BAY AREA WATER SUPPLY AND CONSERVATION AGENCY

BOARD OF DIRECTORS MEETING

June 9, 2017

Correspondence and media coverage of interest between May 31, 2017 and May 9, 2017

Correspondence

Date: June 1, 2017
From: Nicole Sandkulla, CEO/General Manager, BAWSCA
To: MTC Public Information
Subject: BAWSCA Comments on ABAG Plan Bay Area 2040 Draft Environmental Impact Report (State Clearinghouse Number SCH #2016052041)

Media Coverage

Conservation:

Date: June 6, 2017
Source: 89.3 KPCC
Article: Water saving efforts slipped in April, after drought ended

Water Supply Conditions:

Date: June 7, 2017
Source: USA Today
Article: California's endless winter: 8 feet of snow still on the ground in June

Water Supply Management:

Delta Tunnel

Date: June 9, 2017
Source: Water Deeply
Article: California's Delta Poised to Become Massive Carbon Bank

Date: June 6, 2017
Source: Los Angeles Times
Article: California water agencies are seeking a bigger role, aiming to speed up delta tunnel plan

Date: June 5, 2017
Source: Sacramento Bee
Article: Delta tunnels won't help on climate change

Date: May 31, 2017
Source: Sacramento Bee
Article: Jerry Brown sends a message to water agencies on the Delta tunnels – and it's direct

Water Supply Management, cont'd.:

Policy
Date: June 7, 2017
Source: Water Deeply
Article: Public Support for Water Investment Depends How You Ask the Question

Date: June 7, 2017
Source: Sacramento Bee
Article: Here's the right strategy for California's next drought

Date: June 6, 2017
Source: Turlock Journal
Article: Gray's bill looks to provide fair water rights

Date: June 6, 2017
Source: Modesto Bee
Article: A field guide to aiding salmon (as preferred by SF and other Tuolumne River diverters)

Groundwater
Date: June 1, 2017
Source: Environmental Defense Fund
Article: The hidden opportunity for water storage in California

Desalination
Date: June 1, 2017
Source: San Jose Mercury News
Article: Commentary: Desalination will not solve California's water woes

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BAWSCA
Bay Area Water Supply & Conservation Agency

June 1, 2017

MTC Public Information
375 Beale Street, Suite 800
San Francisco, CA, 94105

Re: BAWSCA Comments on ABAG Plan Bay Area 2040 Draft Environmental Impact Report (State Clearinghouse Number SCH# 2016052041)

Dear Sir or Madam:

This letter presents comments by the Bay Area Water Supply and Conservation Agency (BAWSCA) on the Association of Bay Area Government (ABAG) Plan Bay Area 2040 Draft Environmental Impact Report (DEIR). BAWSCA represents the 26 water suppliers that purchase water from the San Francisco Regional Water System on a wholesale basis and deliver that water to 1.7 million people, businesses, and community organizations in San Mateo, Santa Clara, and Alameda Counties. BAWSCA appreciates the opportunity to review the DEIR and to provide our comments.

In the fall of 2016, BAWSCA reviewed the ABAG Plan Bay Area 2040 Draft Preferred Scenario (DPS). In the ensuing correspondence between BAWSCA and ABAG, ABAG committed to responding to BAWSCA's concerns as part of the DEIR that at the time was in development.

The Plan Bay Area 2040 DEIR was released for public review and comment on April 17, 2017. Unfortunately, while the DEIR does include a public utilities section that addressed some of BAWSCA's concerns associated with the proposed growth called for in the DPS, it does not adequately identify and stress the difficulty water agencies (including BAWSCA member agencies) will have in providing an adequate and reliable water supply to support the growth and associated population distribution called for by ABAG, particularly during times of drought.

BAWSCA's comments are provided in the attached Table 1. Our comments are mostly limited to section 2.12 of the DEIR (the section prepared to assess the potential for Plan Bay Area to impact public utilities, facilities, and services within the nine counties of the Bay Area).

Overall, BAWSCA views that Plan Bay Area 2040 may result in insufficient water supplies for BAWSCA member agencies. Some of BAWSCA's more serious concerns are as follows:

- By limiting the DEIR discussion to the ten largest Bay Area water agencies, BAWSCA member agencies, decision-makers, and the public are provided with insufficient information to fully consider potential water agency-specific impact(s).
- There are proposed regulations at the state level, specifically an update to the Bay-Delta Water Quality Control Plan, that must be considered, as well as impacts of those proposed regulations analyzed in the DEIR. If those regulations move forward as the

state intends, they will reduce the quantity of water supply available to many Bay Area agencies, particularly during times of drought.

- Mitigation to address predicted growth should include the development of new water supplies. Such a measure is complex, difficult to implement, and typically takes many years to develop, particularly at a regional scale.

If, following your review of BAWSCA's comments, you have questions or require clarification, please feel free to contact Mr. Tom Francis, BAWSCA Water Resources Manager, at tfrancis@bawsca.org, or (650) 349-3000.

Sincerely,

Nicole Sandkulla
CEO/General Manager

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Attachment: Table 1 – BAWSCA Comments on ABAG Plan Bay Area 2040 Draft EIR

cc: Miriam Chion, ABAG Water Management Representatives
A. Schutte, Hanson Bridgett

Table 1 (Continued)

BAWSCA Comment Number	Location in Document	General Comment and/or a statement made by ABAG in the text of the PEIR that BAWSCA objects to	BAWSCA Comment
1	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting Page 2.12-3, Water Supply Agencies	"Water Supply for each county is provided by its respective water supply department or agency. Some counties contain several water suppliers"	BAWSCA member agencies lie in Alameda County, Santa Clara County, and San Mateo County. BAWSCA is comprised of 26 member agencies that provide water service. There are numerous water supply agencies in those Counties. Counties are not involved in providing water supply services.
2	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting Page 2.12-3, Water Supply Agencies	General Comment	ABAG has chosen to list the eight (8) major water agencies in the Bay Area. Limiting the DEIR analysis discussion to 8 agencies is insufficient. We ask that BAWSCA and our member agencies be called out and detailed in the DEIR. Doing so would better clarify that the wholesale customers of the SFPUC are charged with providing water services and meeting the water supply needs of their respective service areas.
3	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting Page 2.12-4, San Francisco Public Utilities Commission	"…provides water to 2.6 million people within San Francisco, San Mateo, Santa Clara, Alameda, and Tuolumne counties."	It would be helpful to further break down the retail and wholesale customers of the SFPUC, and to identify those wholesale customers that are BAWSCA member agencies. As noted in Comment #2, we ask that ABAG include a specific discussion of BAWSCA member agencies in this section.
4	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting Page 2.12-4, San Francisco Public Utilities Commission	"The primary water source for San Mateo County is SFPUC's …."	Like BAWSCA comments 2 & 3, there is confusion created by not directly referencing BAWSCA and our member agencies in this document. The text should be revised to address this deficiency. The discussion should highlight the fact that certain BAWSCA members have components of their supply other than what they derive from the SFPUC, etc. Implying that the SFPUC is solely responsible for providing water supply services outside of the San Francisco County service area is incorrect.
5	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting	General Comment	SCVWD provides water to 6 BAWSCA member agencies. A reference/ rewrite should be considered.

Table 1 (Continued)

BAWSCA Comment Number	Location in Document	General Comment and/or a statement made by ABAG in the text of the PEIR that BAWSCA objects to	BAWSCA Comment
	Page 2.12-4, Santa Clara Valley Water District		
6	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting Page 2.12-6, Regional Water Setting	Figure 2.12-2, Bay Area Water Use by Supply Source	The Pie Chart presented in figure 2.12-2 indicates various percentages of the 'total bay area supply' that various water sources, such as flow from the Tuolumne River and the Mokelumne River, provide. BAWSCA questions the information shown (for example, we were not aware that the quantities as sourced from the Mokelumne are equal to that sourced from the Tuolumne). It would be helpful to know the exact reference cited and further to have actual quantities of water listed (vs. simply providing percentages). Further, a supply pie chart for dry years would be helpful. Supplies shift during dry years, when other sources are called upon.
7	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting Page 2.12-6, Local Water	General Comment	There is significant discussion in this sub-section relative to groundwater and overdraft considerations. While BAWSCA agrees that overdraft is a concern statewide and particularly within California's central valley, and perhaps is a concern within the groundwater basins underlying portion of the Bay Area such as Santa Clara County, BAWSCA suggests that ABAG provide more detail regarding which agencies rely on groundwater and further which agencies view that overdraft is a potential risk (assuming that perhaps over-pumping of the basin(s) they overlie is a concern in the future if demand increases).

Table 1 (Continued)

BAWSCA Comment Number	Location in Document	General Comment and/or a statement made by ABAG in the text of the PEIR that BAWSCA objects to	BAWSCA Comment
8	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting Page 2.12-9, Water Transfers	"…Bay Area water agencies have a number of transfer agreements to improve water supply in the region".	BAWSCA finds this statement to be an exaggeration. There are not, in our understanding, 'numerous' long-term transfer agreements in place that will provide Bay Area water agencies with additional supplies. Long term transfers appear to be in the works at a small subset of Bay Area agencies (for example, BAWSCA is aware that EBMUD is attempting to secure one with Placer County Water Agency). There may be other agreement mechanisms in place that BAWSCA is not aware of (perhaps between Bay Area Water Agencies and with Yuba County Water Agency and/or other Sacramento entities?). We question this statement and suggest that more specificity is called for here.
9	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting Page 2.12-9, Water Supply Infrastructure, Hetch Hetchy Aqueduct	General Comment	The description as provided by ABAG should be reviewed by SFPUC and modified to provide a greater level of detail. As it currently reads, it over-simplifies the San Francisco Regional Water System and its associated network of tunnels, pipelines, pump stations, reservoirs, treatment plants, turnouts, etc.
10	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting Page 2.12-10, Water Supply Infrastructure, Regional Demographics and Water Demand	"…In general, demand management strategies will allow Bay Area water agencies to continue to meet projected demand through 2030 in average years"	There are significant challenges that water agencies face, such as added water supply challenges associated with increased unimpaired flows on Sacramento / San Joaquin tributaries in the State Water Resources Control Board's proposed update of the Bay-Delta Water Quality Control Plan. The assumption that water supply demands can be meet with the added populations as projected by ABAG coupled with a reduction in water supply associated with the possible SWRCB action(s) may result in the ABAG statement being too optimistic. Additional water supply modeling and evaluation would be needed to substantiate this statement given future water supply uncertainties.

