

Facing an Uncertain

Future:

Rising to Water Resilience: What Will It Take?



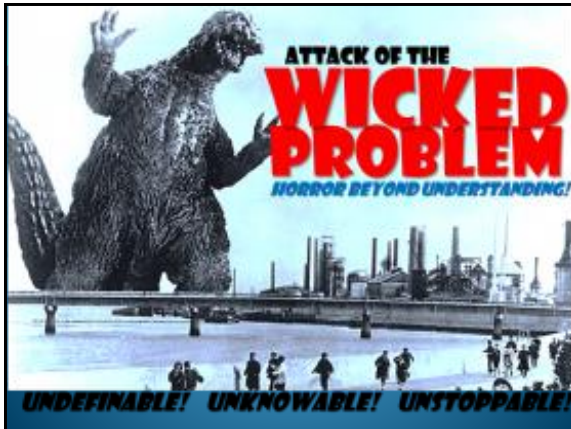
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Overview of the start of a conversation—food for thought

- Context:
 - Water in the world/the world of water
 - Big picture CA Water 101
- Signs of hope here and elsewhere
- Spotlights: Bay-Delta & Recycling & EJ (drinking water)
- The human dimension not an afterthought but at the center

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Sustainability AND Resilience are called for

...and comfort with complexity

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We need more than resilient infrastructure

*We need resilient institutions
We need more resilient relationships
We need more mindful and resilient approaches*

....fortunately, there are signs of hope

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The state of water in the world

- Water as source of life
- Water as source of conflict
- Water as unifying cause/theme
- Water as underappreciated player
- Water as bleeding edge
- Has Water's moment come?

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Is it Water's moment?

Sustainable Development Goals
 Climate discourse and policy: "mitigation" vs. "adaptation"?

This year:

- Mitigation AND Adaptation?
- Water elevated in discourse? COP26 Glasgow
- Country "net zero" pledges on climate
- Corporate "net zero" pledges on water

Nature – based Solutions:

- Climate and Water benefits
- Elevation at international and corporate level
- Steps at national level – infrastructure bill, climate approach
- Beginning efforts at state levels




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California as case study

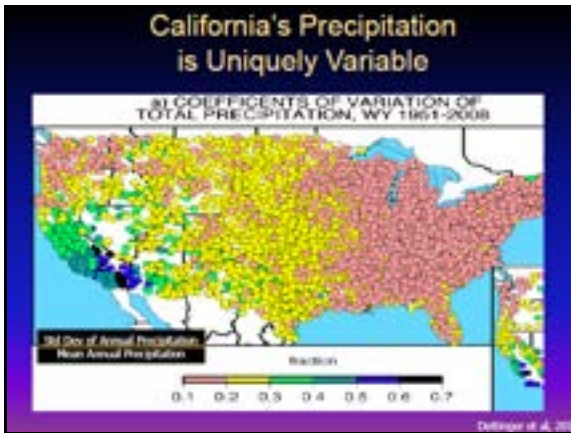
Setting—the whole elephant

- Most Variable hydrology**
 - Year to year
 - Location to Location
 - Time of year
- Mix of sources**
 - Surface Water local or imported (storage/conveyance)
 - Groundwater (intensely local)
 - Every locale different mix
 - Mix of water rights varies greatly
 - Impact of drought varies greatly
- Mix of solutions**
 - Conservation/Recycling/Stormwater/Desal
 - Integrated Water Management in regions and statewide
 - Storage, storage, storage, storage
- Basics**
 - 39 million people → 90 million
 - 469,000 square miles
 - Majority of population lives in large cities 800s of miles from water source
 - One of 5 Mediterranean large scale agricultural opportunities in world
 - Most biodiversity, losing biodiversity most rapidly
 - Institutional setting: local control; 4000+ water supply systems; 2600+ water agencies (an "large")



Climate change and other drivers as gamechangers

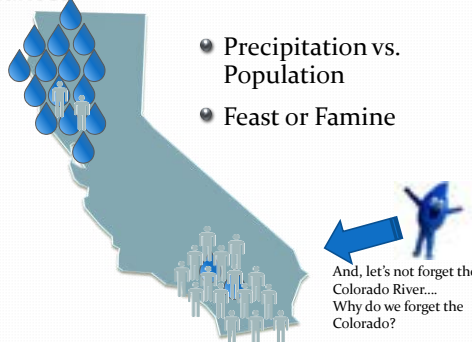
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Managing Hydrologic and Geographic Imbalances

- Precipitation vs. Population
- Feast or Famine



And, let's not forget the Colorado River... Why do we forget the Colorado?

