Public Acceptance:
How is it shaping up for Potable Reuse projects?

Data instincts
Public Outreach Consultants

Mark Millan

KATZ & Associates

Patricia Tennyson

Recycled Water: How Safe is It?

A Publication from WateReuse Research Foundation

Putting the Risk of Recycled Water into Perspective

What is Recycled Water and Why Do We Use It?

Recycled Water Exposure Scenario

Child at Play

The child is 33-pounds and plays on the grass at a playground one day per week immediately following irrigation with tertiary-treated recycled water, which occurs six months of the year (26 days). He/she plays for one hour each day and his/her entire hands, forearms, and lower legs are wet with recycled water for the entire hour. The child indirectly ingests 10 milliliters of recycled water during each play session, which is estimated to be 1/5 the amount of water ingested by a child who swims for an hour. The exposures evaluated include absorption through the skin and incidental ingestion.

This is a high estimation of the amount of water to which a typical child at play could be exposed. This is done purposely to build extra margins of safety into the risk assessments in this study (see reverse). The scenario not only represents a child on a playground, but also at the park or on a school athletic field.

The Word is Out

The San Diego Union-Tribune.

UNION-TRIBUNE EDITORIAL

No toilet-to-tap

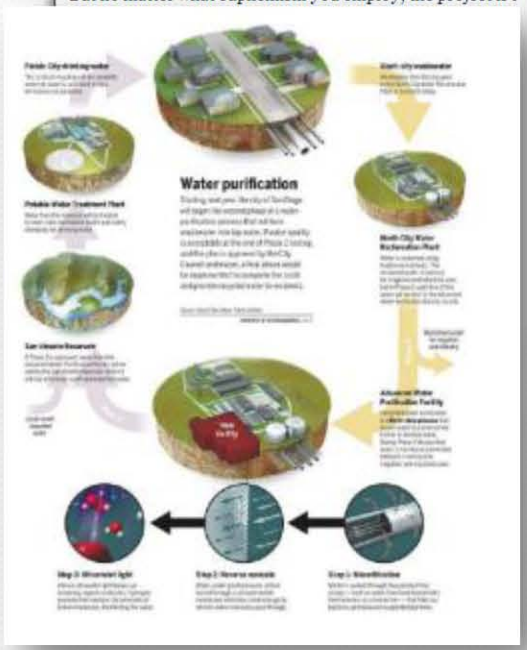
Special water rate hike unwarranted

September 8, 2008

High gasoline prices, rising food costs and upwardly adju payments may be sapping your paycheck, but they have City Council from voting today on a special water rate hike infamous toilet-to-tap scheme.

At issue is an untested process to take sewage effluent, trea and then dump it into the San Vicente Reservoir, the sourc San Diego's drinking water. This would mean, quite literally toilet water and returning it to your tap. Yet advocates of t the apt toilet-to-tap sobriquet, preferring instead to call it potable reuse."

But no matter what euphemism you employ, the project is a



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Jeff Light, Editor

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EDITORIAL

THE YUCK FACTOR: GET OVER IT

As San Diego sprawls above 3.5 million people countywide in just 10 more years, and a projected 4.4 million by 2050, the greatest threat to our economic health and quality of life is an uncertain supply of water. This urban cul-de-sac at the bottom of California is at the tail end of the pipelines that deliver 80 percent or more of our water. That means we are heavily dependent on the mercy of others, and that is not comforting.

San Diegans have more than proved themselves willing to conserve; the city uses less water in real terms today than it did with a smaller population 20 years ago. That will continue to be a crucial part of the region's water strategy for decades. So, too, will be the development of new sources, such as desalination. And, of course, political battles to rescue the Sacramento-San Joaquin Delta from environmental collapse in order to keep Northern California water flowing south will be never-ending.

But the reality is that more must and can be done.

At San Diego's North City Water Reclamation Plant, w project water re demons made sa large qu Once treated

scaping and industrial processes, then pu scrub it some more to nearly distilled wat dards. The demonstration project is to pr million gallons a day for a year, during w will be continually monitored and studied distributed for public consumption. If it p safe and affordable, the city could then co expansion to a permanent plant that coul duce up to 16 million gallons a day, which piped to San Vicente Reservoir.

Frankly, there is not that much to demo at least scientifically.

Similar technology is already in large-s in Orange County, which produces 70 mill lons of purified wastewater each day for i into the county's aquifers for public consu Similar systems are also producing drinki for Montebello, Scottsdale, El Paso and ot American cities, along with Singapore, Br and the International Space Station.

But there would be much education of t to be done.

Similar efforts in years past were dubbe

Water Purification | Demonstration Project

ABIERTO para Recorridos

Este verano la ciudad de San Diego abrira las puertas de las instalaciones del Tratamiento Avanzado de Purificacion de Agua(AWP) en la planta de tratamiento North City Water Reclamation Plant. Acompañanos a recorrer las instalaciones y ver como esta tecnologia puede transformar aguas negras en una de las fuentes de agua mas pura en San Diego.

Apuntense Hoy:

- Visite www.purewatersd.org para registrarse a un recorrido.
- Mande un correo electronico a purewatersd@sandiego.gov o llame al (619) 533-6618 para programar una presentacion a su organizacion.

PUBLIC UTILITIES

USA TODAY

COVER STORY

From toilets to tap

As water becomes more precious, more drinking water will come from treated sewage. Here's how it works.

TIME

Breaking the Taboo on "Toilet to Tap"

Posted by BRYAN WALSH

As I wrote in this week's Going Green column, the American South is gripped by a terrible dry spell, one lasting for months. In Texas alone, 99.93% of the country is in some state of drought. These are extreme times—and they call for extreme measures. Like drinking urine—sort of.

www.purewatersd.org

Source: Marsi Steirer

IPR Success

GWRS

GROUNDWATER REPLENISHMENT SYSTEM

From toilets to tap: How we get tap water from sewage

By Kathy Chu, USA TODAY

Making wastewater pure enough to drink

SINGAPORE — This island nation is aggressively promoting a solution to the water scarcity that vexes countries worldwide: recycling toilet water to drink.

It's an idea that many people find revolting. But, in Singapore at least, the nearly 5 million residents largely seem to have accepted it as necessary.

"In the past, we had to get water from another country, but what happens if the ties between the two countries are jeopardized?" asks Khaling Tan, 20, a student at Nanyang Technological University in Singapore. "It's better to be self-reliant."

DRINKING URINE: Astronauts do it aboard the Space Station

Once heavily dependent on neighboring Malaysia for its water supply, Singapore is unapologetically recycling sewage and other wastewater in a way that the city-

THE WALL STREET JOURNAL.

U.S. EDITION Thursday, May 15, 2008

Sewer to Spigot: Recycled Water

Article Comments

By ANJALI ATHAVALEY

A growing number of cities and counties grappling with water shortages are turning to a solution that may be tough for some homeowners to stomach: purifying wastewater so that residents can drink it.

In an effort to replenish its groundwater supply, Los Angeles is slated to announce Thursday a plan that will recycle 4.9 billion gallons of treated wastewater to drinking standards by 2019. In San Diego, the city council voted in favor of a pilot project that would pump recycled sewage water into a drinking-water reservoir, despite a veto from the mayor over the system's cost. Miami-Dade County, Fla., is planning a system that would pump 23 million gallons a day of purified wastewater into the ground; the water will eventually travel to a supply well and be reclaimed for drinking use.

