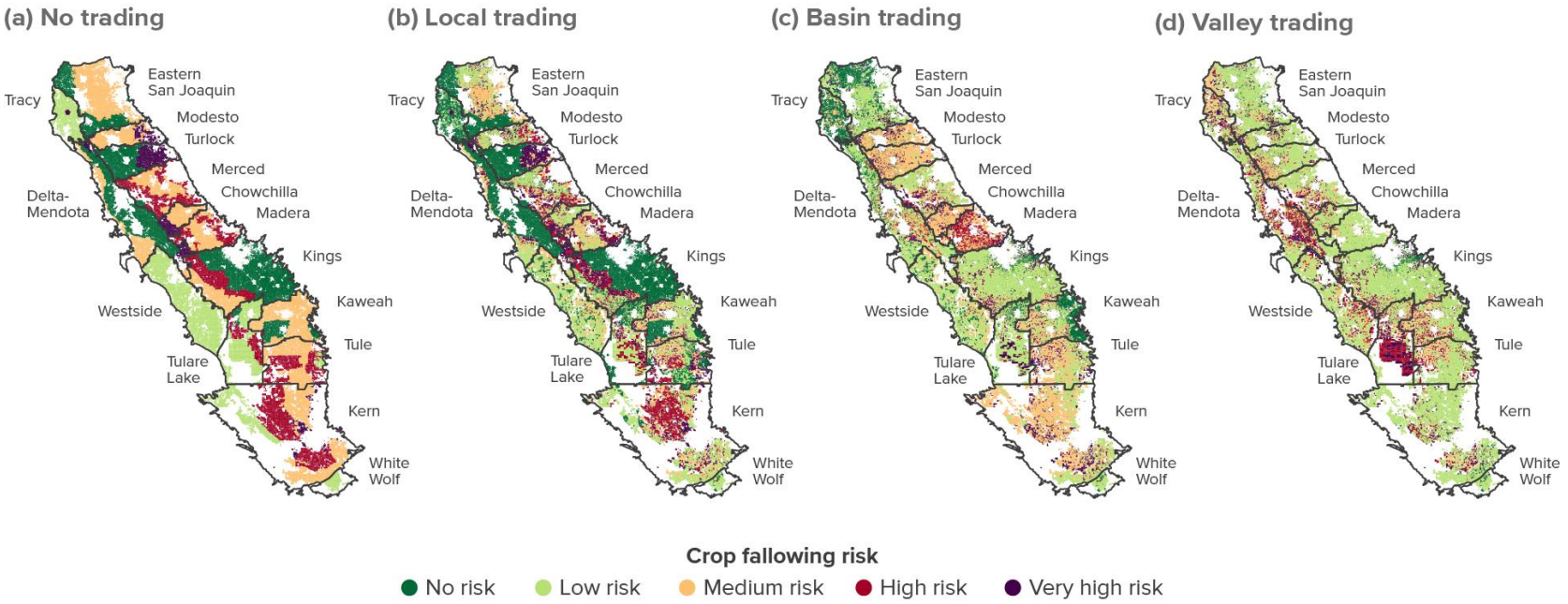
Water trading could significantly lower the costs of water supply reductions



New supplies and increased productivity could further soften the blow



Trading would shift where water is used to reduce costs of fallowing



Will water trading have negative consequences?

- Both groundwater pumping and fallowing can have negative consequences—as SGMA reduces pumping, it raises fallowing
- Concerns around trading:
  - Shifts in groundwater pumping could cause undesirable impacts
  - Shifts in fallowing could have unintended consequences
- We considered a range of potential impacts
- Bottom line? Managing water scarcity is a balancing act
  - Careful design is needed, but trading can help reduce negative impacts of the coming changes

Policies for effective and responsible water trading

- Trading needs to track and address significant undesirable impacts on other water users
- Trading rules need to be transparent, flexible, and accessible to all water users (including smaller players)
- Consider “no buy” zones for groundwater in sensitive areas
  - Avoid impacts (e.g., subsidence) in areas that buy pumping rights
- Consider transitional assistance for areas affected by shifts in fallowing
  - E.g., dairy sector, some counties

What Are Promising Options for Repurposing Farmland?

We explored many options for keeping lands productive with less water

- Solar development
- Water-limited crops
- Upland habitat
- Recharge basins
- New housing

Keeping lands productive will require innovation and investment

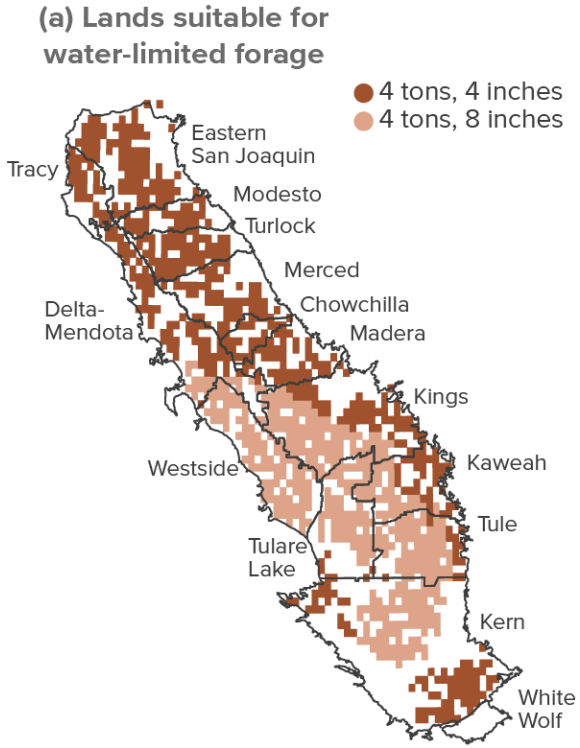
- New land uses must deliver:
  - Ongoing control of dust, weeds, and other pests
  - Ideally also support local economic activity, other local benefits
  - Cost-effective solutions
- There are many promising opportunities
- To realize them, investments will be needed in infrastructure, workforce training, and innovative practices