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Major Water Projects

- Federal – Central Valley Project (CVP)
- State – State Water Project (SWP)
- Local – Many other projects throughout state, including Colorado River system, Hetch Hetchy, EBMUD, Owens Valley

Source: Water Environment Foundation

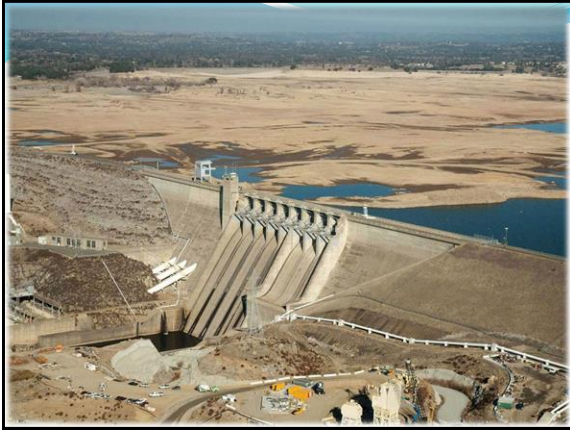


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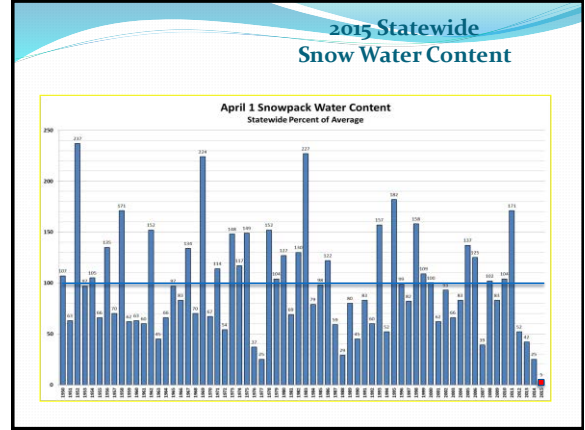
Wake up call: The guy on the right



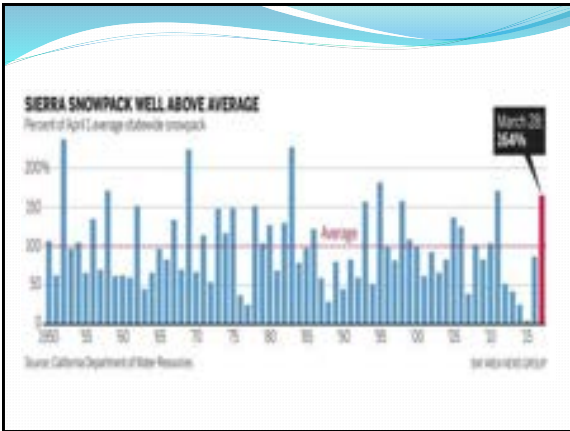
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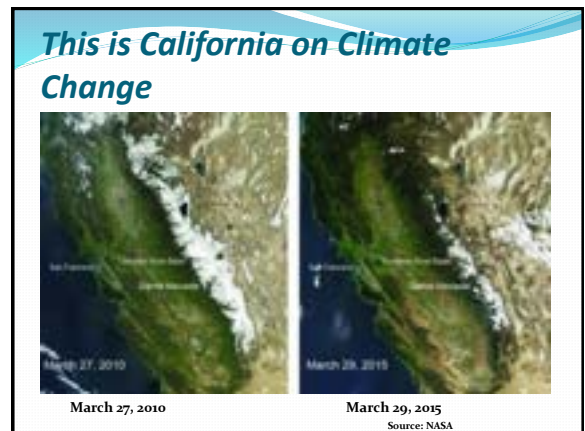
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Future drivers require change

- Climate change → particularly loss of snowpack
- Limitations of looking at “recorded history”
- Population growth
- Food security
- Importance of protecting nature

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California Water Action Plan




- Make Conservation a California Way of Life
- Increase Regional Self-Reliance and Integrated Water Management Across All Levels of Government
- Achieve the Co-Equal Goals for the Delta
- Protect and Restore Important Ecosystems
- Manage and Prepare for Dry Periods
- Expand Water Storage Capacity and Improve Groundwater Management
- Provide Safe Water for All Communities
- Increase Flood Protection
- Increase Operational and Regulatory Efficiency
- Identify Sustainable and Integrated Financing Opportunities

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Governor Newsom takes the baton...

- Water Resilience Portfolio
- Based on portfolio approach; “All of the above” too
- Regional approach, multi-benefit, tech/innovation/data, agency integration among other emphasis
- Resilience bond postponed



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Dealing with reality



“I am a firm believer in the people. If given the truth, they can be depended upon to meet any national crisis. The great point is to bring them the real facts, and beer.”

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Ice Cube's wisdom



“I think, to me, reality is better than being fake.”