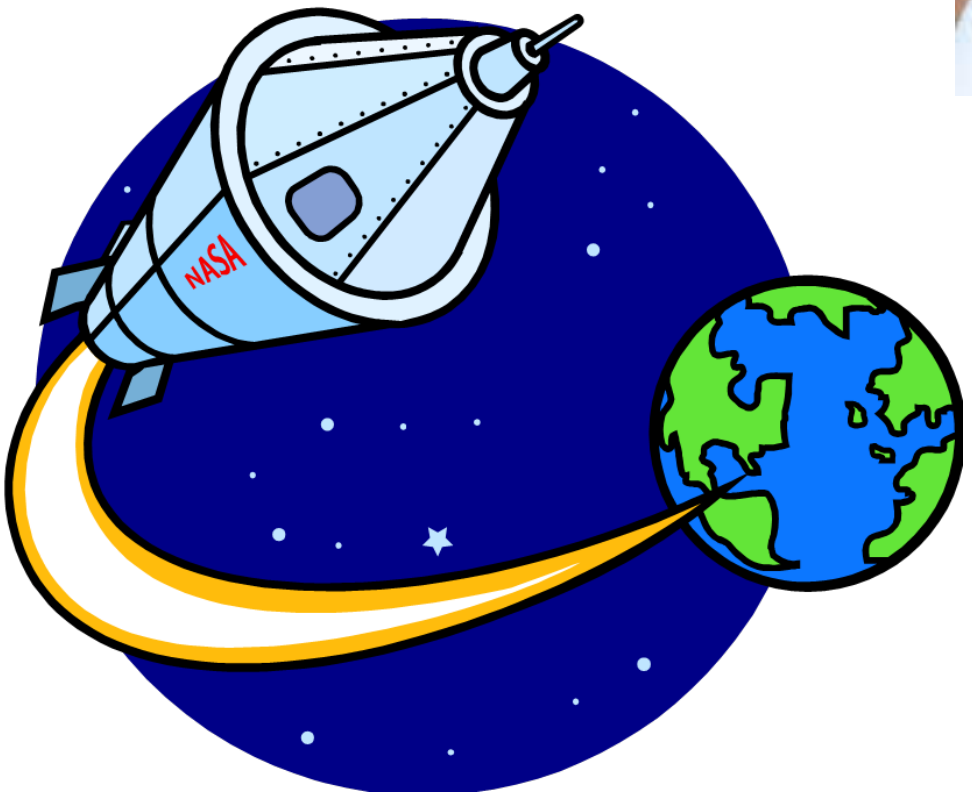
Water recycling is just one of a number of tactics parched cities -- many of which have faced water shortages for years -- are using. "Demand is growing, and supply is pretty much staying static," says Wade Miller, executive director of the WateReuse Association, a

WEST BASIN MUNICIPAL WATER DISTRICT

Source: Marsi Steirer


NEW AT 5:00
SAN DIEGO'S NEWS SOURCE
WASTEWATER COULD BECOME MAIN WATER SOURCE
NEW NUMBERS SHOW POTENTIAL FOR SAN DIEGO
abc 10


Don't Impose Your
YUCK FACTOR
on the rest of us


NASA


TOILET TO YOUR TAP!
Why are Sacramento & Stockton allowed to Dump their Sewage into the Delta/Aquaduct Water?
THE WATER SOURCE FOR 20 MILLION PEOPLE DOWNSTREAM!

WateReuse DPR Research

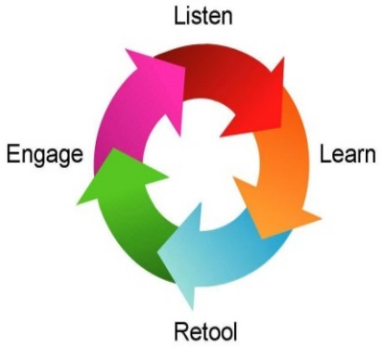
- Project 13-02 conducted in 2014
- Focus on potable reuse – IPR & DPR
- California-centric research
- Communication plans developed:

"Model Communication Plans for Increasing Awareness and Fostering Acceptance of Direct Potable Reuse"

2014 Jan Feb Mar Apr May Jun Jul Aug Sept Oct Nov

Literature Review

Agency IDIs



Legislator IDIs

Health Professionals IDIs

Special Interest Groups

Focus Groups

Public Surveys

State Level Comm Plan

Community Level Comm Plan

FROM WRRF 13-02 STUDY

WATEREUSE ASSOCIATION

Sustainable Solutions for a Thirsty Planet®

Building Public Acceptance of Direct Potable Reuse of Recycled Water

Key Findings from Opinion Research

320-601 / 330-194

Fairbank, Maslin, Maullin, Metz & Associates - FM3

Public Opinion Research & Strategy

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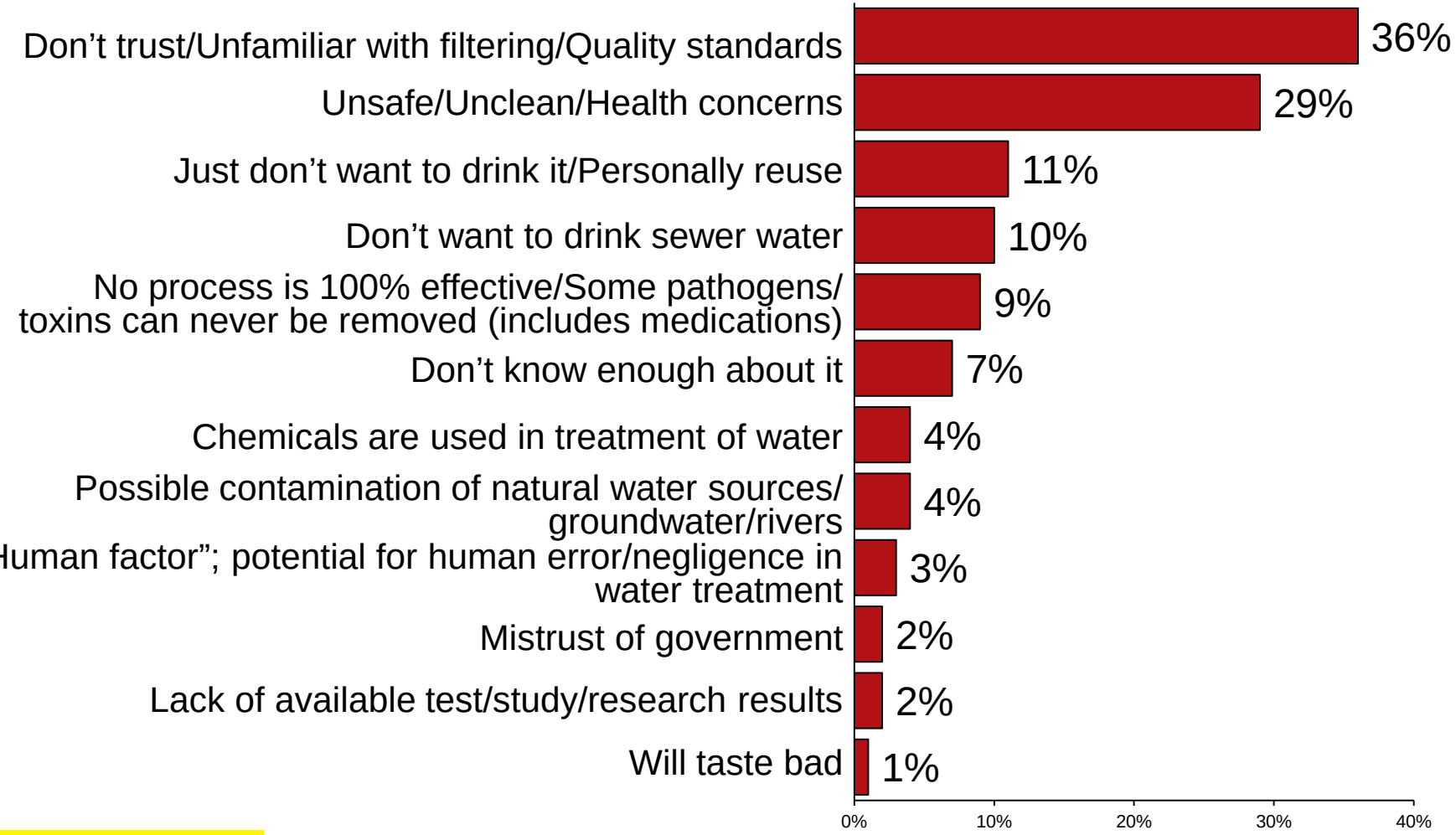
Opponents are largely concerned about potential health impacts of some kind.