Table 1 (Continued)

BAWSCA Comment Number	Location in Document	General Comment and/or a statement made by ABAG in the text of the PEIR that BAWSCA objects to	BAWSCA Comment
10	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting Page 2.12-10, Water Supply Infrastructure, Regional Demographics and Water Demand, Table 2.12-2	General Comment	BAWSCA member agencies are not shown / listed in table 2.12-2 (only the large water agencies are illustrated). BAWSCA asks that the table be expanded to include additional BAWSCA member agency specific information.
11	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting Page 2.12-12, Water Demand, Table 2.12-3	General Comment	Table 2.12-3 provides information relative to projected water shortages (by the Bay Area large water agencies) during a 1-year drought. The table does not provide a breakdown for BAWSCA member agencies, nor is there a similar table to indicate the ability of these agencies to address multiple year droughts. Further, the region faces various challenges ahead (such as the aforenoted regulatory challenges associated with proposed SWRCB unimpaired flow mandates) that could result in more frequent and pronounced impacts.
14	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting Page 2.12-13, Drought	General Comment	Water agencies spend considerable time and effort planning for multi-year droughts. The text of the DEIR should pay more attention to that fact. BAWSCA sees a need for an expanded discussion on droughts and how multi-year droughts impact water agencies. The DEIR discussion regarding conservation mandates as made by Gov. Brown during this most recent drought, the discussion of the heavy precipitation experience this past winter, and the mention of climate change merits separate sections (vs. packing these discussions into the Drought section of the DEIR).
14	2.12 – Public Utilities; Section 2.12.1 – Environmental Setting	General Comment	Water agencies would likely need to look to alternative supplies to address the water needs of the growth in population that ABAG predicts. New sources (or alternative sources) likely have different water quality as compared with an agency's standard source, and

Table 1 (Continued)

BAWSCA Comment Number	Location in Document	General Comment and/or a statement made by ABAG in the text of the PEIR that BAWSCA objects to	BAWSCA Comment
	Page 2.12-13, Water Treatment		may in turn require that modifications be made to water agency's treatment plants.
15	2.12 – Public Utilities; Section 2.12.2 – Regulatory Setting Page 2.12-21 State Legislation	General Comment	As noted previously, there are pending regulations proposed by the SWRCB that if approved would result in less supply being made available from the Tuolumne River (i.e., the SWRCB's update of the Bay-Delta Water Quality Control Plan). These regulations would significantly impact SFPUC, ACWD, and all of BAWSCA. A discussion of the SWRCB efforts and the status of the Bay-Delta Plan amendments should be considered by ABAG for incorporation into the DEIR.
16	2.12 – Public Utilities; Section 2.12.3 – Impact Analysis Page 2.12-27 Impacts of Potential Land Use	"Some water suppliers should be able to meet demands of growth under the proposed Plan, such as the Alameda County Water District, City of Napa, and San Francisco PUC, although these would need to take measures to address water conservation during dry years".	As noted in previous BAWSCA comments, there are other issues impacting Bay Area water supply, such as the SWRCB's update to the Bay-Delta Water Quality Control Plan. It is quite possible that the statement as made is not accurate, and the impact or reduced Bay Area water supply with the expanded growth projected in Plan Bay Area 2040 should be fully considered.
16	2.12 – Public Utilities; Section 2.12.3 – Impact Analysis Page 2.12-27 Impacts of Potential Land Use	"The combined population projections of the water supply agencies for 2040 (9,883,000) exceeds the 2040 regional population projections for the proposed Plan (approximately 9,627,5000) … As a result, there may be adequate water supplies across the entire region to serve expected growth under the proposed Plan".	This statement is misleading. First, not all water suppliers have the ability (or willingness) to wheel (trade) water supplies with others. Second, as in BAWSCA's case, the projections presented do not clearly show where growth will occur at an agency-specific level. BAWSCA believes several assumptions are required to reach such a broad conclusion. ABAG or their consultant should provide the information and assumptions made supporting this conclusion. We further ask that information be presented for each BAWSCA member agency.

Table 1 (Continued)

BAWSCA Comment Number	Location in Document	General Comment and/or a statement made by ABAG in the text of the PEIR that BAWSCA objects to	BAWSCA Comment
16	2.12 – Public Utilities; Section 2.12.3 – Impact Analysis Page 2.12-27, Impacts of Potential Land Use	"However, at a regional level, changes in land use projected development from the proposed Plan may result in insufficient water supplies requiring the acquisition of additional water sources and the imposition of conservation requirements."	The DEIR exaggerates the effectiveness of conservation as a mitigation for insufficient water supplies. BAWSCA member agencies did an exceptional job at conserving water during the recent drought, achieving an overall savings of 27 percent in Fiscal Year 2015-2016, as compared to 2013. However, demand hardening from past conservation efforts would lessen the effect of additional conservation, thereby increasing the overall impacts from the proposed water supply reductions.
17	2.12 – Public Utilities; Section 2.12.3 – Impact Analysis Page 2.12-27, Mitigation Measure 2.12-1(a)	"Implement water conservation measures which result in reduced demand for potable water."	As stated in Comment #16, the DEIR exaggerates the effectiveness of conservation as a mitigation for insufficient water supplies. BAWSCA member agencies did an exceptional job at conserving water during the recent drought, achieving an overall savings of 27 percent in Fiscal Year 2015-2016, as compared to 2013. However, demand hardening from past conservation efforts would lessen the effect of additional conservation, thereby increasing the overall impacts from the proposed water supply reductions.
18	2.12 – Public Utilities; Section 2.12.3 – Impact Analysis Page 2.12-28, Table 2.12-7	General Comment	Similar to comments made elsewhere by BAWSCA, Table 2.12-7 presents Projected Service Area Population of Major Bay Area Water Agencies. It does not provide a breakdown for BAWSCA or its member agencies. By not providing a breakdown, it presents a significant challenge for BAWSCA and its member agencies to estimate the proposed growth by individual City / Water Service provider. We ask that that level of detail be provided and that Table 2.12-7 be expanded to cover BAWSCA.
19	2.12 – Public Utilities; Section 2.12.3 – Impact Analysis Page 2.12-29 Mitigation Measures	General Comment	ABAG proposes that implementing agencies include mitigation measures (a subset of which were listed) that would allow the impact of Plan Bay Area 2040 on Utilities (including water utilities) to be reduced from Potentially Significant to Less than Significant with Mitigation. BAWSCA believes that the mitigation measures as listed in the document should be expanded upon to include the

Table 1 (Continued)

BAWSCA Comment Number	Location in Document	General Comment and/or a statement made by ABAG in the text of the PEIR that BAWSCA objects to	BAWSCA Comment
			development of drought supply projects. Those projects take considerable time, money and are challenging from a public acceptance perspective. Further, those types of projects also have their own set of potentially significant impacts that must be evaluated.
20	2.12 – Public Utilities; Section 2.12.3 – Impact Analysis Page 2.12-29 Mitigation Measures. Significance after mitigation	General Comment	See BAWSCA comment #17. Most water supply projects spend years in the planning and development process. Many are subject to legal challenge. It is unclear if, at the program level, the significance after mitigation could be lowered to the "less than significant with mitigations" since the development of a new water supply project is such a complicated and complex mitigation in and of itself.
21	2.12 – Public Utilities; Section 2.12.3 – Impact Analysis Page 2.12-35 Impact 2.12-4	General Comment	ABAG notes that the implementation of the proposed Plan could require new or expanded water and wastewater treatment facilities. As noted previously by BAWSCA, if supplemental supplies are used by water providers, and if those supplies are dissimilar in water quality from that currently treated, water treatment plant modifications would be required. Such a discussion should be incorporated into this section of the DEIR.
22	3.2.4 - Cumulative Impacts, Page 3.2-8	General Comment	The cumulative impacts analysis should consider the future proposed modification by the SWRCB of the Bay-Delta Plan and cumulative effects of the projected reduction to water supply with the projected growth and impacts in the Plan Bay Area 2040.

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Water saving efforts slipped in April, after drought ended
89.3 KPCC | June 6, 2017 | Aaron Mendelson

Californians used more water this April than they did in April 2016, according to state data, and that jump in water use came thanks to residents of Southern California. The numbers were released Tuesday by the State Water Resources Control Board, which requires urban water districts across the state to report on local water use.

Gov. Jerry Brown declared an end to the state' drought emergency in April, following a wet winter across California. That included lifting the mandatory water conservation limits imposed by the state. The new data represents the first look at water use by Californians after the five-year drought.

In much of the state, including the San Francisco Bay Area, Sacramento and Central Coast areas, residents used less water in April than in the year before.

Not in Southern California. In the South Coast region, per capita water use was 86 gallons per day. That's a jump from 77 gallons a day the previous year. In the Colorado River area, which includes inland parts of Southern California, daily use jumped to 163 gallons per day, from 127 the previous year.

At a State Water Resources Control Board meeting this morning, state scientist Jelena Hartman said the uptick in use may be due to a relatively dry and warm April in Southern California.

Officials will keep a close eye on Californians' water use during the summer months, which will test whether or not conservation has become a way of life in the state, as officials hope. With California's climate changing, scientists say future droughts could strike more often and be more severe — making conservation a perennial issue.

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California's endless winter: 8 feet of snow still on the ground in June
USA Today | June 7, 2017 | Doyle Rice

It's an endless winter in the West.

Snow from the barrage of storms that pounded the western mountains over the winter is still on the ground. Many mountains in the Rockies, Sierra and Cascades are packed with at least 8 feet of snow, the National Weather Service said, creating a dream summer for skiers and snowboarders.

The Mammoth Mountain ski area in Mammoth Lakes, Calif., is seeing its "best spring conditions in decades ... and will be operating DAILY into August for one of our longest seasons in history," the resort said on its website. "When will this endless winter end? We don't have that answer yet, but we do know that the skiing and riding is all-time right now."

The snowpack throughout the Sierra rivals, and in places exceeds, records set during the massive winter of 1982-83. As of June 6, the amount of snow on the ground in the central Sierra region was twice as much as usual, marking its biggest June snowpack in decades, the California Department of Water Resources said.