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Reality: Loss of snowpack



Labels: Sacramento Valley, Sierra Nevada, San Joaquin Valley, Jan. 18.

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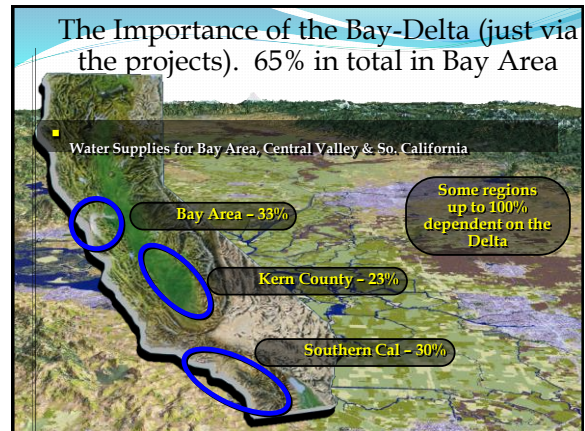
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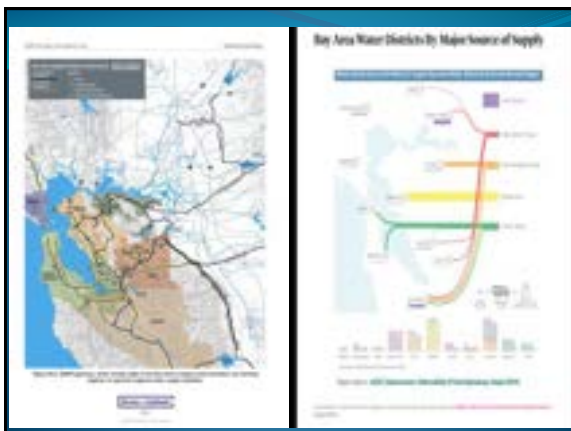
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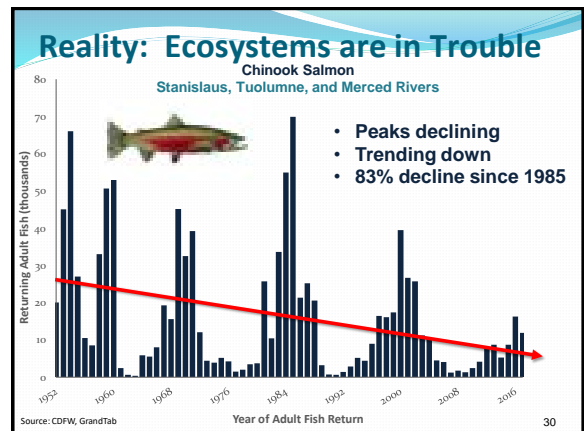
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Reality: California agriculture is precious resource

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Reality: Lack of statewide groundwater management has been a problem

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Groundwater Depletions

June 2002 June 2008 June 2014

Source: NASA Grace

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Reality: Community Well Systems Where Contamination has been Detected

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Framing the issue – Nitrate in Groundwater

42,838 wells analyzed for nitrate since 2000

- 11,431 wells above one-half the maximum contaminant level (MCL)
- 5,811 wells above the MCL

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Safe Drinking Water

- Standard setting—e.g., 123tcp, chromium6
- Consolidation work
- Prop 1 grants; SRF loans
- Irrigated Lands Regulatory Program
- SB200 Funding to help DACs obtain capacity to provide and treat clean, safe, and affordable drinking water

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Reality: Our infrastructure is aging and inadequate to the times




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Reality 2020/2021/2022 stay tuned



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Water Rights



- Drought actions and follow through
- Information management
- Dispute resolution

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Water Conservation and Efficiency



Mandatory drought conservation: 22%
 Long term efficiency standards and targets
 Leak standards and audits

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Reality: We've done a lot about it but still a long way to go

<h3>Progress</h3> <ul style="list-style-type: none"> • Water conservation public response (24%) and Water Efficiency Legislation • Safe Drinking Water legislation and funding • Statewide Groundwater management legislation and progress • Recycled Water paradigm shift • Stormwater Capture acceleration • Updated standards for preventing pollution in agriculture • Modest Bay-Delta progress? 	<h3>Much much more to do</h3> <ul style="list-style-type: none"> • Water quality HUGE needs—PFAS/PFOA, Chromium 6, Lead, Nitrates, Salinity, vestigial contaminants/ongoing contaminants • Water rights 19th century, infrastructure 20th century; problems 21st century • Ecosystems in crisis • Water system fragmentation/politicization • Bay-Delta, Safe Drinking Water • Climate adaptation in face of drought, catastrophic wildfire, and inevitable record floods
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Spotlight: Bay-Delta, Recycling, EJ (drinking water)