*Why would you **OPPOSE** indirect reuse of recycled water for drinking in your community?*



Q12b. Open end; Responses grouped; Asked of indirect potable reuse opponents only

Verbatim Comments from Indirect Potable Reuse Opponents

I think if it is landscaping water this won't be good because of all the minerals that are toxic in the water.

I'm not clear what their "high standards" are, and it makes me nervous.

Honestly, as soon as you said "sewer water" I was opposed. I don't know. I just don't want to drink sewer water.

Even though it is treated, it can never be 100% treated for germs. It can only be 99 percent free of all viruses.

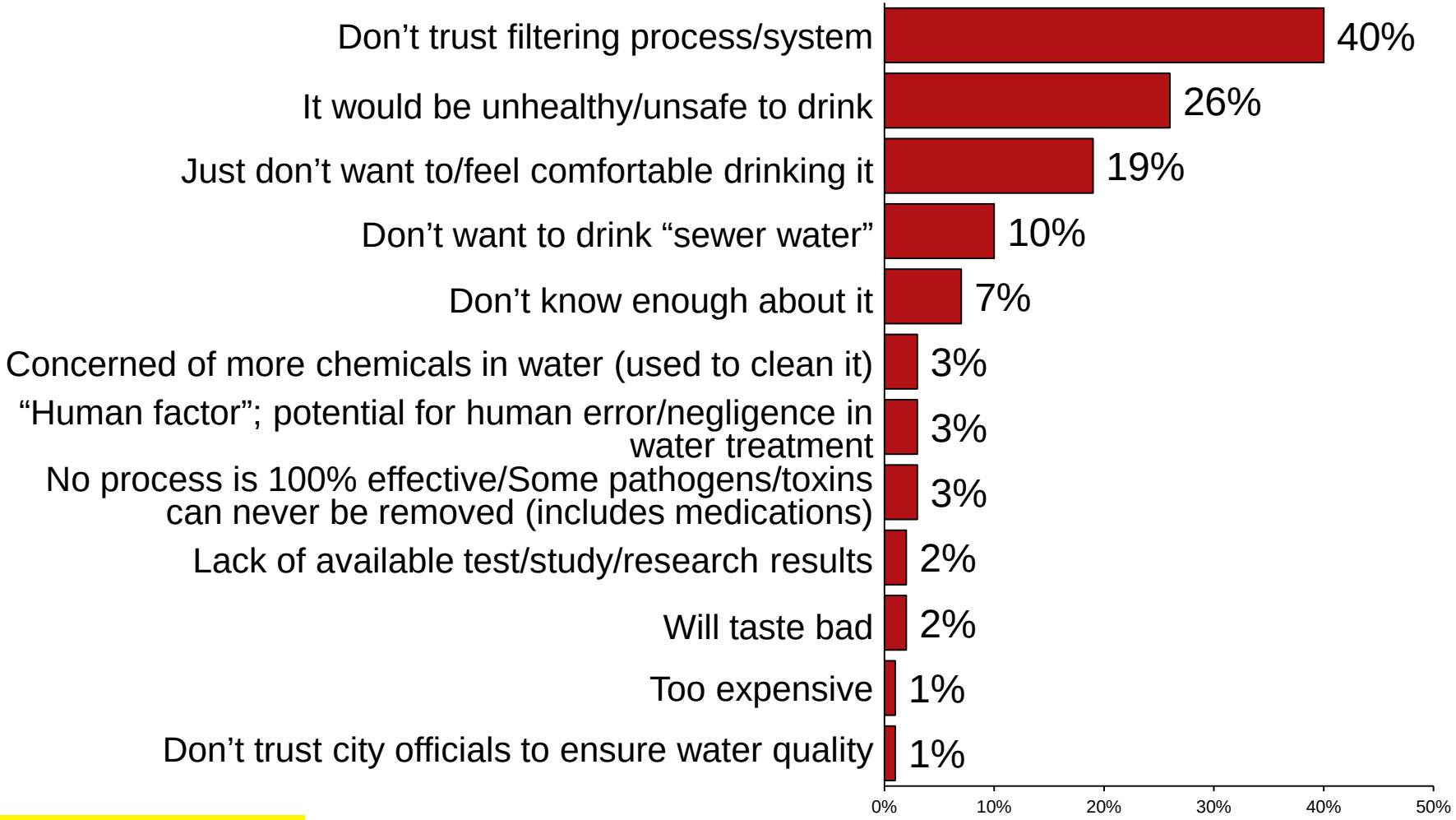
Because it is not safe and it is very, very dirty. It has chlorine, pee, and other garbage in the water.

I feel the safeguards aren't there. It would be done by the government, and wouldn't be done very well.

*12b. Why would you **OPPOSE** indirect reuse of recycled water for drinking in your community? Open end; Responses grouped; Asked of indirect potable reuse opponents only*

Disbelief in the efficacy of the treatment system is the biggest obstacle.

*Why would you **OPPOSE** direct reuse of recycled water for drinking in your community?*



Q14b. Open end; Responses grouped; Asked of direct potable reuse opponents only

Verbatim Comments from Direct Potable Reuse Opponents

It's a mental thing. The idea that it was once sewage…it's a mental thing that you have to get over.

There is a chance of unintentional violations of the process that might cause contamination.

I just want to be sure that the water district filters it enough to drink. I don't trust the water district to do that correctly.

I oppose direct reuse of recycled water. Chemicals from industry can leave toxins in the water.

I think there are educational barriers which will put people back to drinking bottled water, which is bad for the environment.

