

Delivering Water Supply in the 21st Century: Water Utility Trends and Challenges



Key Trends to Watch

1. Uncertain Economy, Financial Instability
2. Adequacy of Water Resources
3. Shifting Water Demands
4. Aging Water Infrastructure/Capital Needs
5. Changing Workforce, Dynamic Talent Life-Cycle
6. Expanding Application of Technology
7. Customer/Stakeholder Engagement, Media Influence
8. Increasing/Expanding Regulations
9. Efficiency Drivers, Resource Optimization
10. Climate Uncertainty

1 Uncertain Economy, Financial Instability

All Trends Touch Rates

- Slow economic growth & employment recovery
- Customer resistance limits / reduces rate increases
- Pressure to improve efficiency & cut cost
- Full cost pricing challenging to justify & implement
- Debt financing increases use of tax free revenue bonds
- Underfunded pension/health benefits & low returns

1 Comparative Cost of Utilities

Since 1996:

- 🌐 Water rates ↑ 4.90%
- 🌐 CPI ↑ by 2.50%

Electricity



\$113.68/mo.

Phone



\$32.99/mo.

Television



\$53.53/mo.

High Speed Internet



\$41.02/mo.

Natural Gas



\$118.50/mo.

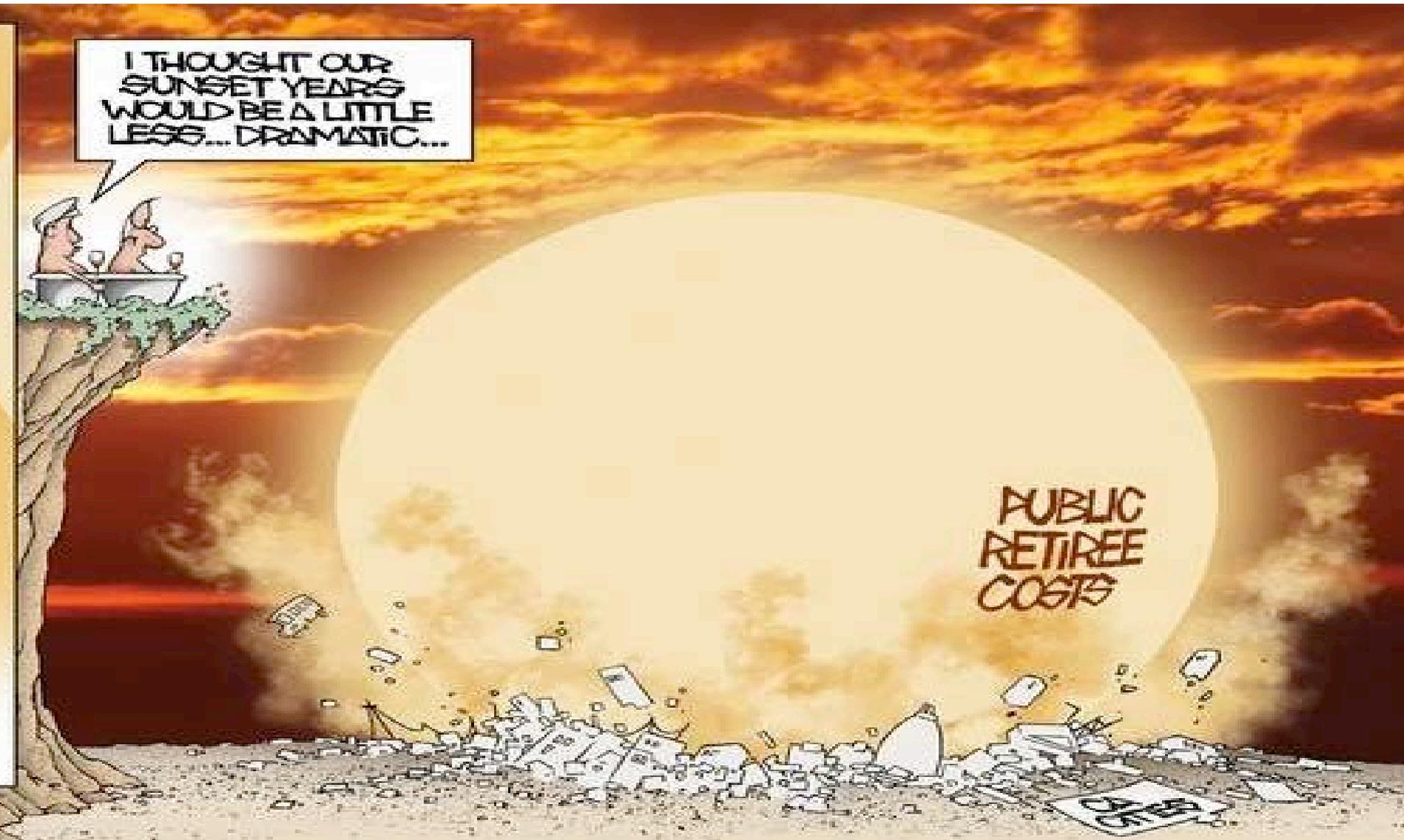
1 Comparative Cost of Utilities

Circle of Blue's 2014 Water Pricing Survey							
City	Service Area Population (in thousands)	Average Monthly Bill for Family of Four Using 50 gallons/person/day	% change from 2013 bill (50 gpd)	Average Monthly Bill for Family of Four Using 100 gallons/person/day	% change from 2013 bill (100 gpd)	Average Monthly Bill for Family of Four Using 150 gallons/person/day	% change from 2013 bill (150 gpd)
Uniform Seasonal							
Phoenix	1600	11.55	0.0%	38.75	0.0%	68.45	0.0%
Uniform							
Fresno	122	19.38	30.2%	28.26	43.1%	37.14	50.9%
Memphis	583	12.04	2.1%	24.08	2.1%	36.12	2.1%
Chicago	N/A	19.86	14.9%	39.72	14.9%	59.58	24.9%
New York	8360	28.64	5.6%	57.28	5.6%	85.92	7.5%
Indianapolis	800	33.01	5.2%	57.32	8.1%	81.62	10.2%
Seasonal Increasing Block							
San Antonio	1000	22.65	5.2%	43.66	6.0%	74.25	6.5%
Salt Lake City	380	17.22	4.0%	27.19	4.1%	37.79	4.1%
Los Angeles	4000	36.53	19.0%	75.98	14.5%	122.41	8.0%
Seattle	630	55.25	8.1%	98.77	9.3%	153.22	8.1%
Santa Fe	78	54.78	0.0%	153.78	0.0%	284.10	0.0%