Solar is a very promising alternative use—but only if transmission bottlenecks can be addressed

- Projections suggest 135–215K acres may be needed in the valley
  - Much more cropland (3.9M acres) could be suitable
- Potential for sustained revenues, land management, job opportunities
- But transmission is a bottleneck; tax policies are evolving
- Workforce development is a high priority

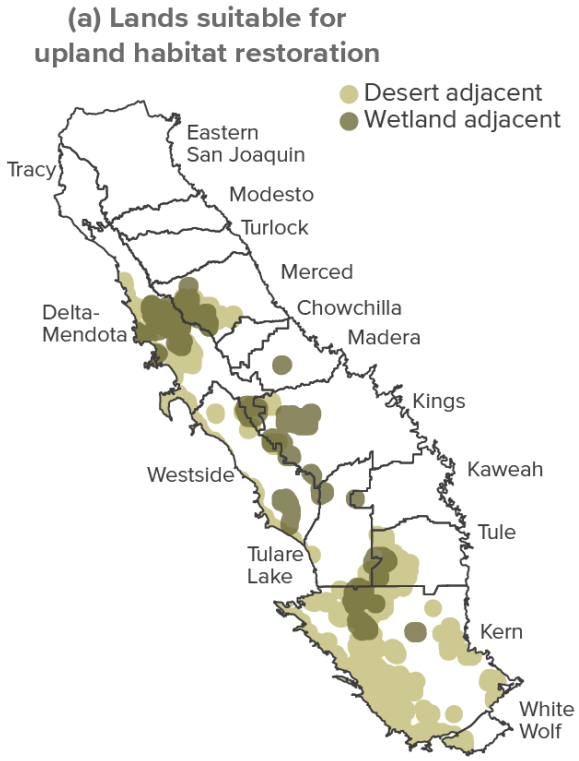
Water-limited cropping can keep lands in production

- Much of the valley floor (3.2M acres) suitable with supplemental irrigation
- Potential advantages:
  - Revenue potential (e.g., market for low-water forage)
  - Ongoing land management (for dust, pests, weeds)
  - Flexible integration with intensively irrigated agriculture
- Availability of supplemental irrigation can be a challenge; R&D needed on varieties, techniques



Upland habitat restoration could expand existing conservation areas

- Potential for 1.1M acres on irrigated farmland
- Can mitigate extensive historic habitat loss; water requirements are low
- Success will require:
  - Reducing costs of restoration
  - Identifying suitable entities to manage these lands
  - Providing legal protections for owners and neighbors

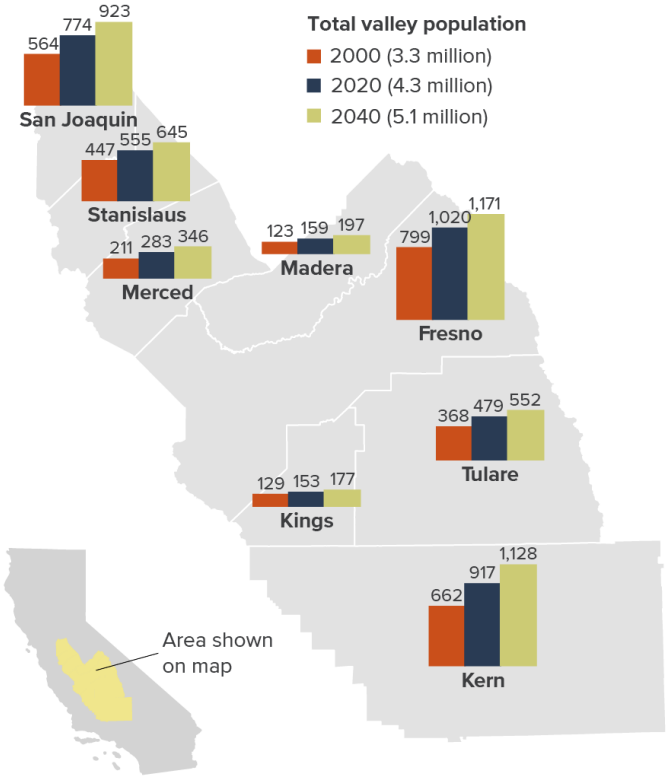


Recharge basins can be managed for multiple benefits

- Valley now has about 50,000 acres of dedicated basins
- Recharge is the main way to expand supplies, and basins have great potential as intermittent wetlands
- But basins are costlier than spreading water on farmland
- And legal protections are needed to manage basins for habitat
- There may be potential for another 20-40,000 acres in dedicated basins

New development could bring revenues and save water

- If growth continues as projected, the 8 San Joaquin counties could see up to 800,000 new residents by 2040
- On net, new homes use much less water than cropland
- Development could occupy up to 50,000 acres of cropland, save up to 175,000 acre-feet per year



Getting to Sustainable Water and Land Use

Recommendations

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- Align regulatory and fiscal incentives with SGMA
- Provide local, state, federal financial incentives

The Valley has met great challenges before, and it is up to this task

Note 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:

Andrew Ayres

ayres@ppic.org

Thank you for your interest in this work.