“We are in rare territory here with the winter we've had,” said Chris Smallcomb, a meteorologist with the weather service in Reno, Nev., the office that also covers the Sierra in California.

The snow can be a deadly hazard, though, for hikers or water enthusiasts. Snow-covered routes make walking difficult and falls on steep slopes can result in long, dangerous and uncontrolled slides.

Streams will also be rising and become deeper and more powerful, bringing a real danger of drowning for kayakers or hikers who fall in.

Over the Memorial Day weekend, three people died and 24 required rescue from the swollen and frigid Kern River in southern California. All three deaths involved rafting incidents.

The winter snow and rain delivered a knockout blow to the 5-year drought in central and northern California. Drought still hangs on, though, in portions of southern California.

And there's still more snow on the way this weekend: Several inches are possible across the highest elevations of the Washington and Oregon Cascades, as well as high mountain locations in Idaho, western Montana, western Wyoming, northeast Utah, and parts of northern Colorado into Tuesday, according to the Weather Channel.

The best chance of 6 or more inches of snow will be in the Cascades and in the Bitterroots of Idaho and Montana.

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California's Delta Poised to Become Massive Carbon Bank

A newly certified carbon trading protocol could help solve a number of problems in the West's largest estuary, including flood risk, water pollution, habitat loss and threats to a critical freshwater supply.

Water Deeply | June 9, 2017 | Matt Weiser

Many islands in the Sacramento-San Joaquin Delta have sunk below the surrounding water level as a result of soil oxidation. A new carbon trading protocol could encourage wetland restoration projects that reverse the oxidation process. Randall Benton, The Sacramento Bee

There's a time bomb ticking in California's Sacramento-San Joaquin Delta.

The largest estuary on the West Coast of the Americas, the Delta is a network of some 70 islands protected by more than 1,000 miles of levees. The soil on these islands is some of the richest farmland in the world because it is composed of organic material: decaying plants that accumulated over millennia.

But when the levees were built 150 years ago to create farms, this dried out the soil, causing it to oxidize and decompose. As a result, the surface of many islands has slowly sunk below sea level. This results in a stronger leverage force on the levees, making them more vulnerable to failure.

That's a problem because the Delta is also the source of freshwater for 25 million Californians and more than 3 million acres of farmland. If numerous islands flooded due to levee failures, seawater could rush into the estuary and compromise the freshwater supply.

One solution to this conundrum is to simply allow the islands to flood again gradually, transforming them back into wetlands. Over time, wetland plants like cattails and tules would grow and die and slowly rebuild the soil elevation. But the process needs an economic incentive on a massive scale.

Now the Delta Conservancy has that incentive. The Conservancy, a state agency that oversees environmental and economic opportunities in the Delta, recently won approval from the American Carbon Registry for a new carbon banking methodology. This means wetland restoration in the Delta (and other coastal areas of the state) can now generate money by selling greenhouse gas credits to polluting industries.

To explain the process, Water Deeply recently interviewed Campbell Ingram, executive officer of the Delta Conservancy, and Steve Deverel, president of Hydrofocus, a consulting firm that helped develop the protocol.

Water Deeply: Why was this carbon methodology developed?

Steve Deverel is president of Hydrofocus, Inc. a consulting firm that helped develop a protocol for carbon sequestration in the Sacramento-San Joaquin Delta. (Photo Courtesy Hydrofocus)

Steve Deverel: What we learned early on from some of the experiments on Twitchell Island, back in the '90s and into the early 2000s, was that we could reverse the effects of subsidence

and actually sequester carbon in permanently flooded wetlands on these islands. So that led to this whole carbon sequestration concept. Basically, if you flood the islands and grow wetland vegetation, these islands could accrete carbon.

Then AB 32 [California's greenhouse gas reduction law] came along in 2006, and we began to see carbon sequestration methodologies developed for other land uses, such as forestry. There was a methodology developed for tidal wetlands in the Mississippi Delta, and we began to think more about developing a methodology for California. It seemed like an opportune time because, in the early '90s, the state had purchased a couple western Delta islands and wanted to move forward with subsidence reversal.

Water Deeply: Why is an economic incentive needed?

Campbell Ingram, executive officer, Delta Conservancy, has worked to create a methodology for carbon banking in the Sacramento-San Joaquin Delta. (Photo Courtesy Campbell Ingram)

Campbell Ingram: Currently there are farmers out there leasing land from the state as well as private landowners, and they're making money off that land. So to ask them to convert to something that doesn't result in a revenue stream is not really tenable for making a living. So we need to find something that helps replace that income but also accrues these other benefits.

Water Deeply: What other benefits are possible?

Ingram: For every inch of elevation that you don't lose in a given year due to ongoing agricultural practices, you're not increasing hydrologic pressure on the levee. And for every inch that you then accrete in elevation, you're reducing that pressure. It's a slow process, but it's at least moving in the right direction.

A wetland compared to a monoculture of corn is typically going to have higher biodiversity, more use by waterfowl and amphibians and giant garter snakes. You can have some water quality benefits. And obviously the greenhouse gas emissions reduction and subsidence reversal.

Water Deeply: How will this protocol be used?

Ingram: One of the things we're trying to work with right now is the state-owned lands that have existing wetlands. So we might work with the Department of Water Resources and take that land they already have in wetland production, run it through the methodology and actually get contracts to be able to have emissions reduction credits. We can then save those credits and use them to produce revenue.

Secondarily, we'll be identifying places in the Delta where maybe the land is just getting too wet to farm. As the peat gets thinner, you get less of this hydrologic blanket that holds that water down, and you have more seepage under the levees. So a farmer could then look at that area and think, "I can actually put this land into a managed wetland and get revenue that isn't from agricultural production."

Water Deeply: Who would benefit from the greenhouse gas credits produced under this program?

Ingram: It's whoever actually holds the land and is managing the land. So, essentially, a private landowner. It's going to take some effort. The procedures early on are very complex. There's a lot of learning that goes on. We would work with landowners to develop the agreements, and market those credits. But ultimately, it would be the landowner who would get the revenue.

Water Deeply: And who would buy these credits?

Ingram: I think it could run the gamut: anybody who has a responsibility to offset their emissions.

We've been working with a couple different carbon financiers who have worked with large companies that are buying carbon. They've been marketing the idea of Delta wetlands credits, and they've been getting a good response.

Deverel: It's not necessarily offsetting emissions. We're talking about a voluntary market. There's not necessarily an obligation at this point to purchase these carbon credits. But I think there is interest. I think a lot of it is larger companies that just feel they want to invest in this kind of endeavor, because they feel like it's a good thing to do. Silicon Valley is one example.

Water Deeply: How much carbon can Delta wetlands sequester?

Deverel: In the Delta we've established there's probably 1 million to 2 million tons of CO_2 released every year, just from the oxidation of these organic soils. If you implemented wetlands, you stop that ongoing emission. And then you also add a little bit of carbon sequestration to that.

We've gone through some of the numbers, and it depends on where you are and what the baseline is. But certainly upwards of 5 to 6 tons of CO_2 per acre, per year is reasonable.

Water Deeply: Is it really possible to reverse subsidence and rebuild Delta islands?

Ingram: It's absolutely possible. It's a slow process, but anytime you inundate you stop the ongoing subsidence. So theoretically, it's absolutely capable of restoring the island elevation. On some of these islands, it will take a very long time, say a hundred years. But for every inch you produce, you're having a significant positive effect on the pressure exerted on that island. The challenge is to really get this concept to spread and catch on and gain acceptance, and have people accept the methodology.

Water Deeply: How does this process work?

Deverel: The key issue is very slow decomposition of the dying wetland vegetation. So every year out there, you have this cycle of wetlands growing and then dying back in winter and then growing again in the spring. That dead vegetation in the winter just basically decomposes and stays in the system and doesn't oxidize.

You have to go back in geologic history and look at how these organic soils originally formed out in the Delta, which started about 6,500 years ago or so. And it was the result of sea level rise that occurred during the Holocene – the last 10,000 to 11,000 years – which resulted in sea level rising over time and wetland vegetation forming on kind of an outwash plain in the Delta.

So you had this continual inundation that resulted in tidal wetlands that allowed them to keep accreting. So over time, you accreted 1 to 2 millimeters a year during that 6,500 years.

The 1850s came along, and the Swamp Land Act allowed people to go in and drain these swamps. In the 1860s, the reclamation of the Delta had begun and all these wetlands were converted to drained islands for farming. Since that happened, we've lost about half of that 5 billion cubic meters of organic matter.

Water Deeply: What's the potential? Where do you see this in, say, another 20 years?

Ingram: There's a lot of potential. The Air Resources Board recently put out their latest scoping plan, and in that they describe a target of 15,000 to 30,000 acres of managed wetlands in the Delta in the next 13 years. This is one of the best uses of the western Delta because of its importance to the water supply.

The farmers themselves, I think they wake up every morning and realize they are 20-plus feet underwater, and that's probably not sustainable. So absolutely, it is our hope that we start to see islands in wetland production at scale. But that will definitely take some time, and it's hard to put out a number on that.

We're pretty excited, and working hard to get some pilot projects up and running to demonstrate that the methodology is viable. We feel like we're kind of on the precipice of a great opportunity.

# # #

California water agencies are seeking a bigger role, aiming to speed up delta tunnel plan
Los Angeles Times | June 6, 2017 | Luis Sinco

California's powerful regional water districts are working alongside Gov. Jerry Brown to take on more responsibility for designing, building and arranging financing for a $15.7-billion twin-tunnel project that would ship water southward from Northern California as they push to finally close the deal on the controversial plan, two officials working closely on the project told the Associated Press.

Talks among Brown's office, state agencies and the water contractors that could lessen the state's hands-on role in one of California's biggest water projects in decades have been underway since May, according to the two sources, one a senior official involved in the project and the other an employee working closely on the project.

They spoke on condition of anonymity because they were not authorized to publicly reveal details of the talks.

Some water district officials said the move, to be done by a group of regional California water agencies in what is called a joint-powers authority, or JPA, would speed up the mega-project, which they say is needed to modernize California's existing north-south water-delivery systems.

Critics who oppose the tunnels said the change could allow California's big water districts to cut corners on issues affecting public safety and the environment.