1 B&V 2010 Rate Survey

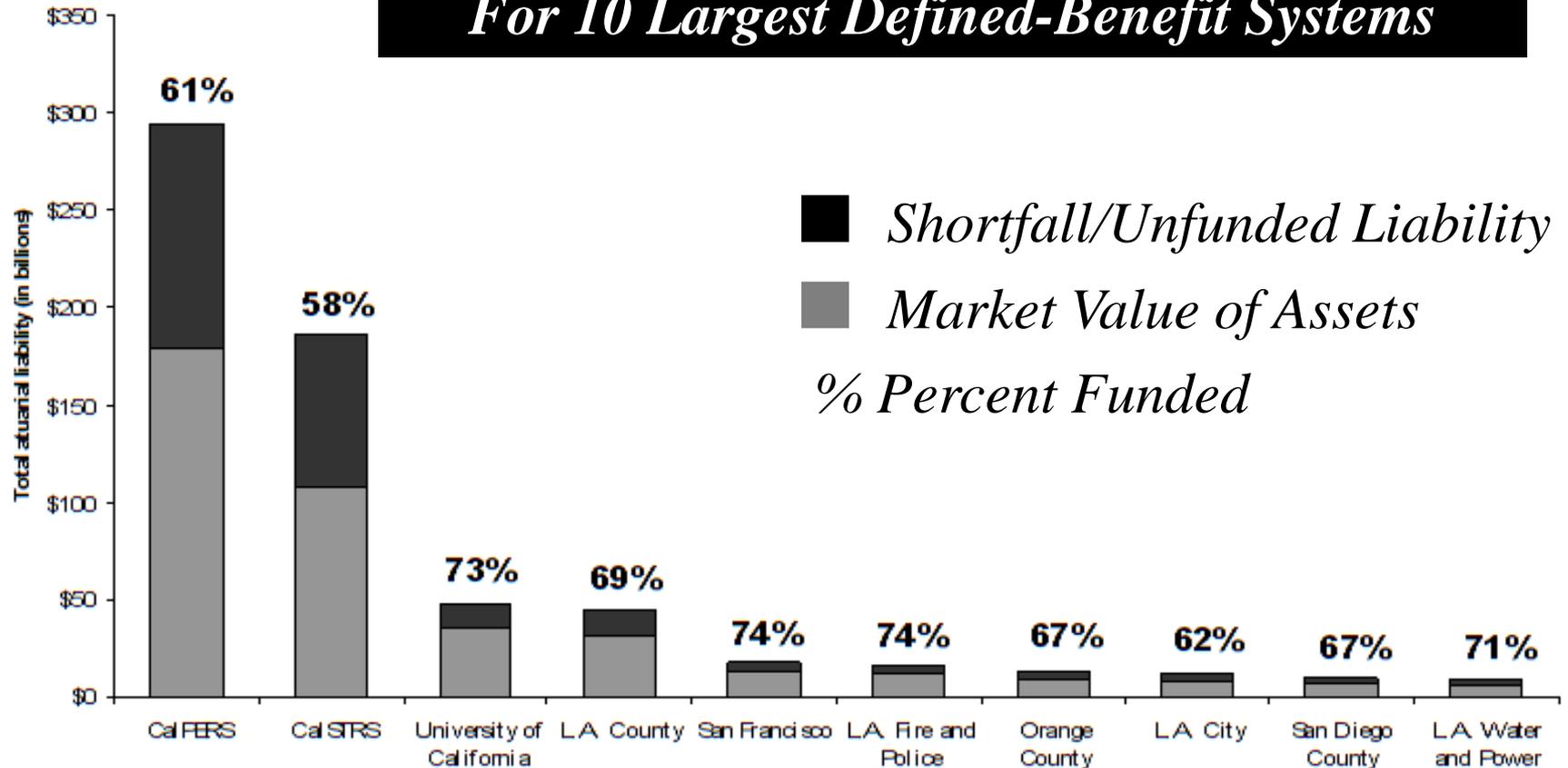
- Electricity, chemicals & natural gas costs - leading contributors to O&M costs
- Lower consumption & high fixed cost
- Pension obligations & health care benefits
- Aging infrastructure

1 Uncertain Economy, Financial Instability



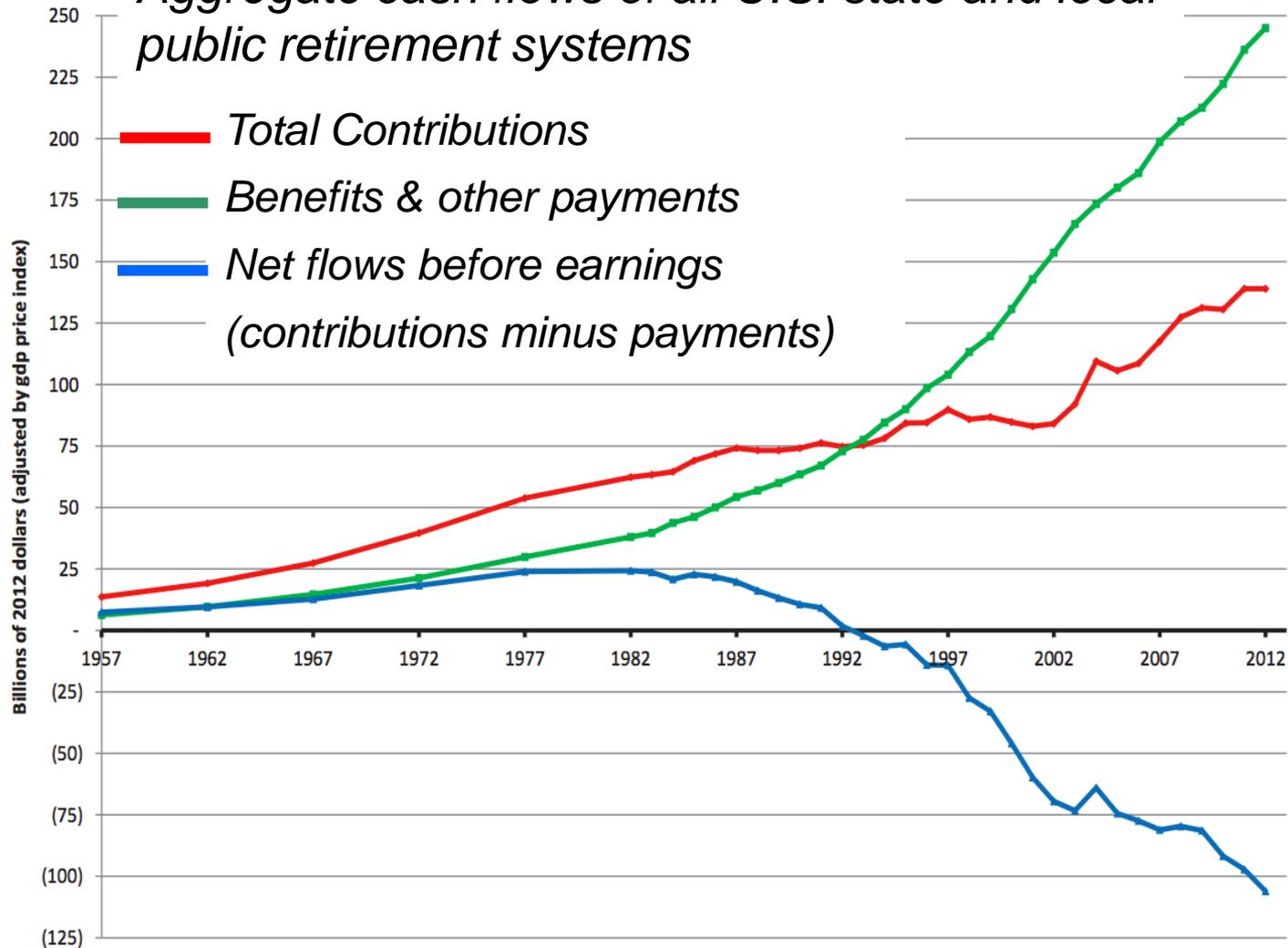
1 Uncertain Economy, Financial Instability

California Public Pension Obligations in 2010 For 10 Largest Defined-Benefit Systems