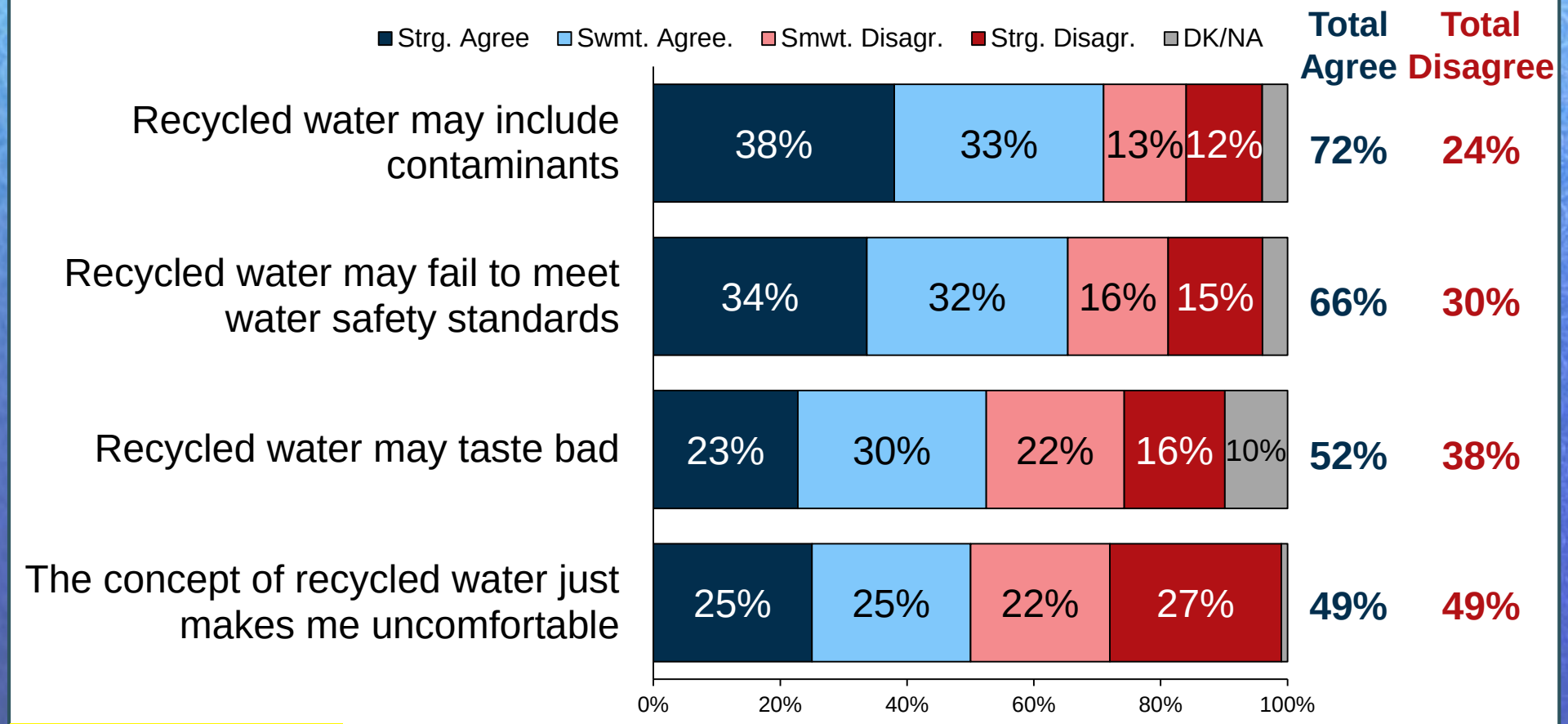
I would like to see other cities in the U.S. implement it first. At this time, I don't think it is 100% safe.

I would only oppose it for drinking. I don't think science has the right answers for purifying it for drinking at this time.

*12b. Why would you **OPPOSE** direct reuse of recycled water for drinking in your community? Open end; Responses grouped; Asked of direct potable reuse opponents only*

Safety concerns drive reservations about direct potable reuse.

I am going to read you a list of concerns some members of the public have expressed about direct reuse of recycled water for drinking. Please tell me whether you personally agree or disagree with that concern.



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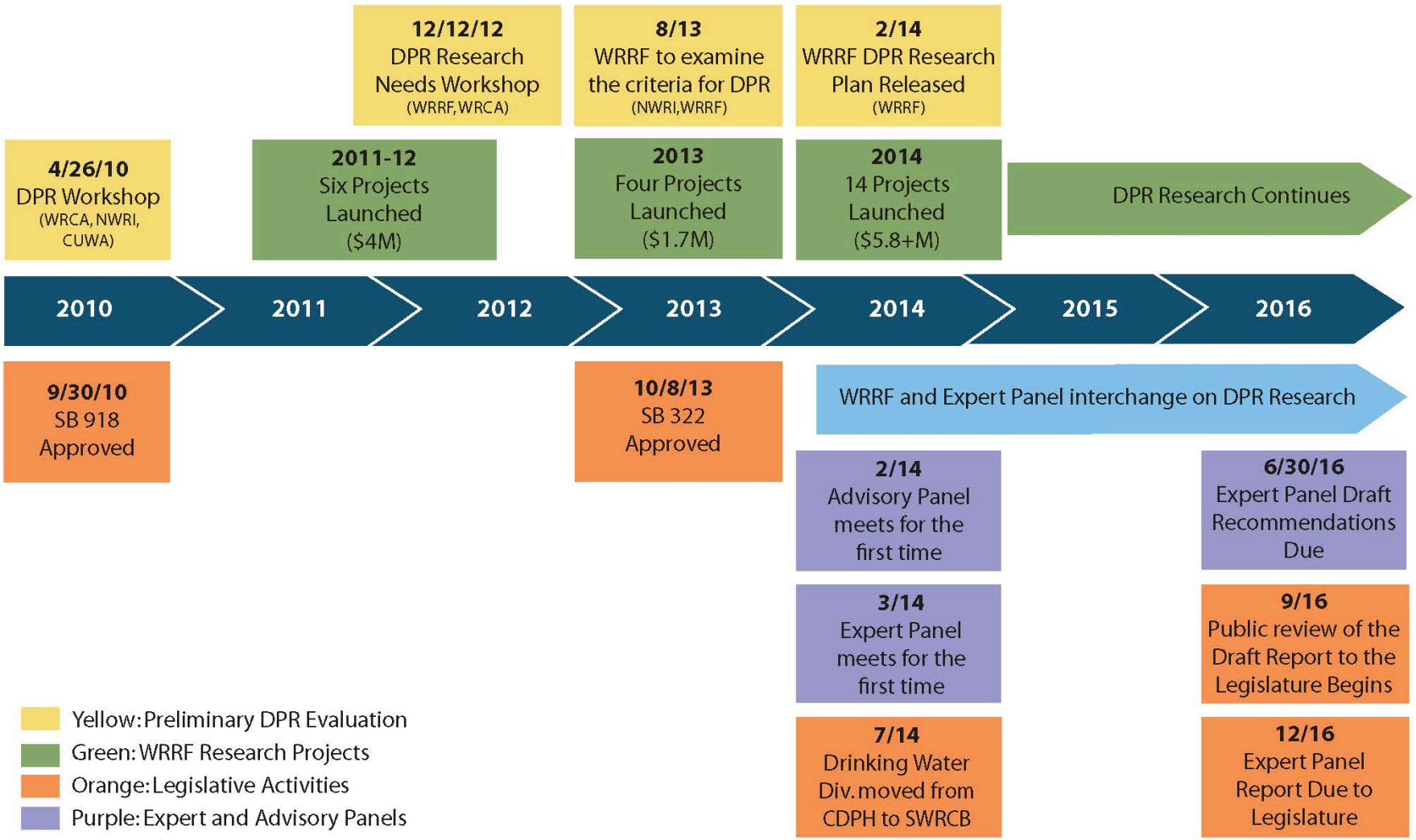
Q16.

California Direct Potable Reuse Timeline



OFFICE OF THE GOVERNOR

OCT 08 2013

To the Members of the California State Senate:

I am signing SB 322 which requires the Department of Public Health in consultation with the State Water Resources Control Board, to investigate the feasibility of developing uniform water recycling criteria for direct potable reuse by September 2016.

This information is past due. In an effort to enhance the use of recycled water, I have proposed the consolidation of the management of the drinking water program and all other water quality programs, including recycled water, under the State Water Board.

I am directing the Water Board to ensure that this work is completed expeditiously. The 3-year time frame mandated in this bill is too slow. California needs more high quality water and recycling is key to getting there.