Asked for comment, state spokeswoman Nancy Vogel said Friday that talks were underway between the state Department of Water Resources and the regional water agencies "on the structure of the entity that would design and build WaterFix," which is the name Brown's administration has given the proposed tunnels.

"Details have not been finalized, but our shared goal is a structure that assures the best design and construction talent and protects state oversight," Vogel said. Brown's press office did not immediately respond to an email seeking comment.

Brown long has pushed projects that would streamline the delivery of water from the delta of Northern California's biggest rivers — the Sacramento and San Joaquin — southward to water districts selling water to cities and farms, mostly in Central and Southern California. The current plan calls for 35 miles of two 40-foot-high tunnels.

The group of water agencies, which includes the biggest urban and agricultural water suppliers in the United States, has engaged in years of talks on the tunnels, but the current proposal as described by the two people involved would give the agencies a substantially bigger role in shaping the final outcome.

# # #

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Delta tunnels won't help on climate change

Sacramento Bee | June 5, 2017 | Barbara Barrigan-Parrilla
Special to The Bee

Dan Morain suggests the proposed Delta tunnels offer a solution for managing California's water in our changing climate. ("Brown sends a message on the Delta tunnels," Insight, June 1).

This argument misses the mark. The engineering report for the California WaterFix project indicates that the proposed new intakes at the town of Hood are being designed for 18 inches of sea level rise, yet the Delta Stewardship Council indicates that we should be planning for 55 inches of sea level rise. The $17 billion tunnels will likely become a stranded asset.

The Tracy pumps will be used only about 52 percent of the time because flows through the Delta will be too low. And because there is no plan to screen the existing pumps, large fish kills will continue at the Tracy pumps.

Also, construction of the tunnels will cause a net loss of 15,000 acres of wetlands within the estuary. If Delta fisheries and wildlife are going to survive in a changing climate, more water will need to flow through the estuary, not less.

A recent UCLA study found that the Sierra snowpack will decrease by about 30 percent by the end of the century. But the Metropolitan Water District of Southern California recently told a Bay-Delta committee that water sales will be used to finance the $17 billion.

How can Metropolitan or any other water district secure financing when less water will be available for sale? University of the Pacific economist Jeff Michael has run the numbers and says the tunnels cannot be built without a taxpayer subsidy.

Four million people live in Delta counties. The Delta hosts power and natural gas lines, highways, railroads and other key infrastructure. Levees will need to be raised to mitigate for sea level rise even if the tunnels are built. The Delta cannot be sacrificed.

To really prepare for climate change, let's spend that $17 billion to build more projects like the ones featured in our California Sustainable Water Plan.

# # #

Barbara Barrigan-Parrilla is executive director of Restore the Delta. She can be contacted at barbara@restorethedelta.org.

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Jerry Brown sends a message to water agencies on the Delta tunnels – and it's direct
Sacramento Bee | May 31, 2017 | Dan Morain

Jerry Brown took an Old English turn from his Latin wisdom in 2012 by declaring: "I want to get s--- done," a reference to his vision for building two tunnels 30 miles long to move Sacramento River water south from the Delta to the rest of the state.

And in 2015, addressing California water agencies, he offered pithy advice to naysayers: "Until you put a million hours into it, shut up." Critics of the $15 billion project were greatly offended.

Now, with Brown's tenure in the corner office ticking away, decision time is upon California. Yes, I have written that before. But in the coming days, the U.S. Interior Department is expected to issue its final assessment of the impact of the tunnels on the Delta's ecology and associated fisheries.

In anticipation of that, Brown, through his top aide Nancy McFadden, very recently summoned representatives of the main consumers of Northern California water to Sacramento. The unmistakable message to come of the meetings: fish or cut bait, or some more pungent variation of that saying.

The Metropolitan Water District of Southern California, Westlands Water District and the Kern County Water Agency, along with agencies in the Silicon Valley and East Bay, must decide if they're in or out and whether they'll pay their proportionate share.

Brown recently summoned MWD, Kern and Westlands water districts to Sacramento. The message? Fish or cut bait.

"The governor's office has sent a very clear signal," said Tom Birmingham, director of the 600,000-acre Westlands Water District, the second largest consumer after MWD. "The time to make a decision is now. The governor is absolutely correct. The welfare of the state of California is going to depend on the outcome of this decision."

"We're on the verge," said Jeff Kightlinger, executive director of the Metropolitan Water District. The MWD board, like other the water boards, would need to decide whether to buy into the project, a step that would require a rate increases. "It may be expensive but it is needed."

And this from Ted Page, president of the Kern County Water Agency board: "I sincerely believe that if we do not build it, the state will regret it. Personally, I am all in. I think California desperately needs this project."

The federal wildlife agencies' findings will signal the end of the planning process that began when Arnold Schwarzenegger was governor. It will set forth scientists' view of the impact of the tunnels on fish, and provide information about the amount of water that agencies could realistically expect to draw from the Delta.

Brown will travel to China this week, where he will advocate on behalf of cooperation in the fight against climate change. Internationally, Brown has been a leader on environmental issues.

He and his aides, many of them with a history of environmentalist advocacy, believe the tunnels will protect the environment while making the state water system more reliable. But green though he may be, the governor has been unable to persuade leaders of Delta counties of the wisdom of the tunnels.

“Two 40-foot diameter tunnels that can take the entirety of the Sacramento River at most times of the year of just seems like a bad idea to salmon fishermen,” said John McManus, executive director of the Golden Gate Salmon Association. “Rank-and-file salmon fishermen don’t trust them when they say, ‘Trust us.’ ”

There’s an element of hypocrisy on the part of Bay Area environmentalists, who drink water piped from Hetch Hetchy. Delta interests have all the water they could possibly want. But the fishing industry has a real beef. Dams deplete salmon runs.

Without a doubt, lawsuits will be filed to block the tunnels. No one should be shocked if there is an anti-tunnel initiative on the 2018 ballot, as happened in 2016 when Stockton farmer Dean Cortopassi promoted a measure to block the project’s financing.

Brown spent $4 million to defeat the initiative. The next governor won’t be nearly as invested. Indeed, the leading Democratic candidates duck taking a stand one way or another on the tunnels. So San Joaquin Valley farming interests and the MWD face a decision. I’ll make up my mind after the final environmental assessments are issued.

But Californians have been re-engineering the Delta for more than a century. In time, nature will reassert itself. An earthquake will strike and levees will slump, inundating the man-made island and disrupting the balance between fresh and salt water. As sea level rises longer term, salt water will flow further inland. Sooner or later, something will give.

# # #

Public Support for Water Investment Depends How You Ask the Question

Americans are concerned about their infrastructure, including water, but recent public opinion research has revealed specific concerns and exposed which issues resonate most.

Water Deeply | June 7, 2017 | Mitch Tobin

Many of President Donald Trump's campaign promises have sparked controversy, but one of his proposals – spending $1 trillion to fix the nation's decrepit infrastructure – has broad, bipartisan support, according to numerous public opinion surveys.

Water projects are only expected to be a small part of that potential infrastructure spending, but polling data suggests that the public is willing to pay for such improvements – up to a point.

Some of the most detailed looks at public opinion related to water infrastructure were conducted by organizations that have a vested interest in seeing more investment in those water works. A cynic might say it's like asking a barber if they think you need a haircut, but these surveys were conducted by professional pollsters using accepted methodologies, so I think they provide useful data.

Below are five takeaways from recent research on public opinion related to water infrastructure.

1. **Americans aren't happy with the state of the nation's infrastructure.**

A global survey conducted in 2016 by Ipsos sought to "obtain a pulse on satisfaction levels related to roads, rail, air networks, utilities and broadband communications." In the United States, 63 percent of respondents said they weren't satisfied with their infrastructure, and they ranked water and sewage systems as their top priorities.

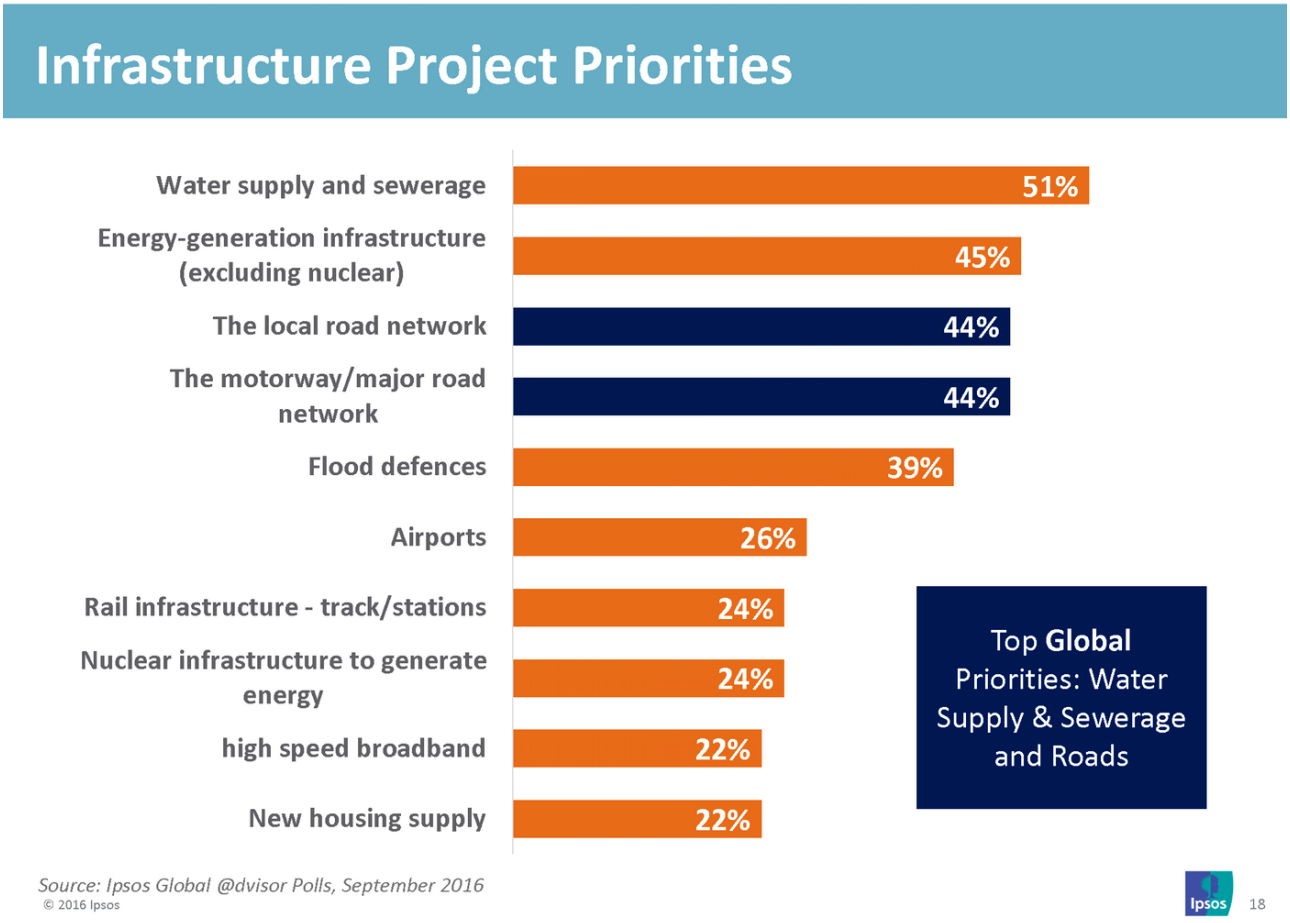
"Americans prioritize water system, road and energy infrastructure as their preferred focus for development," Ipsos reported. The poll also found that 76 percent of Americans believe investing in infrastructure is vital to future economic growth and 69 percent think community views on projects should be heard properly, even if it means delays.

