



# Surviving climate change through collaborative water reuse

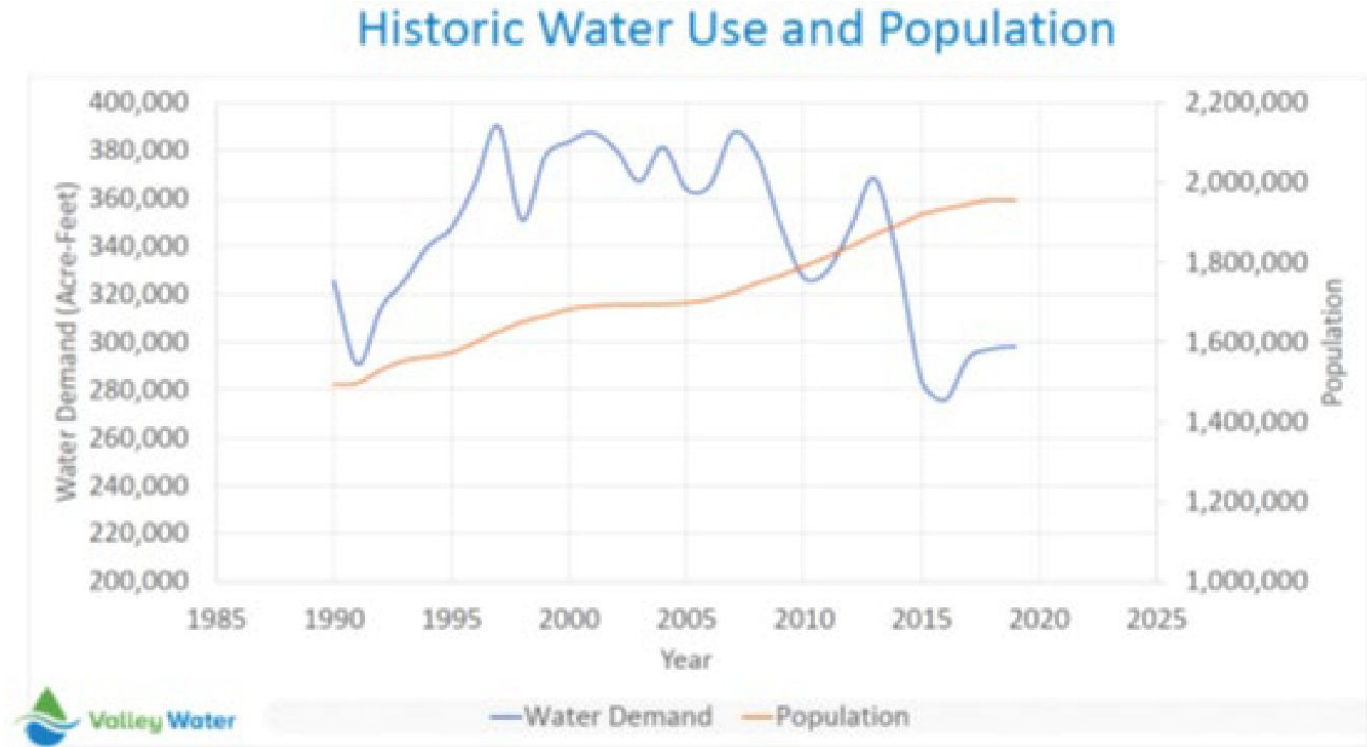
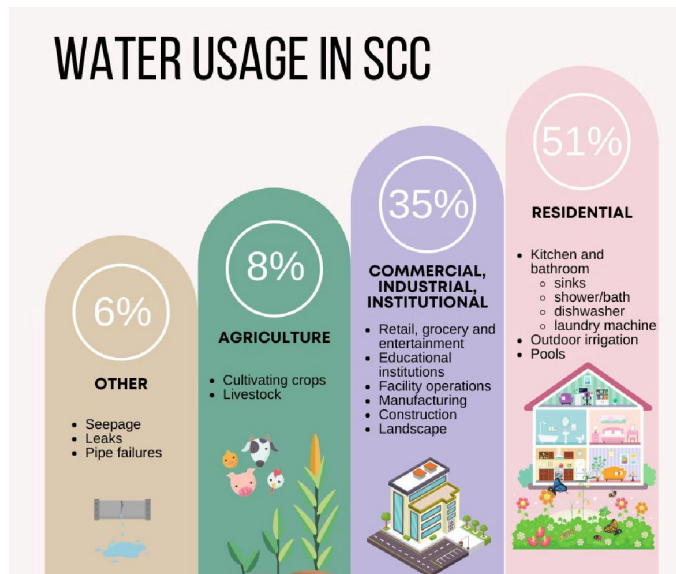
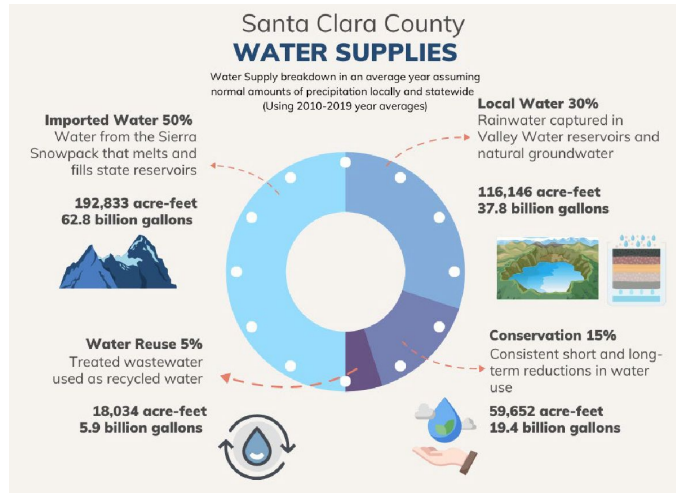
AEG Impact Challenge: Climate, Health & Equity @ VERGE22