Bay-Delta:
 *Conflict of the ages between ag, urban, environment/commercial fisheries
 *Also *between* water users
 *Plumbing, sure, but also trust and operations
 *Water quality control plans/ Status/"Voluntary Agreements"
 *Tunnels, canals, alternative conveyance



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Recycled Water— not just ready for take-off; it took off

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EJ/Drinking Water

- Human Right to Water (2012): clean, safe, affordable
 - Legislation/regulation
 - Transition DPH→SWRCB
 - Prop 1+
 - Consolidation Authority
 - Operational Funding
 - SAFER program
 - Irrigated Lands Reg. Program
- Key actors:
 - Community Water Center
 - Leadership Council for Justice and Accountability
 - Clean Water Action
 - New Alliance for urban and rural action
 - Growth of coalition of agriculture and advocates

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Reality: We can do something about it

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Key to future is integration and local and regional leadership

Efficiency/Recycling/Stormwater Capture/Parks+

- Santa Ana River Watershed/Orange County
- San Diego
- Los Angeles
 - LA
 - Met
 - LA County
 - WRD and more
- Sacramento writ Irg
- Santa Clara County/SF Bay agencies
- San Joaquin Valley
 - Del Puerto
 - Brackish

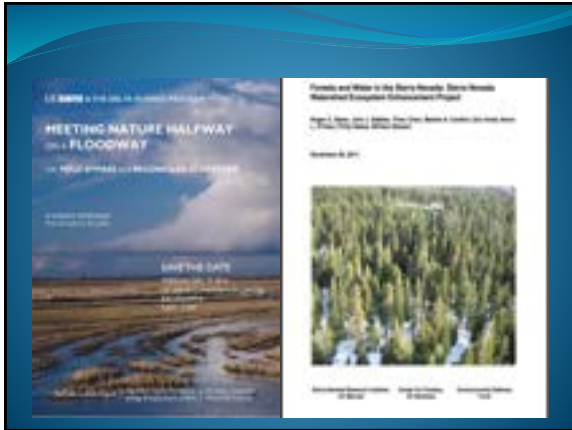
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“Our relationship with water has to evolve.” Los Angeles

Mayor Eric Garcetti, October 14, 2014

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Urban Sustainability challenge & opportunity: Stormwater

- Problem or resource?—it is all in how you look at it
- Stakes high—multiple challenges
- Working across silos huge sea change
- Measure W

Save the rain.
Save L.A.
YES ON W



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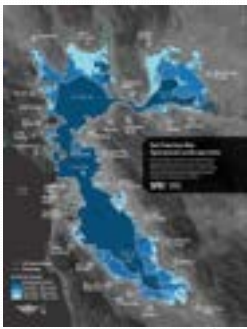
Urban Sustainability challenge & opportunity : Sea Level Rise

- Bay Area analog to LA
- Measure AA--\$500 million
- 200+ Empire State Buildings
- Seawalls vs. wetland restoration



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Adaptation Atlas

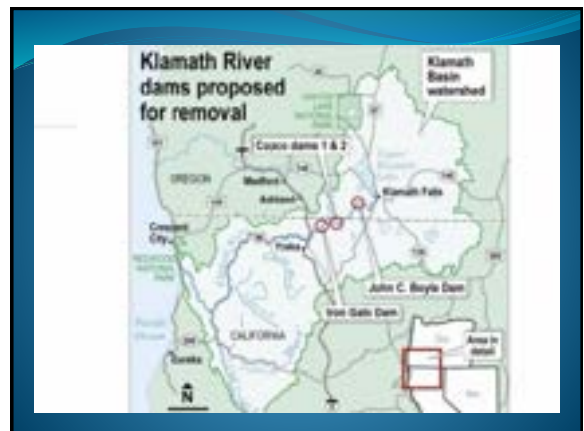



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Data and Technology help on the people side and can bring hope

- Atmospheric river predictive capacity
- Measurement and reporting, especially when transparent
- Sensors
- Telemetry
- "Big Data"



...and so is the human factor...

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The Wisdom of Yogi Berra

"In theory there is no difference between theory and practice. In practice, there is."



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Like a chicken talking to a duck... 就像一只鸡和一只鸭子说话



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Practice Resilient Relationships

- You have far more power than the powerful want you to know
- What you do matters
- What you say matters
- Everyone is a potentially ally in the fight to deal with climate change
- Everyone is a potential ally in making the world, and each community a more liveable, sustainable and resilient place
- It's all about "ecosystem" management, starting with your own

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Few will have the greatness to bend history itself; but each of us can work to change a small portion of events, and in the total; of all those acts will be written the history of this generation.

Robert F. Kennedy

www.ireland.com/robert-kennedy-quotes

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Thank you



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