SUPPORTING MESSAGES – Ranked by Very Convincing

Respondents were given a series of messages about the importance of water and the need to invest in our water systems. Across the county, three primary themes emerged for the majority of Americans.

	Total	East	Midwest / Plains	South	West
		18%	22%	38%	22%
1	We are all dependent on a strong and reliable water infrastructure 64%	We are all dependent on a strong and reliable water infrastructure 71%	We are all dependent on a strong and reliable water infrastructure 61%	We need to avoid public health tragedies 68%	We are all dependent on a strong and reliable water infrastructure 59%
2	We need to avoid public health tragedies 64%	We need to avoid public health tragedies 69%	We need to avoid public health tragedies 59%	We are all dependent on a strong and reliable water infrastructure 66%	We need to avoid public health tragedies 58%
3	Water infrastructure is aging 53%	Water infrastructure is aging 62%	We owe it to our children to maintain and update the investment in water infrastructure 49%	Water infrastructure is aging 57%	Water infrastructure is aging 46%
4	We owe it to our children to maintain and update the investment in water infrastructure 50%	Without water, our economy would grind to a halt 58%	Water infrastructure is aging 47%	We owe it to our children to maintain and update the investment in water infrastructure 53%	Without water, our economy would grind to a halt 42%
5	Without water, our economy would grind to a halt 48%	We owe it to our children to maintain and update the investment in water infrastructure 58%	Without water, our economy would grind to a halt 44%	Without water, our economy would grind to a halt 50%	We owe it to our children to maintain and update the investment in water infrastructure 41%
6	Water utilities are investing in new innovation and technology 41%	More extreme weather events are stressing our water infrastructure 47%	Major metropolitan areas and agricultural communities are at risk of water scarcity 39%	Water utilities are investing in new innovation and technology 44%	Water utilities are investing in new innovation and technology 39%
7	Major metropolitan areas and agricultural communities are at risk of water scarcity 41%	Major metropolitan areas and agricultural communities are at risk of water scarcity 45%	Water utilities are investing in new innovation and technology 37%	Major metropolitan areas and agricultural communities are at risk of water scarcity 43%	Major metropolitan areas and agricultural communities are at risk of water scarcity 37%
8	More extreme weather events are stressing our water infrastructure 38%	Water utilities are investing in new innovation and technology 44%	More extreme weather events are stressing our water infrastructure 36%	More extreme weather events are stressing our water infrastructure 37%	More extreme weather events are stressing our water infrastructure 34%

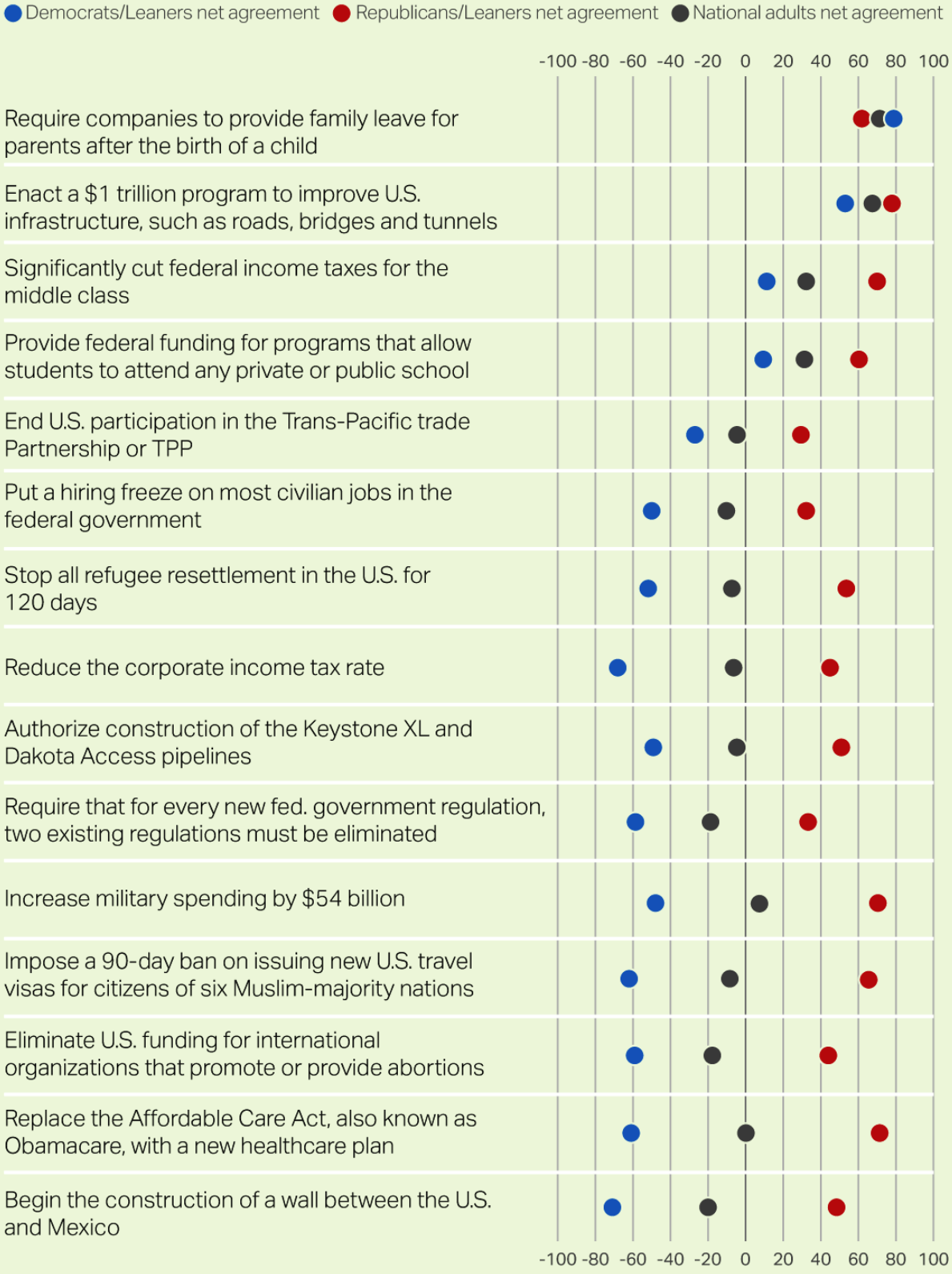
A March 2017 Gallup poll also found that both Republicans and Democrats favor infrastructure spending, broadly defined. The graphic below shows that only family leave had more bipartisan support than the $1 trillion infrastructure program that Trump proposed in the campaign. Aside from infrastructure and family leave, Trump's other proposals trigger big partisan divisions between Republicans and Democrats.



2. Support for water infrastructure spending is strong and bipartisan.

A poll released in May by the Value of Water Campaign found "overwhelming support for increasing federal investment in water infrastructure, which cuts across party and demographic lines." The graphic below from the survey, which was conducted by FM3 Research and Public Opinion Strategies, is one of the reasons why pollsters called support for water infrastructure spending "ubiquitous."