Unfunded Pension Liability

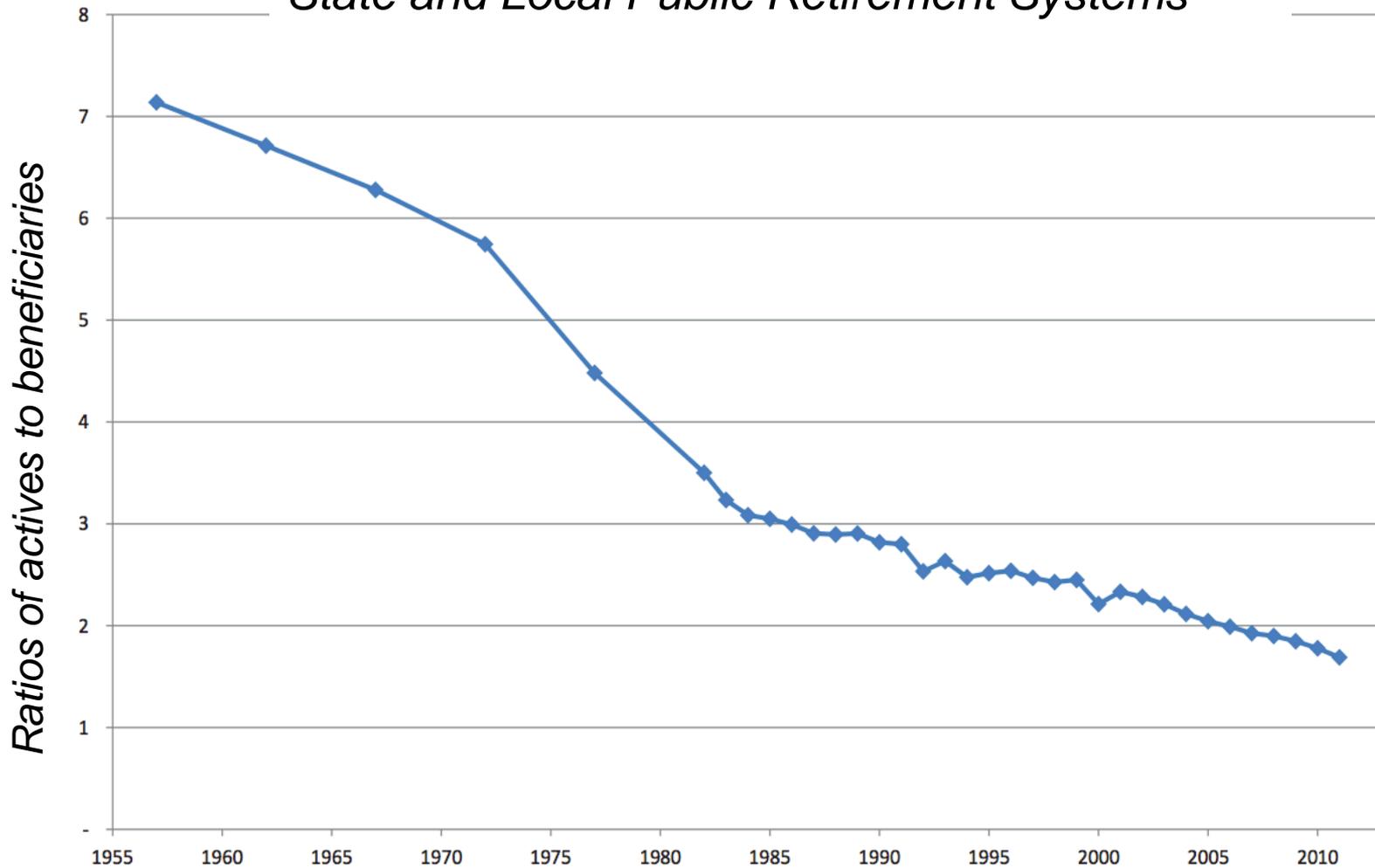
Aggregate cash flows of all U.S. state and local public retirement systems



Source: Authors' analysis of Census Bureau data on retirement systems. Adjusted for inflation by GDP price index (Bureau of Economic Analysis).

Unfunded Pension Liability

*Trend in number of actives per beneficiary
State and Local Public Retirement Systems*

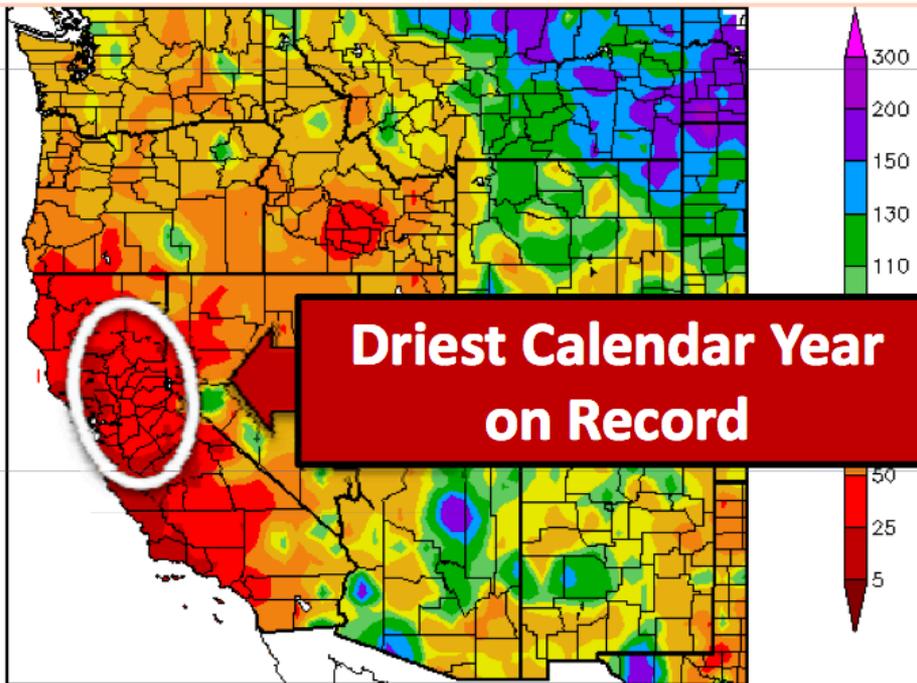


California Unfunded Pension Liability

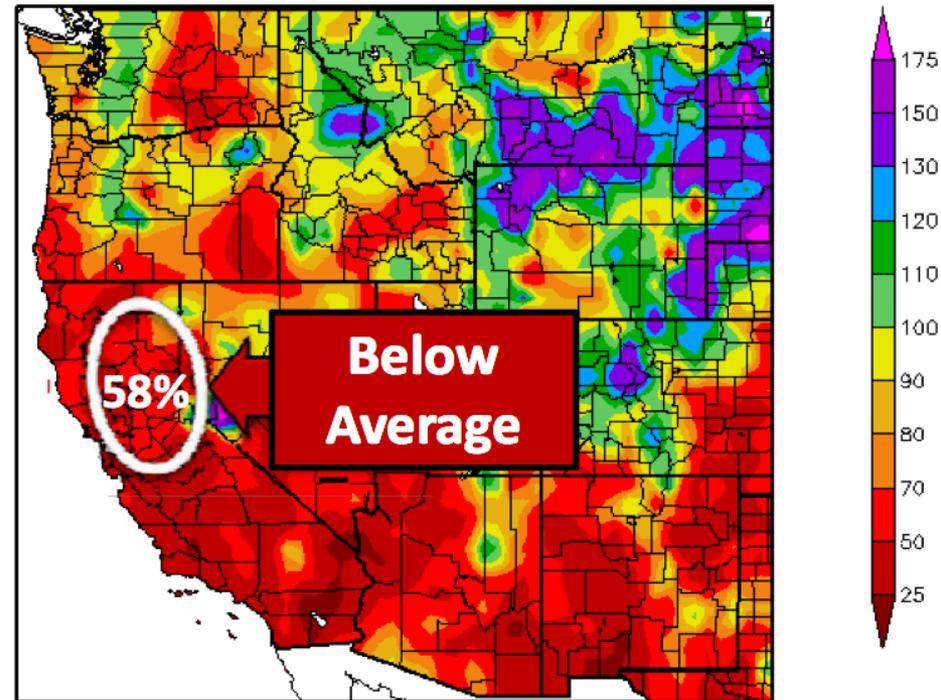
- Moody's recalculated - \$329 B - nearly double the \$128 B estimate
- Assuming returns of 5.5% vs 7.5%= 64% funded, not 82%
- Employee retiree costs to date have been vastly underestimated
- 30 Californian cities on the watch list for a possible credit downgrade
- GASB's new rules will highlight this
- Governments will see borrowing rates increase
- Each city/special district is unique; MWD estimate = ~ \$25/AF for both PERS and medical; a few percent rate increase