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# We Need a More Resilient Water Supply



*“With each drought, our local and imported water supplies are reduced. In 2022 we’ve had three consecutive years of less than average rainfall [and] our annual allocation from state and federal imported water supplies have drastically decreased in the last 3 years. **The optimistic view that wet years will continue to compensate for extended dry spells is no longer justified..**”*

Source: Jackson MD, S. et al. “Water Supply” in Santa Clara County Medical Association **Bulletin** (June 2022), **Water and Health: The Coming Water Crisis and What We Can Do About It.**



# The “Why” and “How” of Effective Collaboration

***“Most water utilities were created to solve last century’s problems. The problems evolved faster than the institutions.”***

***National Water Reuse Action Plan (Action Item 2.16)***

Framework	Challenges	Strategies
Governance	Outdated missions, narrow focus	Relate agency goals to quality of life
Regulations	Regulatory uncertainty	Engage with regulators early and often
Economics	Benefits are long-term and diffuse	Include avoided costs, risk reduction
Management	Complexity of joint operation	Assign roles by expertise, resources
Leadership	Regional programs still require board support.	Build informal relationships and create formal agreements.

Source: Rosenblum, E. et al. **Multi-Agency Water Reuse Programs: Lessons for Successful Collaboration** (Washington DC: EPA, 2022)



## Economy of Scope

**Economy of scale** occurs when the cost per unit produced falls as more units are produced

**Economy of scope** occurs when multiple benefits are provided at lower cost from a single program. Projects like water reuse that **solve intersecting problems and offer multiple benefits** provide participating agencies with **economy of scope**.

## Efficient Implementation

The time required to implement collaborative projects is reduced through understanding: *“Projects proceed at the speed of trust.”*

-  How critical is the project to stakeholders?
-  Do they understand each other’s motives?

Time to Reuse=  $\frac{n^2}{K(n-K)}$  in **The Water Reclamation Matrix, Proceedings, 2nd IWA Leading-Edge on Sustainability (2005)**. London: IWA, pp. 216-224.

# Wanted:

## A Common Understanding of Water Resilience

- Wholesale water agencies (Valley Water, SFPUC; also EBMUD, Zone 7)
- Retail water agencies
  - Municipal: San Jose, Santa Clara, Palo Alto, Sunnyvale, Gilroy
  - Investor-owned: San Jose Water Company, Great Oaks Water Company; also Cal Water
- Recycled water producers
  - Palo Alto Regional Water Quality Control Plant
  - Sunnyvale Water Pollution Control Plant
  - San José-Santa Clara Regional Wastewater Facility (City of San José)
  - South County Regional Wastewater Authority
  - Onsite and distributed wastewater treatment and reuse
  - Stormwater capture and use
- Water consumers—commercial, industrial, institutional, and residential
- Public interest groups—environmental, business, public health (e.g. **SCCMA**)

# Managing Water with “Virtually Integrated” Utilities



*Sustainable Water Infrastructure for Tomorrow (Virginia)*



*NTMWD East Fork Water Reuse Project Wetland Education Center (Texas)*



*Sweetwater Wetlands Park (Arizona)*



*Pure Water Monterey (California)*

# The challenge before us

*Regarding Climate, Health and Equity a critical obstacle to collectively overcome in 12 months is the lack of a **collaboration roadmap** to help water agencies and other stakeholders recycle their water and guide them towards a shared vision of water resilience for their communities.*