Republicans and Democrats Disagree on Most of Trump Proposals

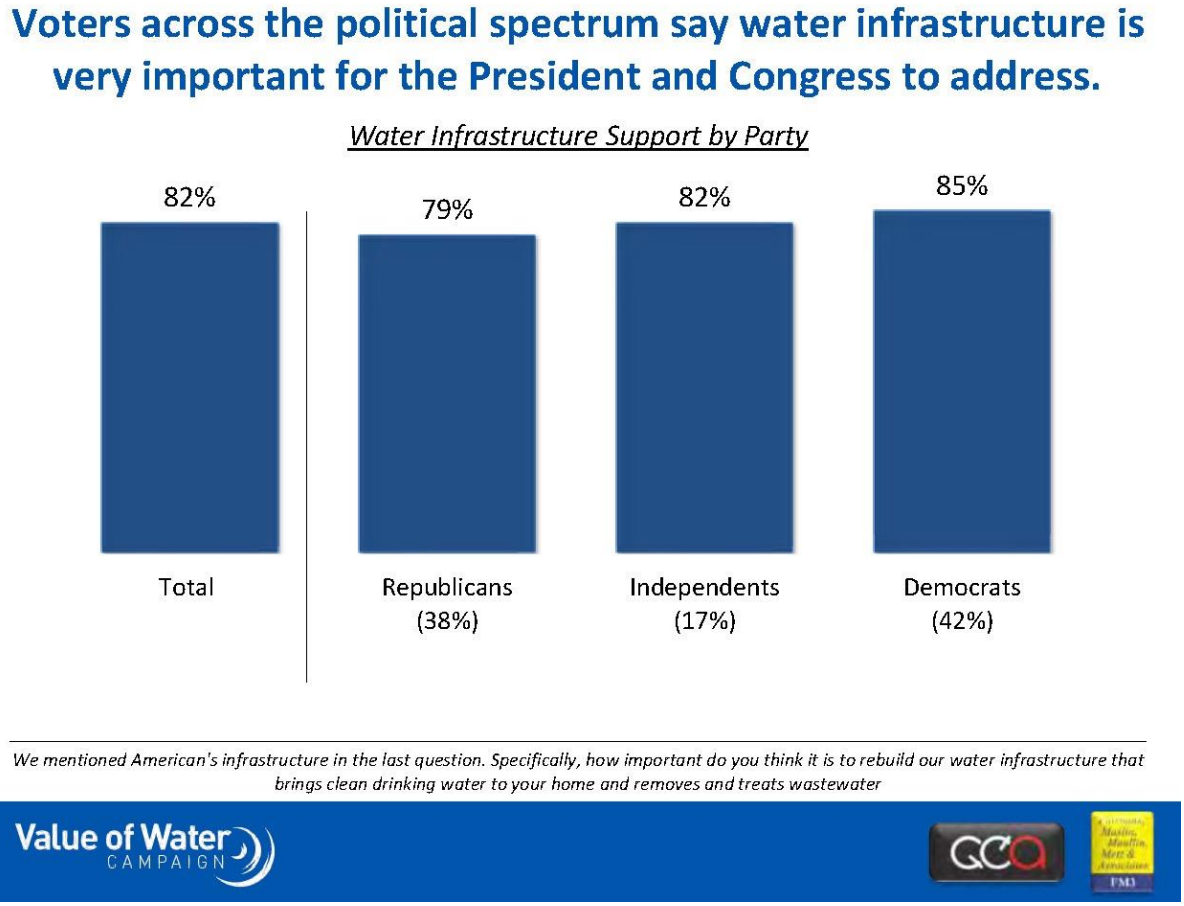


Net agreement is % agree minus % disagree

GALLUP, MARCH 9-29, 2017

“The public thinks we’re under-investing in infrastructure of all kinds right now and water infrastructure is no exception,” pollster Dave Metz said in an interview.

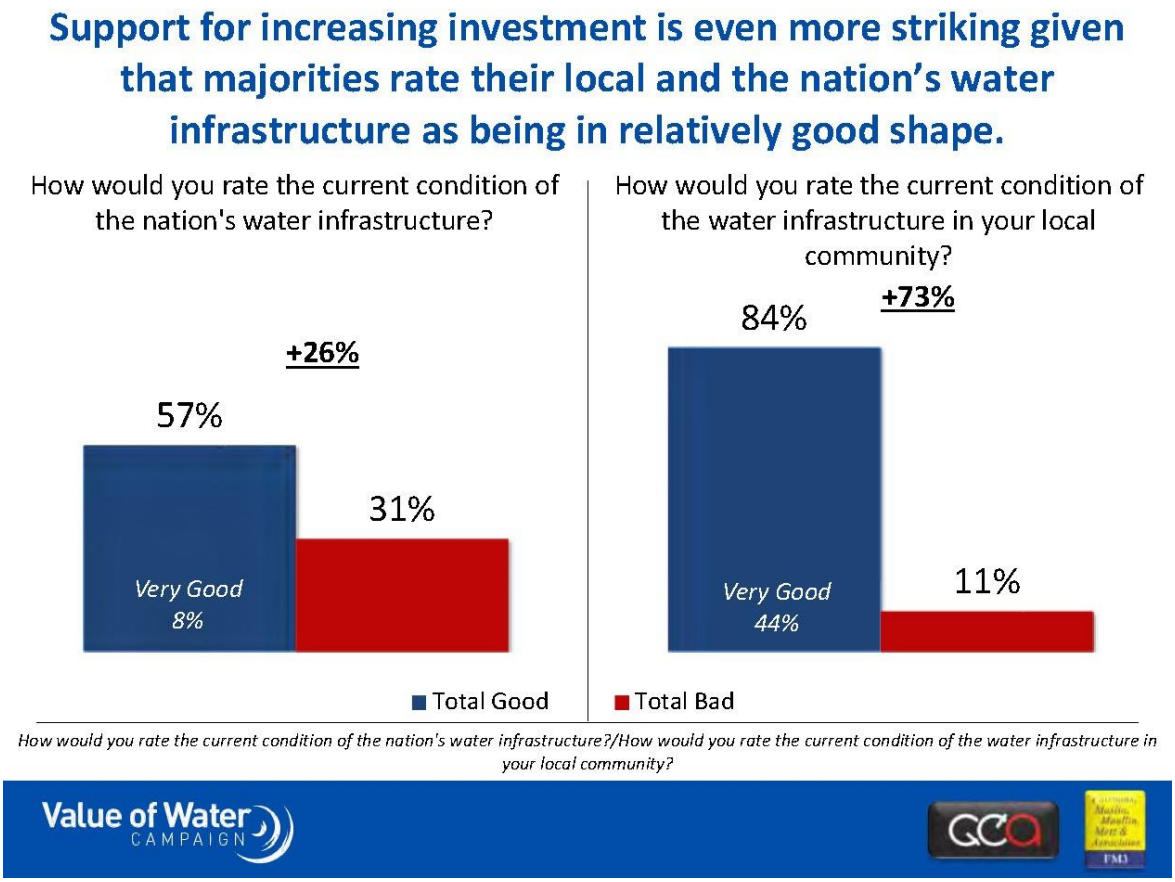
This is the second year in a row that the Value of Water Campaign, an initiative of the U.S. Water Alliance, has released results from a national poll on infrastructure. Once again, the telephone survey of registered voters found that Americans are considerably less worried about the fate of their own local water infrastructure than the nation’s overall waterworks. As shown in the graphic below, pollsters Metz and Lori Weigel think the overwhelming support for water infrastructure is striking given that Americans believe their own water infrastructure is in pretty good shape.



Another water infrastructure poll, released in 2016 and supported by MWH Global, a water resources engineering firm, painted the issue in somewhat darker terms. In that survey, conducted by Wakefield Research, 35 percent of Americans said their community’s current infrastructure wouldn’t last for more than five years, and 48 percent said not having easy-low-cost access to clean water was an issue faced by communities.

3. When asked about infrastructure, people may not immediately think of waterworks.

The word “infrastructure” means different things to people, so when looking at polls on the issue, it’s important to understand what, exactly, pollsters are asking about. In the Ipsos survey, people were asked what infrastructure meant to them. The graphic below, a word cloud that sizes the terms according to how frequently they were offered, shows that water-related infrastructure didn’t exactly spring to mind for many people.



In his presentation on the survey, Ipsos pollster Cliff Young notes that roads, bridges and jobs may be the first ideas that people think of when asked about infrastructure, but people also express concern about water and energy systems when prompted by surveyors (as the Value of Water Campaign's poll also demonstrates).

4. Many people say they're willing to pay to fix infrastructure.

Plenty of polls have found support for more spending on water infrastructure and other public works. But it's one thing to say you favor a government- or utility-sponsored program, and another to say you favor higher water bills or taxes. As with most public opinion research, how questions are worded matters greatly.

That said, there does appear to be some public support for reasonable increases in their water costs to pay for infrastructure upgrades. A 2015 survey by MWH Global found that 61 percent of those surveyed "support higher utility rates for the development and enhancement of water infrastructure in their communities."

The 2016 Value of Water Coalition poll, conducted by American Viewpoint and Hart Research, found that Americans are willing to pay higher water bills if they're informed about infrastructure issues. When asked initially if they were willing to pay more, survey respondents were evenly split: 47 percent in favor and 47 percent opposed. But after pollsters provided more information about water issues, support for higher bills increased to 60 percent.

“An overwhelming majority would be willing to consider an increase of at least 5 percent, with a quarter of respondents even willing to pay a 10 percent increase,” pollsters Linda DiVall and Geoffrey Garin note in their slide deck summarizing the 2016 results. “Somewhat curious is the pattern of groups willing to pay over 10 percent: Younger adults, minorities, and those with lower incomes.”

INVESTMENT IN INFRASTRUCTURE

What Infrastructure Means to People

Source: Ipsos Polls, 10/7/2016 n=1,005

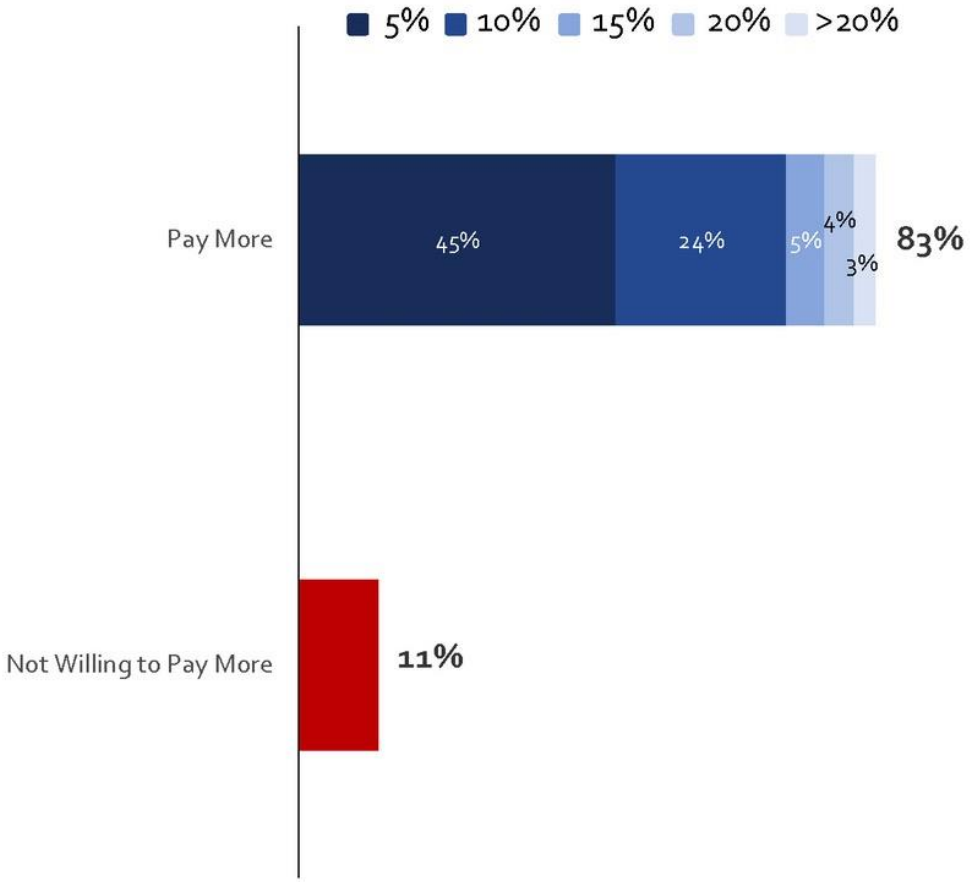
It’s worth remembering that many people cannot even tell you how much their water costs them. In its 2015 poll, the Value of Water Campaign found that 57 percent of those surveyed couldn’t state their yearly water bill, with the researchers noting that varied payment schedules make it hard for many consumers to quantify their costs.