Sincerely,

Edmund G. Brown Jr.

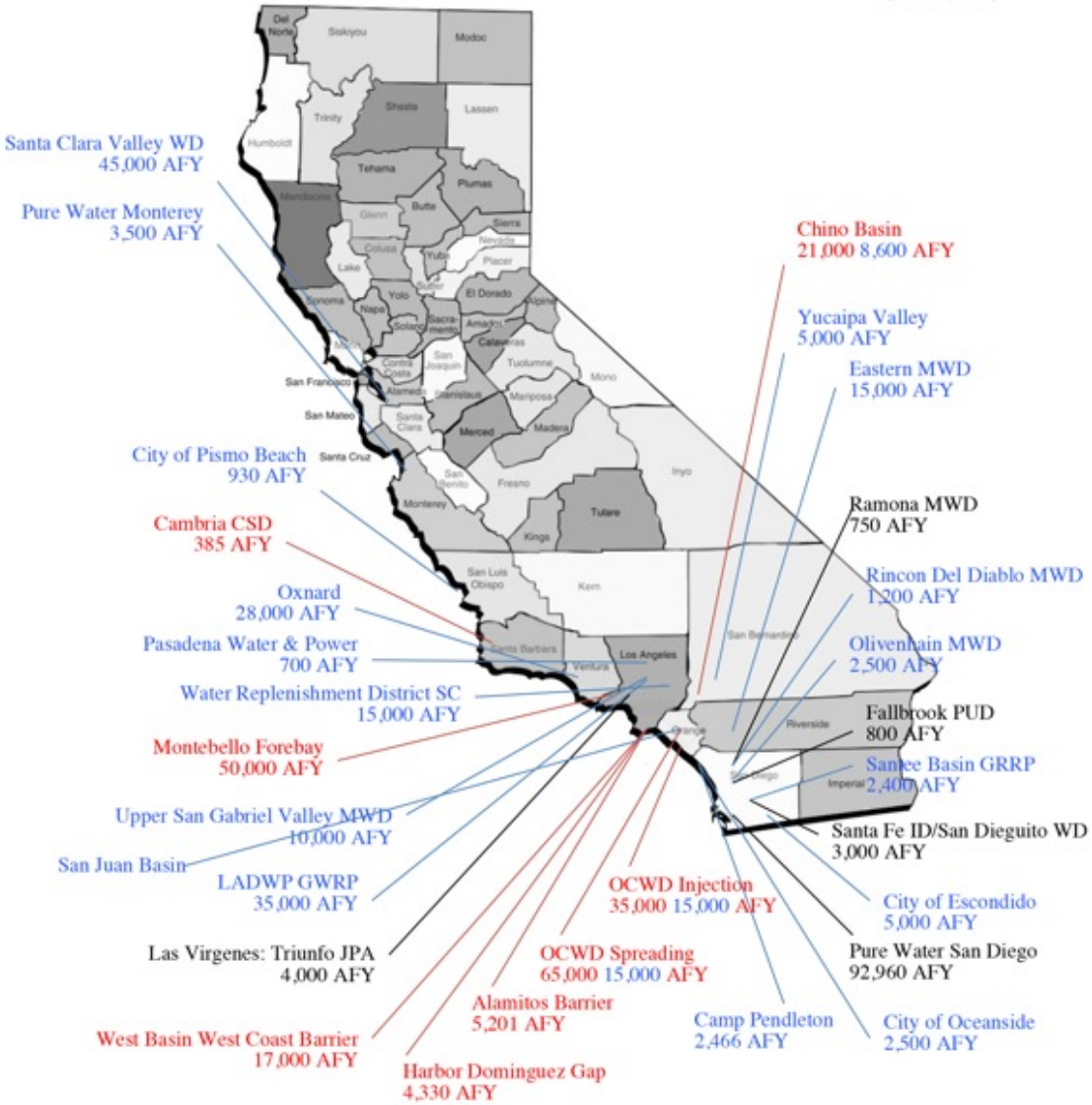
GOVERNOR EDMUND G. BROWN JR. • SACRAMENTO, CALIFORNIA 95814 • (916) 445-2841

WATEREUSE CALIFORNIA

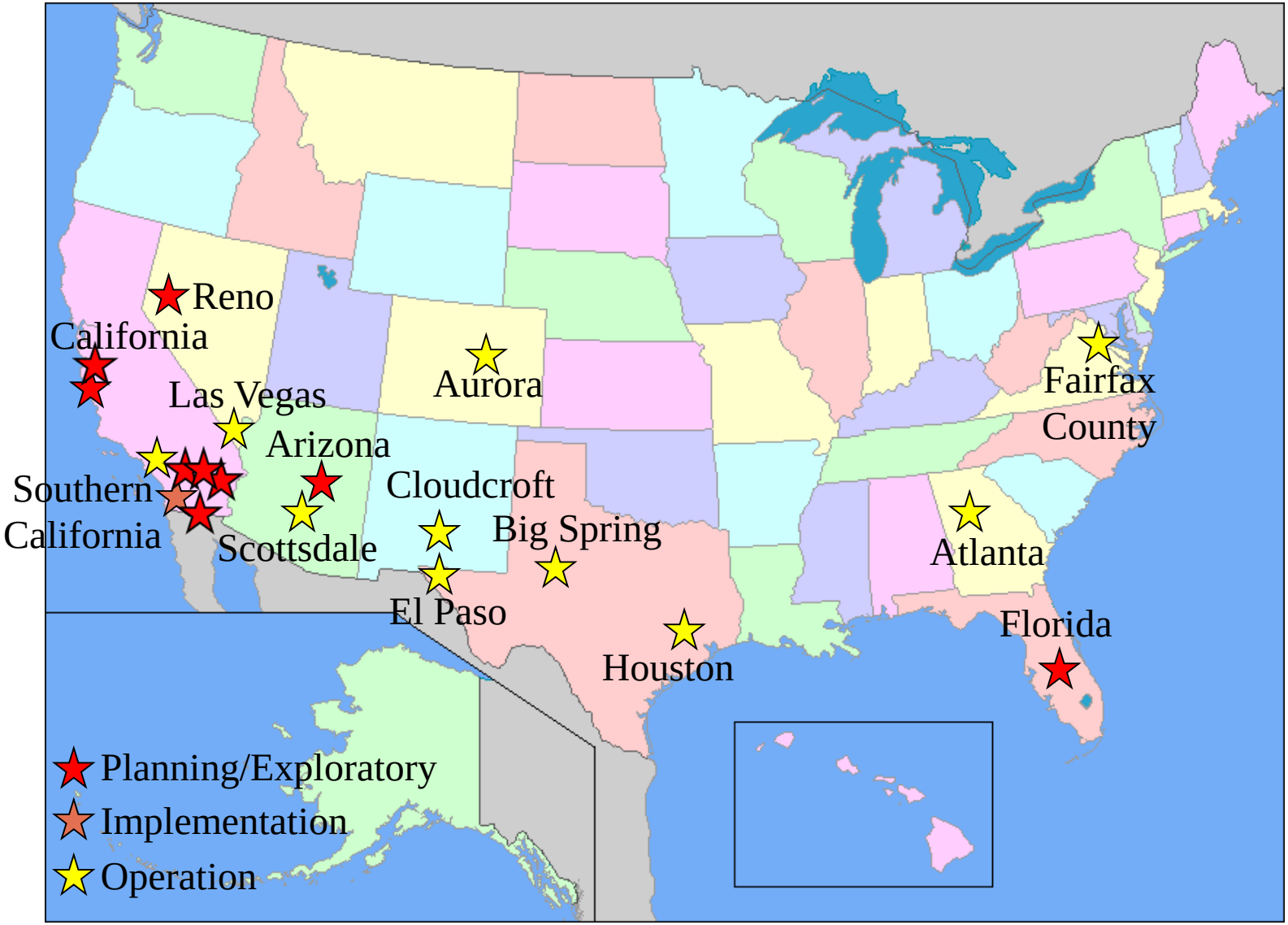
Potable Use Projects

Red = Permitted groundwater-- 197,916 AFY
Blue = Planned groundwater -- 212,816 AFY
Black = Planned surface water augmentation– 101, 510 AFY

(June 5, 2015)



Potable Reuse Benchmarks in the U.S.