2 Adequacy of Water Resources

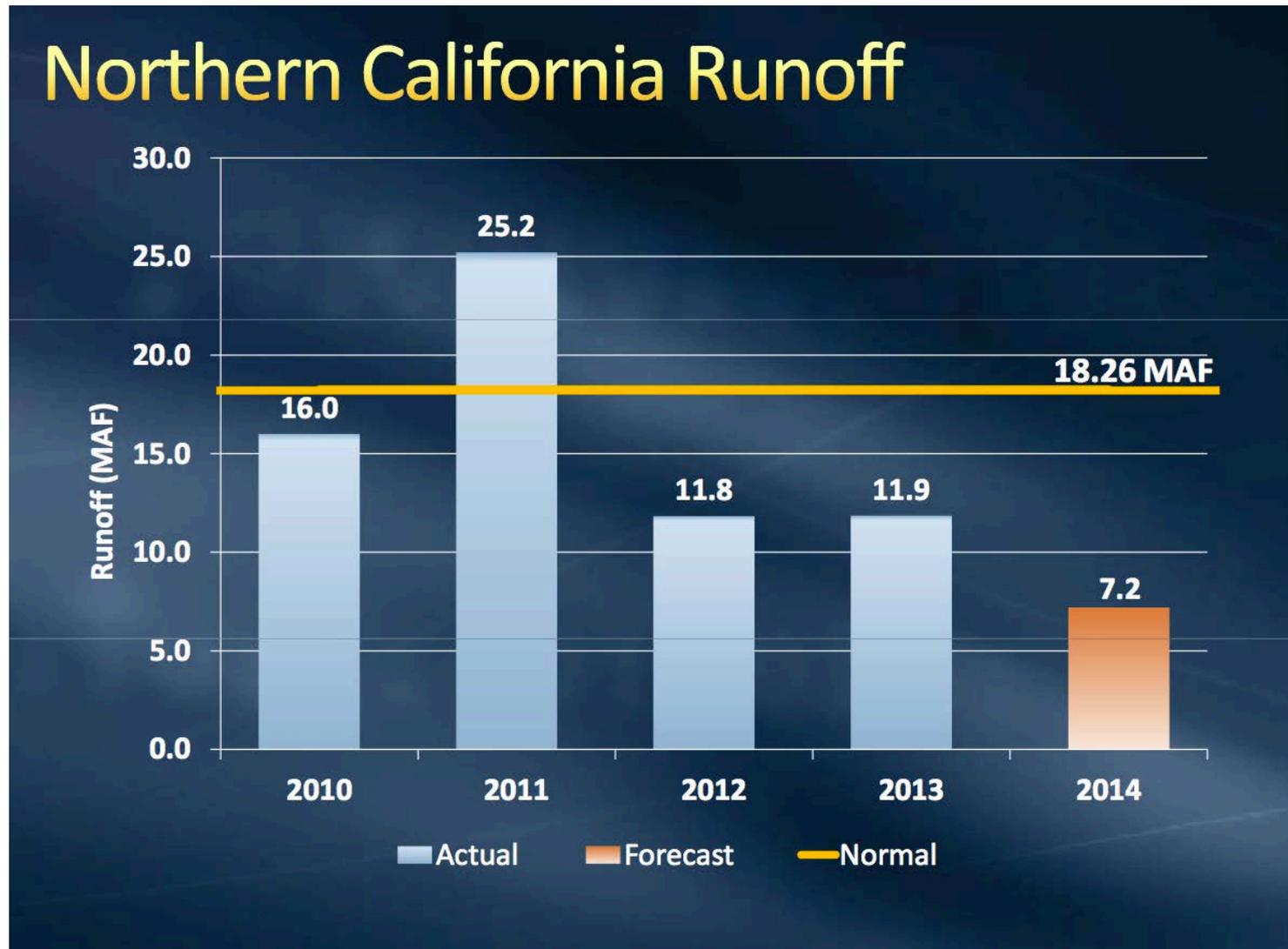
Percent of Average Precipitation (%)
Calendar Year 2013



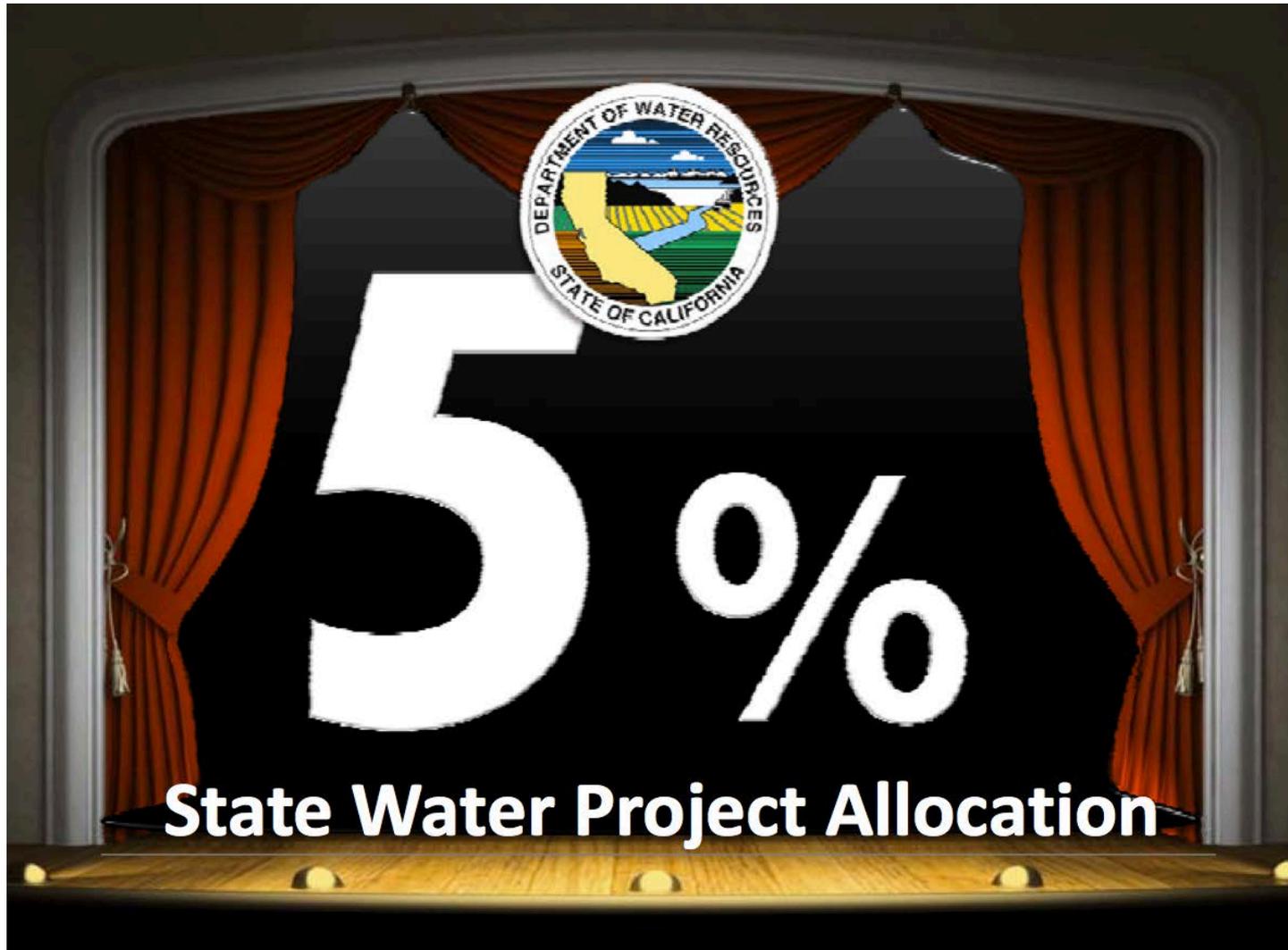
Percent of Average Precipitation (%)
Water Year to Date