5. Messages should stress vulnerability and ties to economy.

Some polls on water infrastructure have tested messages and probed what issues resonate with the public. As with any funding issue, pollsters recommend talking about “investing” rather than “spending.” Ipsos’s Young argues that infrastructure advocates could help their cause by linking the issue to other higher-priority concerns, such as employment and economic security. As shown below, framing infrastructure spending as a way to create jobs and pave the way for higher growth can hitch the issue to even more popular ideas.

INITIAL MONTHLY % INCREASE THRESHOLD

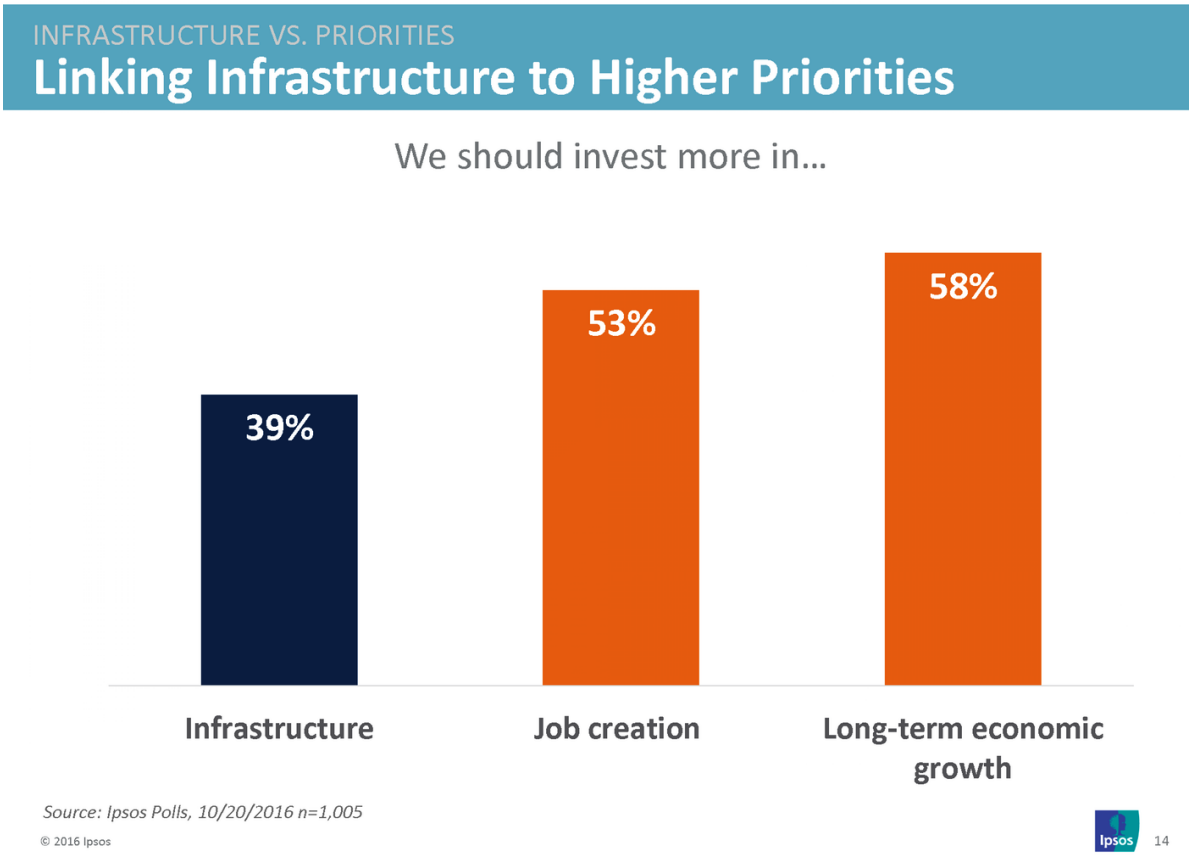
When encouraged to consider tangible percentage increases in their water bill, opinions are much more encouraging. An overwhelming majority would be willing to consider an increase of at least 5%, with a quarter of respondents even willing to pay a 10% increase. Somewhat curious is the pattern of groups willing to pay over 10%: Younger adults, minorities, and those with lower incomes.



	5%	10%	Over 10%	None
Men 18-39	49%	27%	17%	5%
Men 40-59	48%	19%	9%	19%
Men 60+	42%	22%	9%	21%
Women 18-39	44%	32%	21%	1%
Women 40-59	52%	19%	13%	12%
Women 60+	40%	29%	10%	8%
White	46%	23%	11%	12%
Black	52%	24%	15%	4%
Hispanic	37%	35%	19%	7%
Republican	48%	25%	8%	14%
Independent	45%	22%	14%	11%
Democrat	45%	30%	14%	7%
H.S. Or Less	49%	24%	12%	9%
V-Tech/Some Coll.	47%	28%	13%	7%
College Grad.	43%	21%	15%	15%
Post Graduate	44%	25%	10%	15%
Under $40K	46%	24%	19%	6%
$40K To $75K	47%	31%	9%	11%
Over $75K	46%	23%	11%	14%
Urban	44%	26%	16%	11%
Suburban	42%	28%	12%	11%
Medium/Small Town	48%	23%	13%	11%
Rural	49%	21%	9%	12%

The average household spends 8% of their monthly utility costs on water, wastewater, and storm water services, compared to 47% on phone, internet, and cable. Given this, what percent more would you be willing to pay to improve and modernize the water systems in your community?

Last year's Value of Water Campaign poll asked respondents to react to a series of messages related to rebuilding water infrastructure. As shown in the graphic below, people thought messages related to our dependence on water, threats to public health and the age of the infrastructure were most convincing.



Metz said the most compelling messages highlight the vulnerability of our water infrastructure. "Things may be working fine today, but we're one earthquake or severe weather event away from that infrastructure failing – with devastating consequences," he said. "Even raising the specter that you could be without water for three or four days while people work to repair or replace it – people can instantly understand how disruptive that could be."

Beyond poll numbers, it also helps to have visuals that illustrate the dilapidated state of the infrastructure. "Being able to show them something that looks like it's close to collapse – that can be worth more than any fact- or statistic-packed verbal message you might craft," Metz said.

A version of this story first appeared on WaterPolls.org.

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Here's the right strategy for California's next drought

Sacramento Bee | June 7, 2017 | Ellen Hanak and David Mitchell
Special to The Bee

The recent drought brought record high temperatures and record low precipitation, pushed numerous native fish species to the brink of extinction and led to unusually large drops in groundwater levels. But the biggest milestone for urban areas was the state's unprecedented order to cut water use by an average of 25 percent.

By some measures, the conservation mandate was a great success. From June 2015 to February 2016, Californians reduced water use by 24 percent compared to the same months in 2013 – more than double the savings achieved under a voluntary program in 2014. And the urban economy still grew faster than the national average.

But the mandate was a blunt instrument. It didn't reflect how well prepared most urban suppliers were, or their willingness to further reduce water use when needed. It generated discord, and it muddied state and local roles and responsibilities.

Our new research being released Thursday suggests that two key factors are important to improving urban drought preparation and response in California. They point to a strategy to better manage water, and not just during droughts.

First, California's urban water supply system is decentralized, with 400-plus utilities serving more than 90 percent of all residents, compared to just five electricity utilities for the same size population. In past droughts, local decision-making was considered essential because of this complexity.

Second, becoming resilient to drought requires developing water reserves and managing short-term demands. Cities invested vast sums on supply and storage since the last major drought, but the state mandate focused exclusively on demand, essentially ignoring local supplies.

As a result, most water suppliers we surveyed said the rationing requirement was excessive. Communities were required to cut use even if they had invested in supplies developed for droughts, such as banked groundwater. Managers said that uncertainty about future state policy could discourage such investments, funded mostly by local ratepayers.

To improve response to future droughts, a "trust but verify" policy can be more effective than the "better safe than sorry" approach of the state conservation mandate.

A good model is the "stress test" the state adopted toward the end of the drought, which allowed local utilities to drop conservation mandates if they could demonstrate they had three years of drought-resilient supplies.

The state should also make permanent its requirement that suppliers report their water use each month. This is a valuable tool for tracking trends, not only for water managers, but also for the media and general public. Maintaining this reporting during non-drought years can also help reduce water use over the long-term.

Implementing these recommendations will help protect California's residents and businesses from the worst effects of future droughts, and it can start right now.

# # #

Ellen Hanak is director of the Public Policy Institute of California's Water Policy Center and can be contacted at hanak@ppic.org. David Mitchell is a co-founder and principal at M.Cubed, and can be contacted at mitchell@mcubed-econ.com.

Gray's bill looks to provide fair water rights
Turlock Journal | June 6, 2017 | Angelina Martin

California lawmakers took a step toward restructuring water rights hearings throughout the state last week when Assembly Bill 313, introduced by Assemblyman Adam Gray (D-Merced), overwhelmingly passed the Assembly, moving the bill which aims to fix the state's broken water management structure closer to becoming law.

"Anyone who deals with California water knows the system is broken," said Gray following the vote. "Today's vote sends a clear message that we realize it's time to get to work, starting with restoring the fairness our water rights holders expect and deserve."

According to Gray, state agencies often treat water rights issues unfairly and act with unchecked power. AB 313 proposes to restructure water rights hearings, creating a new Water Rights Division in the Office of Administrative Hearings to handle all water rights matters, removing conflicts of interest and built-in biases in the current system.