Source: Daniel Gerrity

WRRF 13-02: Agency Feedback

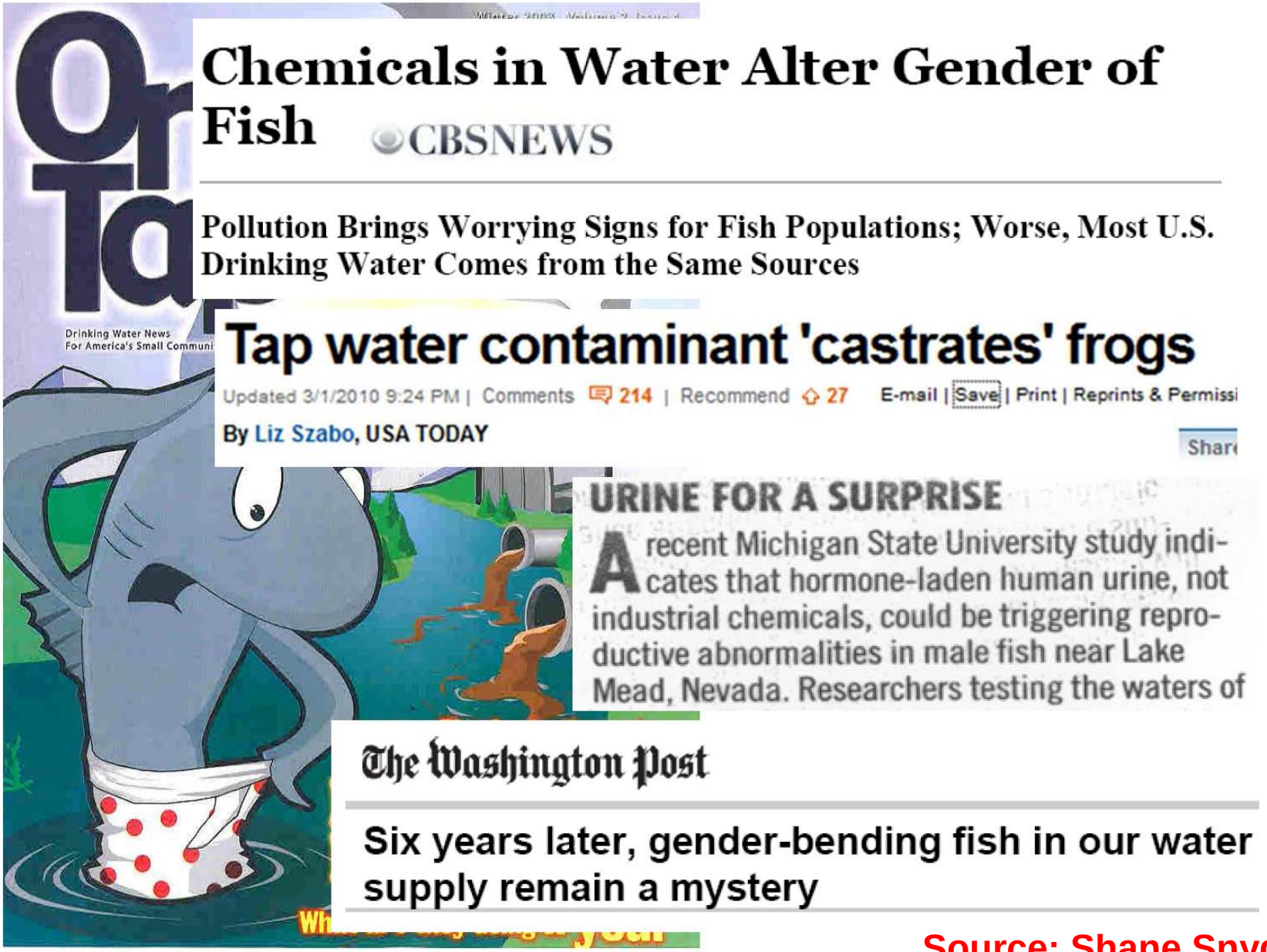
- Addressing health and safety concerns (water quality, PPCPs/CECs, exposure to diseases)
- Costs to ratepayers
- “Yuck” factor/toilet-to-tap
- Building trust with community members
- Regulations/regulators
- Inconsistent language

WRRF 13-02: Special Interest Groups

- More environmentally responsible
- Familiarity results in support/less fear
- With little knowledge: casually supportive or strongly opposed
- Brine disposal is an area of great concern
- Other concerns: safety and cost

WRRF 13-02: Research Findings

- Majority support IPR (62%)
- Initially most oppose DPR – but support goes to 56% with information about safety
- Treatment steps alone build support
- Testing/monitoring influence support
- Environmental message next most effective



Source: Shane Snyder

Table 2 - SAMPLING RESULTS FOR SODIUM AND HARDNESS

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Sodium (ppm)	2/25/03 9/14-15/04	19.49	7.1 - 37	no MCL	no PHG	Generally found in ground and surface water
Hardness (ppm)	2/25/03 9/14-15/04	115.58	48 - 190	no MCL	no PHG	Generally found in ground and surface water

Table 3 – DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)	Typical Source of Contaminant
Barium (ppm)	2/25/03 9/14-15/04	.067	ND - .2	1 ppm	2 ppm	Discharges of oil drilling wastes and from metal refineries; erosion of natural deposits
Nitrate (ppm)	2/10/04 9/14-15/04	1.87	ND - 5.6	45 as nitrate 10 as nitrogen	45 as NO_3 10 as N	Runoff and leaching from fertilizer use; leaching from septic tanks and sewage; erosion of natural deposits
Fluoride (mg/L)	2/25/03 9/14-15/04	.10	ND - .21	2.0 mg/L	1.0 mg/L	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Arsenic (ug/L)	2/25/03 9/14-15/04	7.33	ND - 22	50 ug/L	N/A	Erosion of natural deposits; runoff from orchards, glass and electronics production wastes
TTHMS (ug/L)	11/22/04	14.05	4.3 - 28.0	80 ug/L	N/A	Byproduct of drinking water chlorination
Haloacetic Acids (ug/L)	11/22/04	4.7	1.3 - 9.2	60 ug/L	N/A	Byproduct of drinking water disinfection