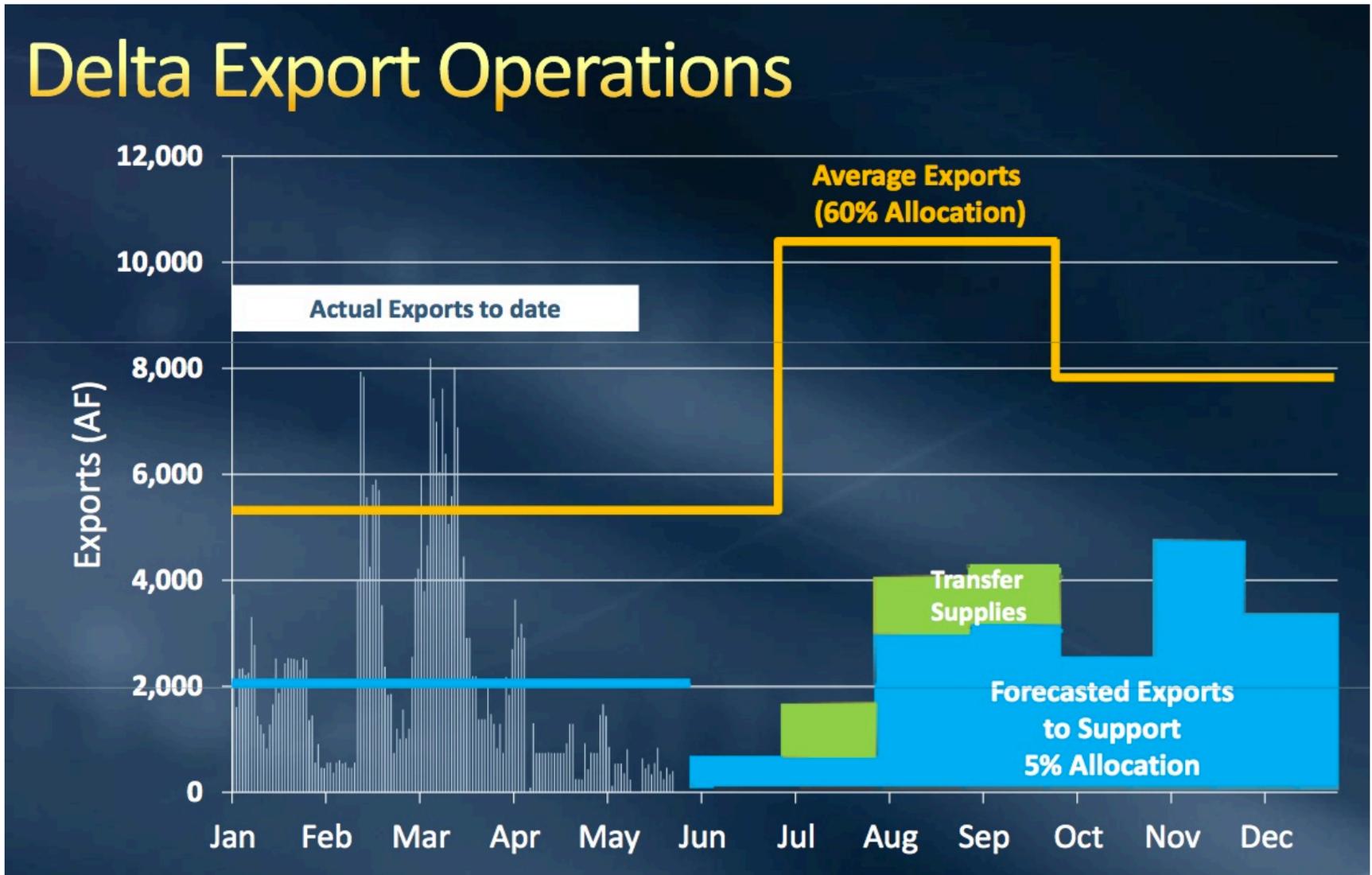
2 Adequacy of Water Resources



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2 Adequacy of Water Resources: Population

- Crosses 50M in 2049 & grows to ~52.7 million by 2060
- 39% higher than state's 2012 estimate
- Southern California will grow by 8.3M to 31M
- Riverside County by ~2M
- LA will grow by 1.7M, San Diego by 1M

Source: CA Dept of Finance Population Projection: 12/31/13

2 Adequacy of Water Resources: Alternatives

- Climate change adds uncertainty
- Alternative water sources are available & expensive (recycled water, conjunctive use, stormwater, desal, etc.)
- We are diversifying into higher marginal cost supplies
- Rising social and environmental mitigation costs



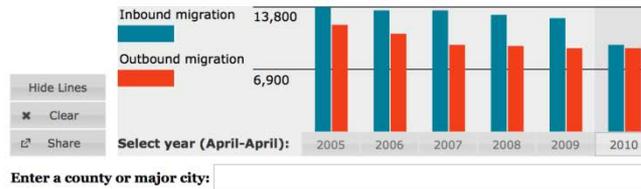
2 Adequacy of Water Resources: Conservation

- Additional water conservation is possible –
 - ~60% of household water use is landscape watering
- Cost, constraints & regs are driving conservation
- Challenge – *financial sustainability*
- Sales loss is immediate; deferral of capital spending is long term
- Creates political risk

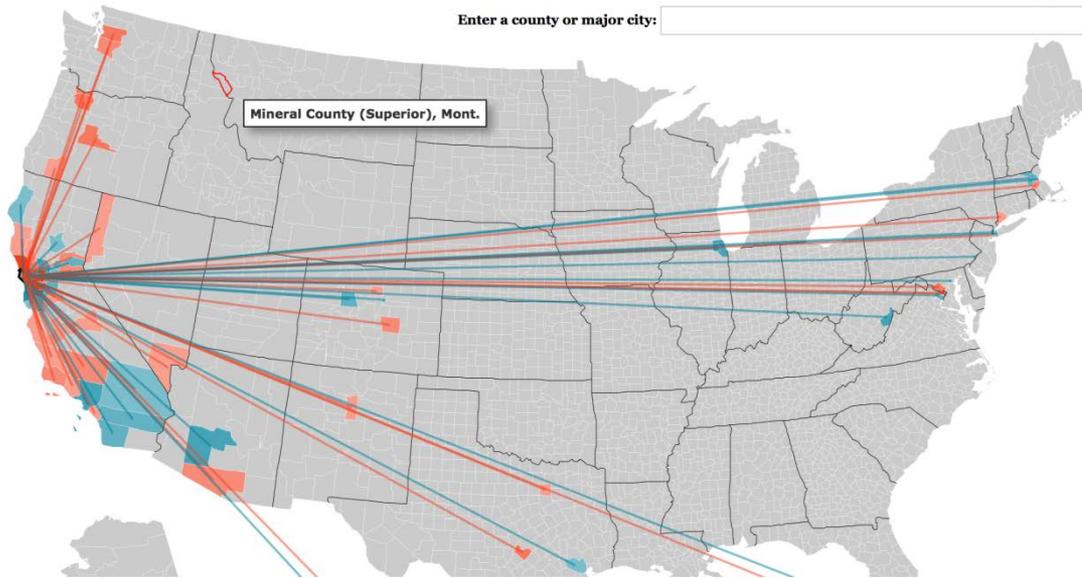
3 Shifting Water Demands

Marin County (San Rafael), Calif.