"The current system isn't just inadequate – it's imbalanced," said Gray. "This bill begins a critically necessary reform of the state's water management, removing inherent biases and conflicts of interest."

Currently, the State Water Resources Control Board exercises quasi-judicial authority to hold water rights hearings, writing regulations, initiating enforcement actions and conducting hearings in which Board staff act as prosecutors and the SWRCB itself acts as the judge and jury.

"The end result of the current system is like the State Water Board asking the State Water Board if it agrees with itself," said Gray. "There's a reason there are umpires in baseball: we need a neutral party to enforce water rights so everybody gets a fair shot."

Under the bill's newly-formed Water Rights Division, administrative law judges would preside over water rights matters. This would include conducting hearings and making recommendations to the Executive Director of the SWRCB which may then be accepted, rejected or modified, ensuring objectivity while still allowing state water agency experts to give input. This will provide a neutral body for hearings regarding complicated and often controversial issues.

"State agencies aren't supposed to have unchecked power. They shouldn't be able to act with impunity and little accountability to the public," said Gray. "Creating a level playing field, as this bill does, ensures water rights holders receive the same due process and objectivity that our justice system promises everyone – nothing more, nothing less."

The Turlock Irrigation District works closely with the SWRCB, and TID Director Michael Frantz welcomes the potential reorganization of the Board.

"I think it makes sense for a different body to review and ultimately decide than the initial passing body. I like the aspect of breaking it into two so you have a true appeals process," said Frantz. "I think it's always appropriate in government to have a multiple-bodied appeal process."

AB 313 previously passed through the Assembly policy and fiscal committees without a single "no" vote, and passed the California Assembly with an initial 55-0 vote. The bill will now move to the Senate, where it will be considered in the coming weeks.

# # #

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A field guide to aiding salmon (as preferred by SF and other Tuolumne River diverters)
Modesto Bee | June 6, 2017 | John Holland

To no one's surprise Tuesday, the Turlock Irrigation District board endorsed Tuolumne River fishery improvements that do not involve boosting reservoir releases.

Directors voted 5-0 to support a proposal made by San Francisco in response to a state effort to sharply increase flows for salmon and other native fish on this and nearby rivers.

The city, which gets most of its water from the Tuolumne, calls for projects such as spawning gravel restoation, planting of riverside trees, and control of non-native predators and aquatic weeds.

This approach has long had general support among water suppliers, including TID and the Modesto Irrigation District on the Tuolumne. Tuesday's vote was for a $34 million plan with specifics on how much habitat would be restored and how the predators could be removed.

"The district has been and continues to be opposed to increased river flows as the sole solution for a healthy fishery, when nonflow measures are often less costly and more effective," TID General Manager Casey Hashimoto said.

The proposal is based on extensive studies done on the river by the districts.

The plan from the State Water Resources Control Board involves the Stanislaus, Tuolumne and Merced rivers below their main foothill reservoirs. It calls for 40 percent of pre-dam flows from February through June each year, although they could range from 30 to 50 percent depending on conditions at the time.

The proposal was released last September and drew plenty of debate at five hearing sessions. The state board tentatively plans to release a final plan in October and could vote on it in December.

The 40 percent threshold would roughly double rivers that have been heavily used by farms and cities for more than a century. Environmental and fishing groups seek even higher volume, and they question too much reliance on nonflow measures.

"The lower Tuolumne is now slow-moving and warm, creating ideal habitat for non-native species, such as bass and water hyacinth, that thrive under such conditions," the Tuolumne River Trust said in a Feb. 2 statement, before the water got unusually high. "Native species, which evolved with faster-moving, colder water, are now at a competitive disadvantage."

San Francisco supplies about 2.5 million Bay Area residents with water diverted much higher on the Tuolumne than TID and MID. All three share responsibility for lower-river fish.

# # #

RIVER PLAN DETAILS

San Francisco's proposal for the lower Tuolumne River fishery includes:

- Restoration of stream-bed gravel where salmon lay their eggs after returning from a few years in the Pacific Ocean. It would cost $17 million and cover 13 river miles just downstream from La Grange.
- Pressure-washing of gravel that has become clogged with sediment, at a cost of $2.4 million.
- A $12 million structure, known as a weir, that would block striped bass and other non-native predators near Hughson. The 5-foot-tall weir would have openings for native fish and small boats. It could provide a viewing spot for the public and fish counts for scientists.
- Reducing bass via fishing derbies, bounties and relaxed catch limits. The plan acknowledges that bass fishing groups want to sustain the population.
- Placing large rocks and downed trees in key places to improve salmon and steelhead trout habitat over eight river miles, costing $1.7 million.
- Planting native trees such as willow and cottonwood on 12 miles of shoreline. They provide shade, and some river creatures eat the leaves they drop. The cost is $500,000.
- Controlling water hyacinth, a nonnative plant that interferes with fish and boats, at a cost of $100,000 in problem years. It got especially bad in the 2012-16 drought but was washed away by this year's massive flows.

The hidden opportunity for water storage in California
Environmental Defense Fund | June 1, 2017 | Maurice Hall

California's historic winter ended the drought in many parts of the state and piled up record levels of snowpack in the Sierra Nevada Mountains. With so much precipitation, surface water infrastructure – our network of dams, reservoirs and levees – has been called into action like never before, and in some cases has struggled to handle the influx of flows.

With spring temperatures on the rise, snowmelt and runoff have accelerated, adding another wave of stress to the system. And with snowpack still at 192% of average, there is even more runoff on the way.

So where will all this water go?

With many reservoirs near capacity already, water managers have had to allow spring snowmelt to flow out through the Sacramento-San Joaquin Delta and into the ocean. This is inevitable given the shear amount of water in the system this year, and in fact, these occasional high flows provide multiple benefits to ecosystems and coastal communities.

But wouldn't it be nice if water managers could keep a bit more of this water in the system – not just to ensure delivery to agricultural and urban water contractors, but to hedge against future dry years and prolonged droughts?

Many are calling for increased surface water storage by building new dams and increasing reservoir capacity across the state. And while some of these projects make sense, others will likely prove too costly for the marginal benefits they provide.

The answer is beneath our feet

One underused opportunity for storage is putting more water into groundwater aquifers. During the drought these aquifers were significantly depleted across the state, and even before the drought, many of our groundwater basins were overpumped. Some estimates show that we've lost more than 150 million acre-feet of groundwater in Central Valley aquifers over the past century. This has had devastating effects, such as water supply contamination and land subsidence.

The silver lining to this depletion? There is now plenty of room to store water in these aquifers. Essentially vast underground reservoirs that can accommodate excess water and ease the pressure on our surface water reservoirs during wet years like this one. And, importantly, water stored in underground aquifers could be used to supplement supplies during periods of drought.

The groundwater storage potential is massive – much more than the approximate 42 million acre-feet of total surface storage capacity.

Planning for the future

While groundwater recharge occurred in many basins across the state through natural processes, we unfortunately missed opportunities to take full advantage of underground storage this year.

Recharging aquifers basically means spreading water out on land that has porous soils and letting it soak in. During wet years, our facilities and rules are designed to send water downstream to prevent flooding rather than spreading it out so that it can seep back into our aquifers. So to take full advantage of wet years like this one, we need to look at our water system and policies in new ways.

Luckily we are moving in the right direction and recharging our aquifers at a higher rate. Local water districts and even individual farmers have demonstrated a growing interest in groundwater recharge. Some have started to implement projects and re-purpose land to create more recharge basins.

When we talk about the need for water storage in California, we must take full inventory of the tremendous opportunity of our underground natural storage infrastructure. If we focus on this now, we'll be able to take advantage of the next wet winter.

And, importantly, we'll be better prepared for the next inevitable drought when it comes – and it will come.

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Commentary: Desalination will not solve California's water woes
San Jose Mercury News | June 1, 2017 | Leon Szeptycki and Newsha Ajami

In the wake of the recent drought, desalination of ocean water continues to be a central topic in California water debates.

Some coastal communities were particularly hard hit by the drought, including a large swath of the central coast that is among the last regions in the state still suffering from drought conditions. Desalination seems to hold the potential for limitless, drought-proof supplies, but the reality is far more complex.

The potential impacts on ocean ecosystems have generated controversy and delays. In addition, communities are only starting to tap alternative sources, such as recycled wastewater and storm water, that have the potential to be less costly and more sustainable in the long-term. The decision whether to build a coastal desalination plant should be based on a consideration of all of these factors for each community.

Such decisions should not, however, be based on the hope that ocean desalination will fundamentally alter the state's overall water budget and supply portfolio. More specifically, we cannot rely on ocean desalination to meaningfully reduce the stress on freshwater ecosystems, particularly the Bay Delta and its tributaries, the heart of California's water supply.

Part of this is just due to the numbers. We withdraw approximately 42 million acre-feet per year from rivers, streams, and aquifers in California. We use up a net total of 33 million acre-feet of that. According to the 2013 update to the state's water plan, even if every proposed ocean desalination facility were built (an unlikely scenario), they would produce a combined total of approximately 382 thousand acre-feet a year, less than 1 percent of the state's existing water budget. Looking at just the Bay-Delta, humans use up or export approximately 6 million acre-feet per year. Again, even if all of the current ocean desalination proposals were built and run at full capacity, they collectively would not put a meaningful dent in our use of the Bay-Delta.

Furthermore, and just as importantly, there is no guarantee that every acre-foot of desalinated water would reduce demand on the Bay-Delta by an acre-foot. Currently there exists no systematic or legal mechanism to ensure that the water purveyors that opt into desalination facilities will directly reduce their reliance on the Delta.

To our knowledge, there is just one proposed desalination facility that will in fact reduce strain on a local freshwater ecosystem. The proposed California American Water plant near Monterey will directly reduce surface water withdrawals from the Carmel River. Those reduced withdrawals, however, were mandated by the state more than 20 years ago. Such mandates with direct links to meaningful improvements in stream flow should certainly be a factor in deciding whether to build a desalination plant. We are not aware, however, of any other proposed plant that can yet claim such a link.

While often Californians are persuaded to consider desalination as a way to future water supply security using Israel and Western Australia as examples, one should remember that California is a highly populated state of about 40 million compared to 8 million in Israel and 2.6 million in Western Australia.

Seawater desalination, while can be a very small part of water supply portfolio of some of California's coastal regions, will not be a significant part of the pie. The math is just not there.

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