Table 4 - DETECTION OF CONTAMINANTS - SECONDARY DRINKING WATER STANDARD

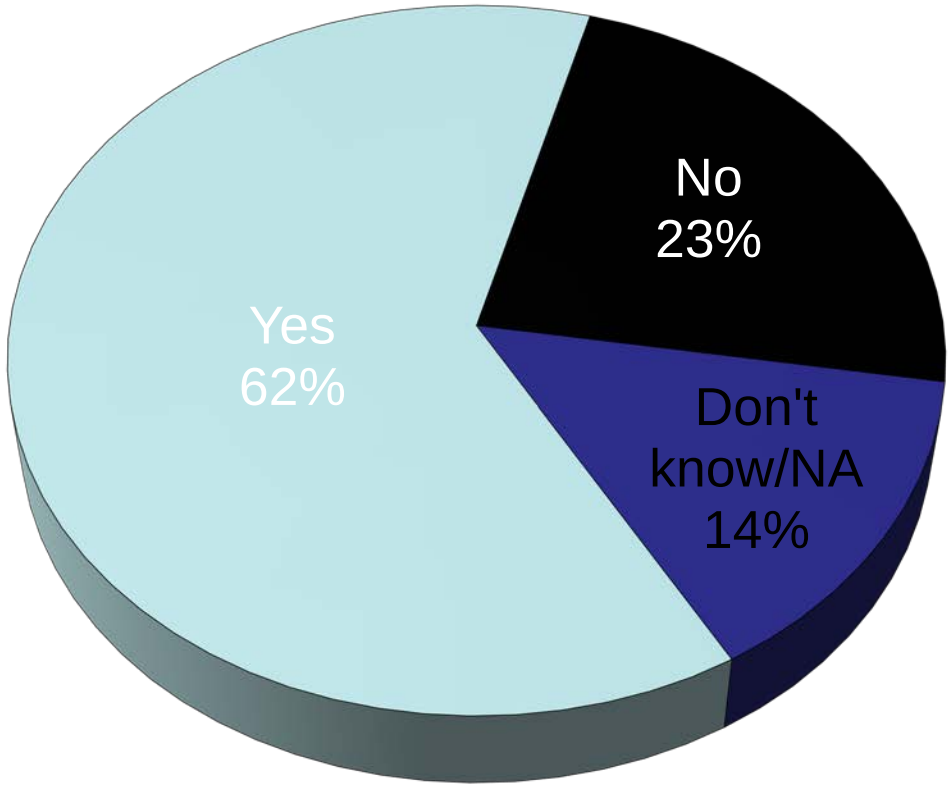
Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Range of Detections	MCL	Typical Source of Contaminant
Sulfate (mg/L)	2/25/03 9/14-15/04	10.88	2.9 - 18.0	500 mg/L	Runoff/leaching from natural deposits; industrial wastes
Chloride (mg/L)	2/25/03 9/14-15/04	13.93	5.4 - 21.0	500 mg/L	Runoff/leaching from natural deposits; seawater influence
Specific Conductance (umhos/cm)	2/25/03 9/14-15/04	339.17	230 - 420	1600 umhos/cm	Substances that form ions when in water; seawater influence
Total Dissolved Solids (mg/L)	2/25/03 9/14-15/04	203.3	120 - 260	1000 mg/L	Runoff/leaching from natural deposits
Color (units)	2/25/03 9/14-15/04	2.58	ND - 5.0	15 units	Naturally-occurring organic materials
Odor Threshold (units)	2/25/03 9/14-15/04	.33	ND - 1.0	3 units	Naturally-occurring organic materials
Turbidity (units)	2/25/03 9/15/04	.46	.02 - .85	5 units	Soil runoff

Table 5 - DETECTION OF UNREGULATED CONTAMINANTS

Chemical or Constituent (and reporting units)	Sample Date	Level Detected	Action Level
Boron (ug/L)	1/15/03, 2/25/03, 6/25/03	158.3 ug/L	1,000 ug/L

Voters are confident that it is *possible* to treat recycled water to drinking water quality standards….

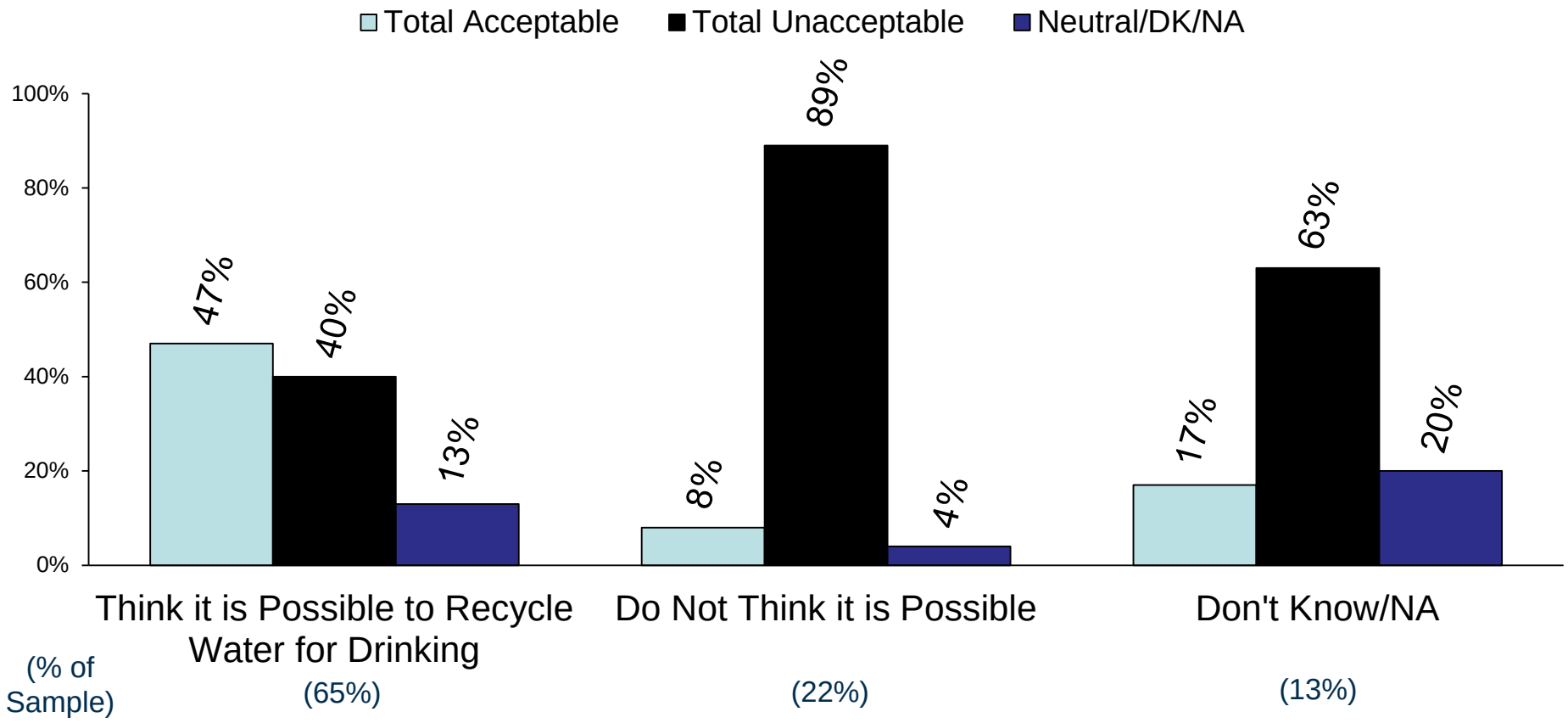
Do you believe that it is possible to further treat recycled water used for irrigation to make the water pure and safe for drinking?



Q10.

. . . but even those who believe that do not necessarily accept the idea of potable reuse.