Population (2010): 252,409
Population (2005): 244,206
Inbound income per cap. (2010): \$47,700
Outbound income per cap. (2010): \$39,500
Non-migrant income per cap. (2010): \$53,000



Enter a county or major city:



- More older customers alters water demand profiles & increases quality concerns

- Continued movement to South & West
- Conservation reduces per capita use; Use-based rate models ↓ revs
- Industrial water use efficiency & offshoring reduce water demand

4 Aging Infrastructure/Capital Needs



4 Aging Infrastructure/Capital Needs

- EPA: ~\$500 B gap in funding by 2020, in part due to aging
- CA drinking water needs \$28E over next 20 years.
- With financing = ~\$1,500 / citizen; ~\$20/household /month

Busted pipe creates sinkhole

By Tom Sheridan 2:51 P.M. MAY 21, 2013

PRINT COMMENTS 1



5 Changing Workforce

- Employees want flexible work schedules, new skills, access to tech/social networks

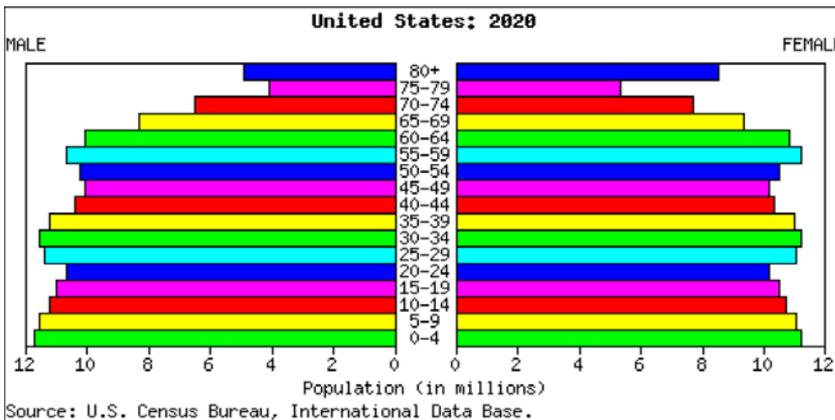
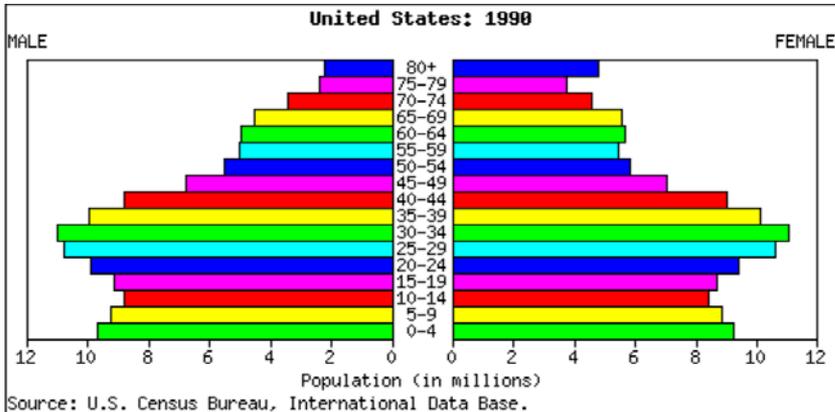
- Aging workforce & competition **↑** demand for tech staff

- De-emphasis of trades

- **↓** compensation packages affect recruitment

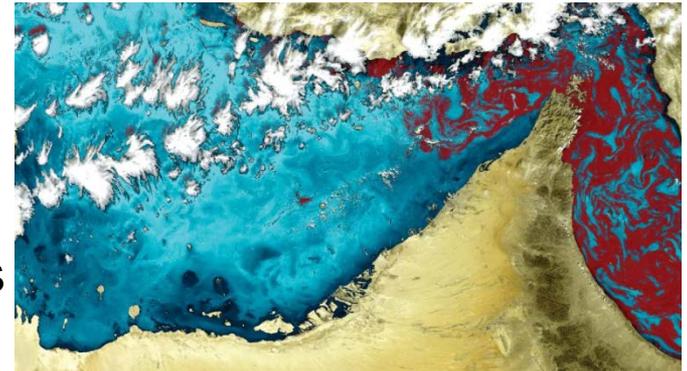
- Social networks allow tapping of broader workforce pool

- Extended career workforce eases transition



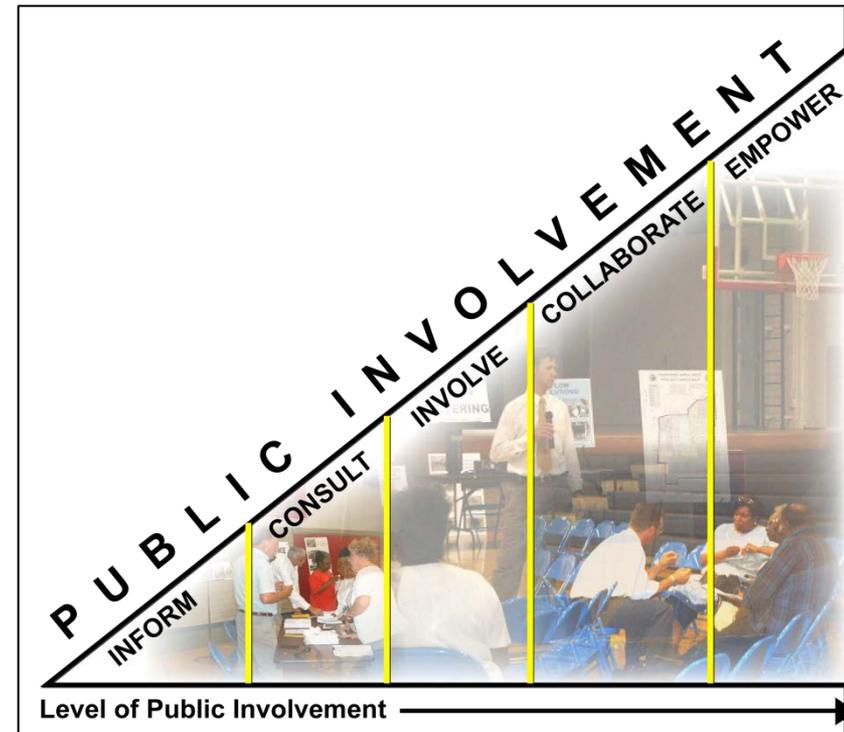
6 Technology: Expanding

- Wireless & mobile provide continuous connectivity to web-based apps
- “Smart” components & systems monitor & control water supply
- Water treatment tech advances provide new water options
- “Data deluge” challenges utilities to create useful info for decisions
- Integration & convergence of tech increases



Customer/Stakeholder Engagement, Media Influence

- Direct customer/stakeholder engagement increases with “blended media” interactions
- Public perceptions are formed by mass/social media
- Greater sensitivity to cultural/ethnic shifts - reach out to understand perceptions & build credibility
- Use social media to disseminate emergency & response info
- Growing public sensitivity to water issues



8 Increasing/Expanding Regulations

- Shift from “end-of-pipe” rules to watershed protection
- Contaminant regulation as a group - more cost-effective water protection
- “Smart water” programs & policies address shortages & protect quality
- “Emerging” contaminants drive human health impact studies & potential regs
- More push for State / federal regulations
- Unfunded mandates and push-back



9 Efficiency Drivers, Resource Optimization

- The economy, pressure on water rates, & public perception drive productivity
- Energy reductions driven by cost management & GHG reduction goals
- Resources & energy (use, recovery, generation) optimized through water cycle
- Collaboration & consolidation of small systems provides efficiencies

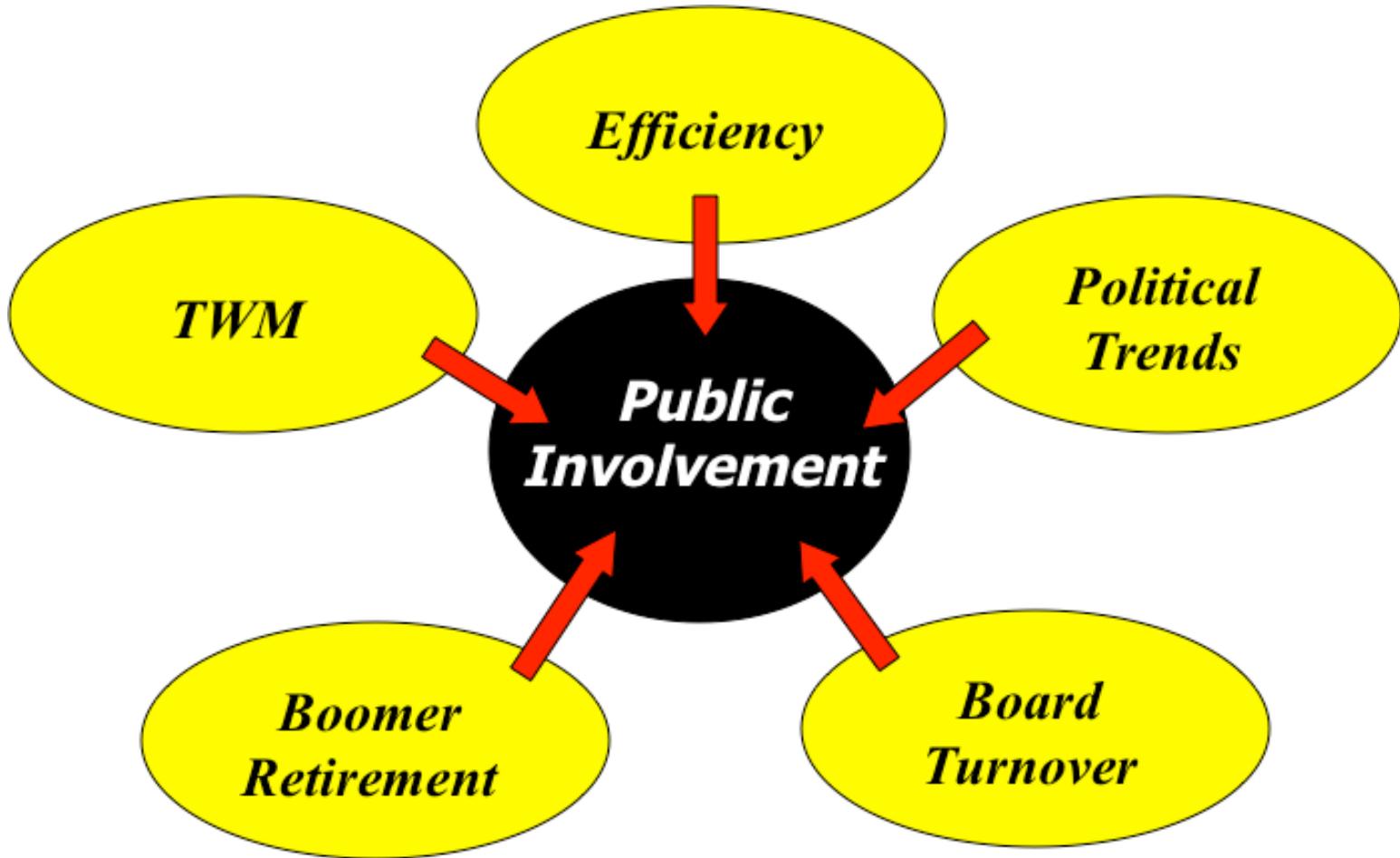


10 Climate Uncertainty

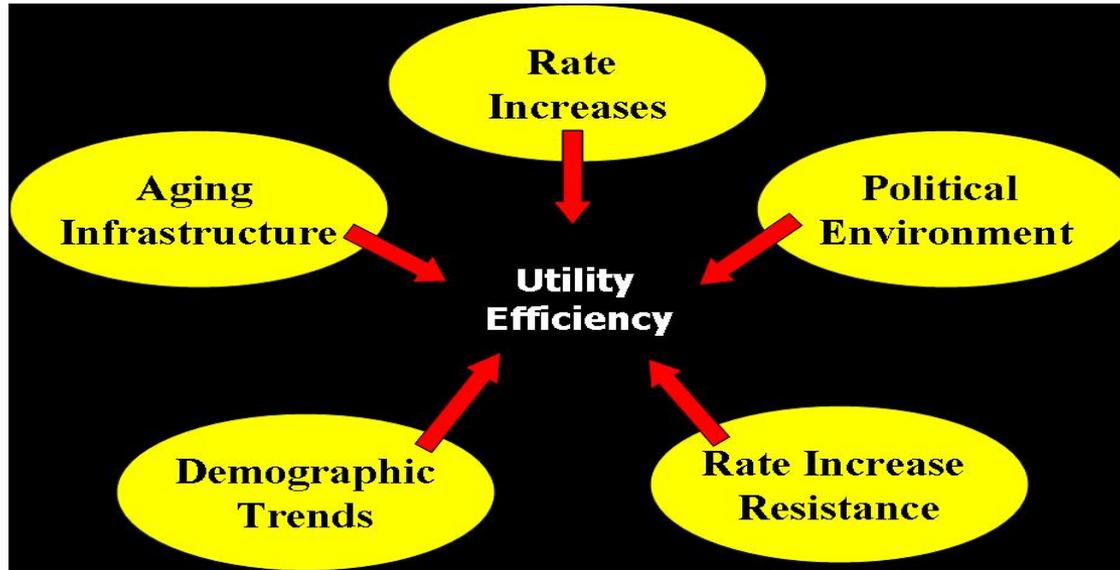
- ↑ GHGs continue to raise average global temps
- ↑ intensity, frequency & duration of extreme weather / disasters impact water resources & infrastructure
- Rising mean sea levels impact coastal area water infrastructure reliability & performance
- Water-related ecosystem services (food supply, nutrient cycling, erosion effects, etc.) are stressed by climate change & human impacts



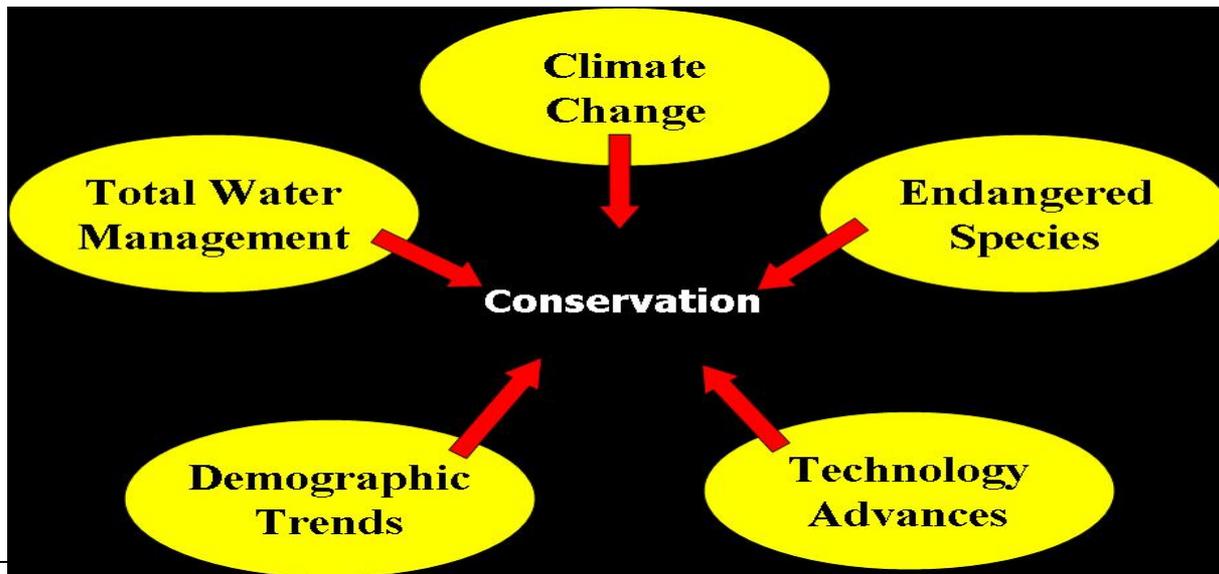
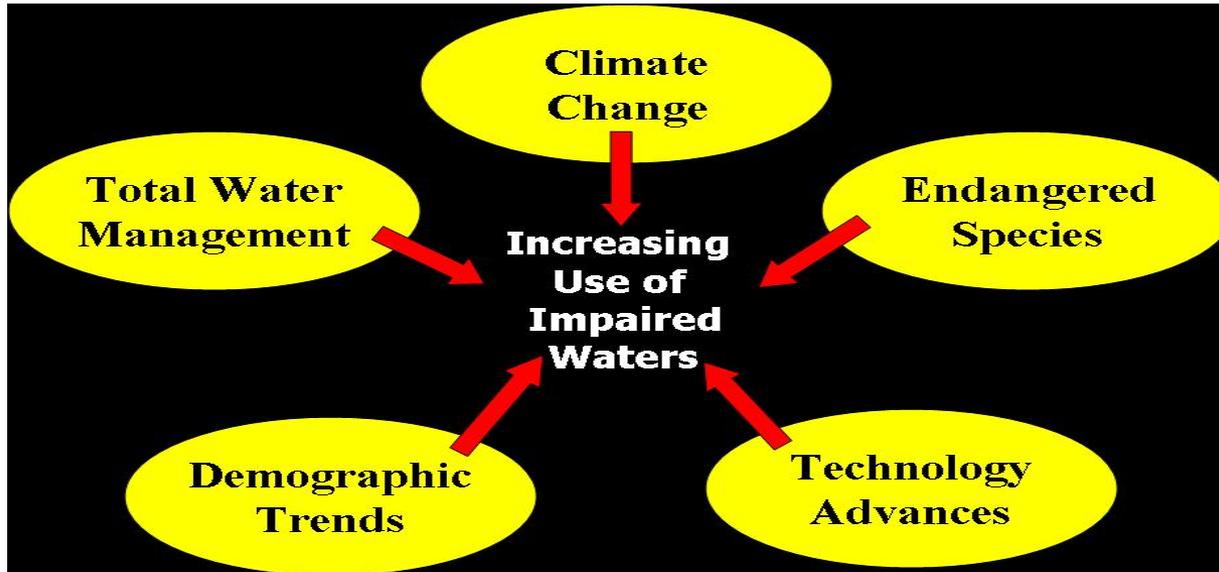
Confluence of Trends



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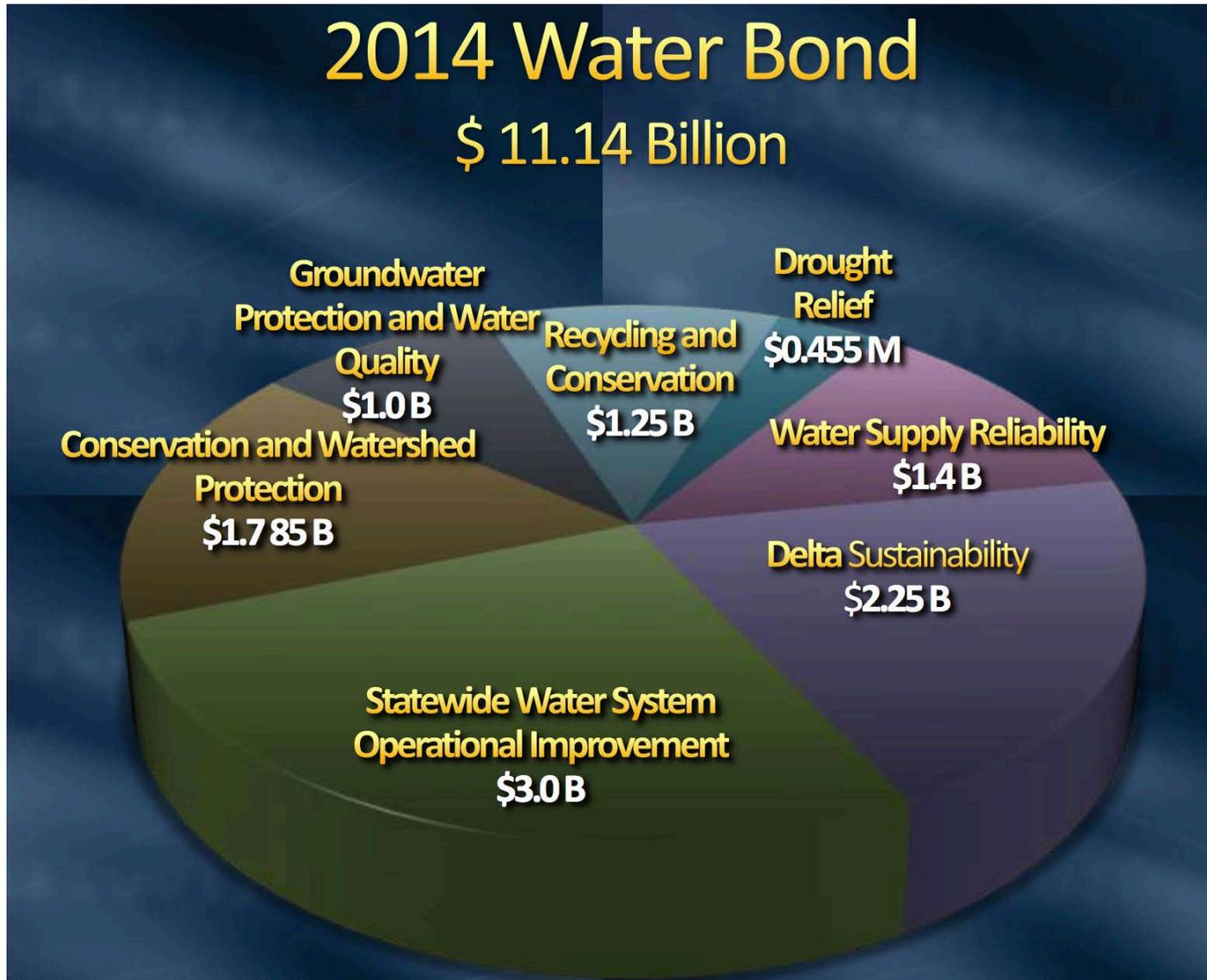
Confluence of Trends



Original Water Bond

2014 Water Bond

\$ 11.14 Billion



Courtesy: Metropolitan Water District of Southern California

So . . .Where are the Opportunities for Utilities to Improve Service?

1. Utility efficiency opportunities & consolidation
2. Public involvement in environmental problem solving
3. Water policy – Ag water use; better groundwater management; Delta fix; storage
4. Training for the trades
5. Alternative water supply development
 - Recycled water
 - Water use efficiency (Ag and urban)
 - Stormwater
 - Storage

Thank You!



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