Acceptability of Recycled Water for Drinking by Belief in its Feasibility



9e. I am going to read you a list of potential uses for recycled water. Please indicate whether you consider each item to be a completely acceptable, somewhat acceptable, somewhat unacceptable, or completely unacceptable use for recycled water. Drinking Water


2
CASHIER

Potable Reuse Challenges

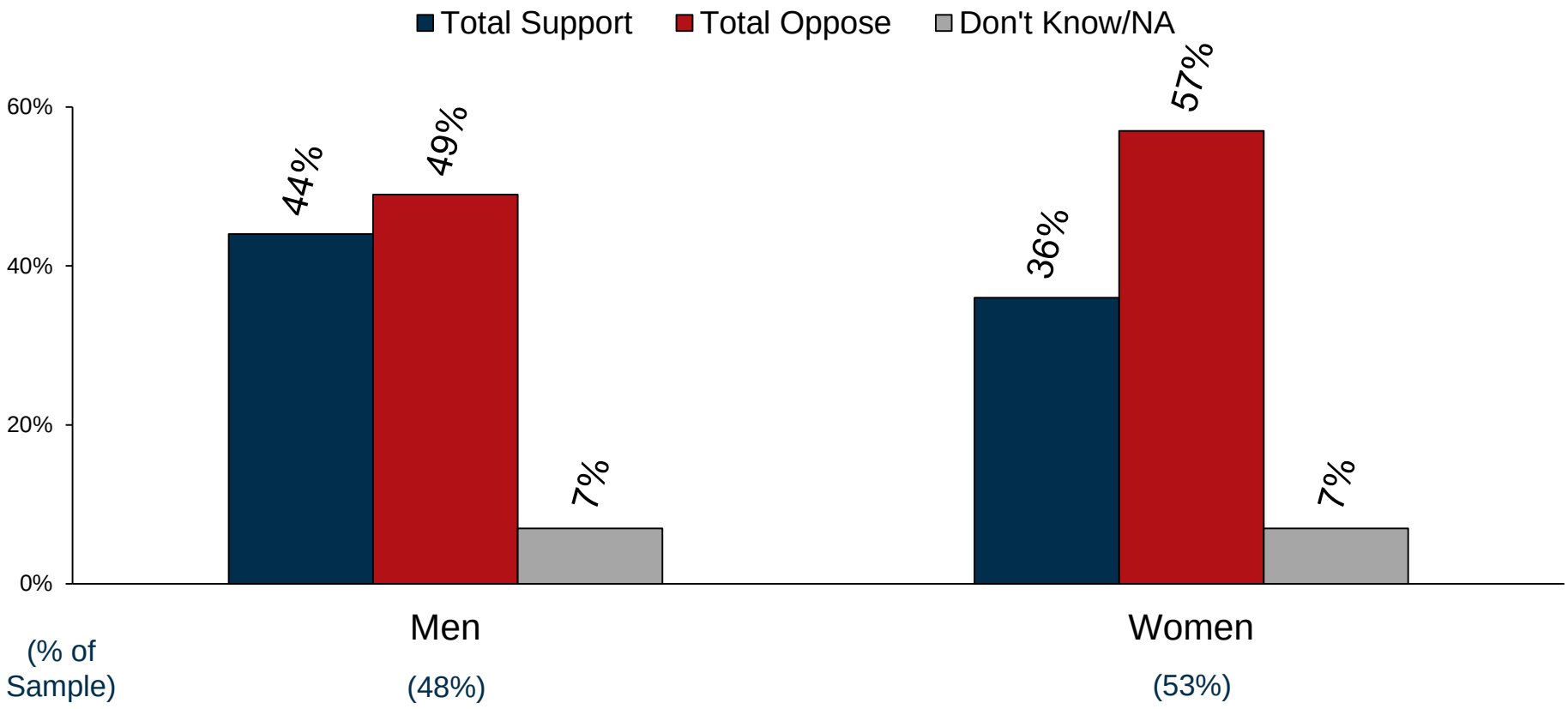
WATEREUSE ASSOCIATION

Sustainable Solutions for a Thirsty Planet®

Those Opposed

Women express a higher degree of discomfort with DPR than do men.

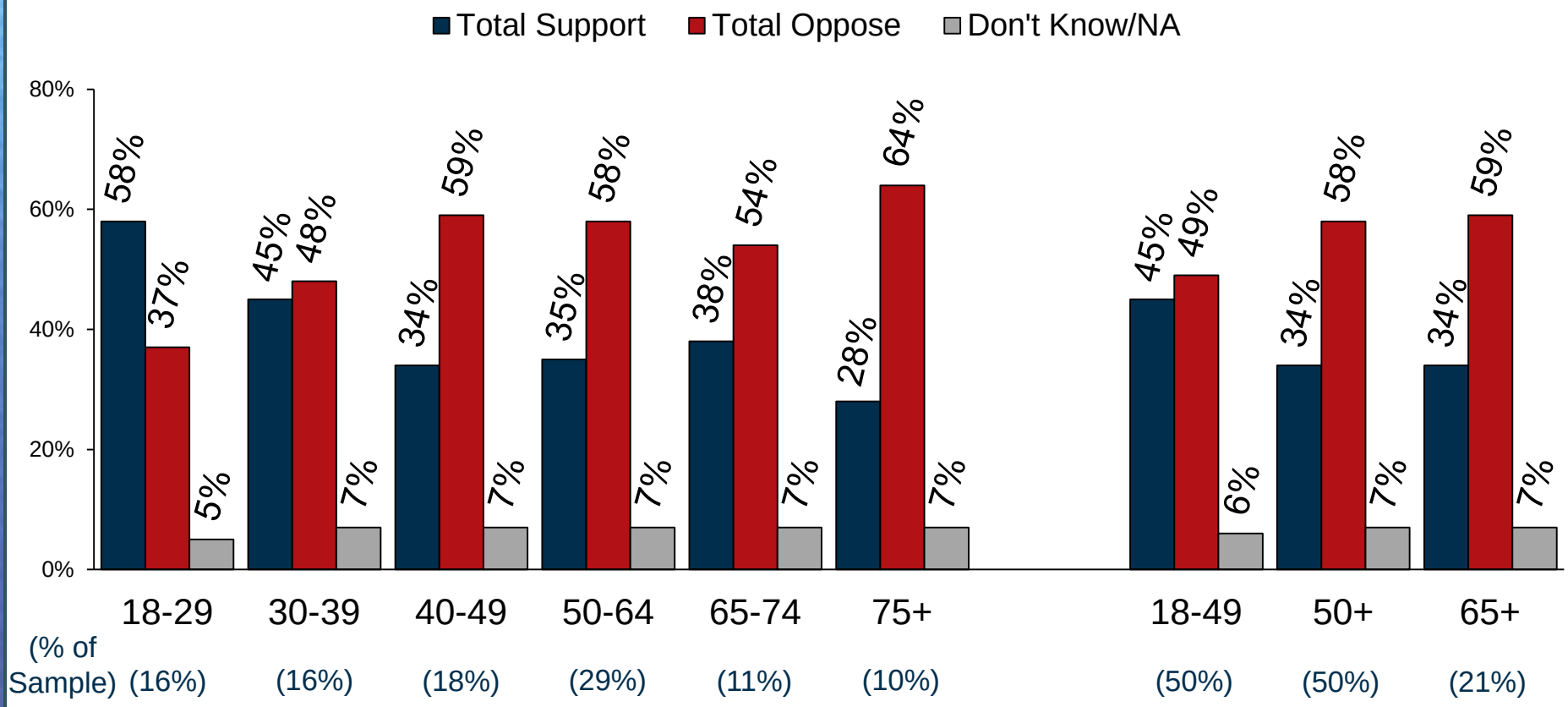
Initial DPR Support by Gender



13 Total. Would you support or oppose the direct reuse of recycled water in your community?

The youngest voters are comfortable with DPR, but support declines with age.

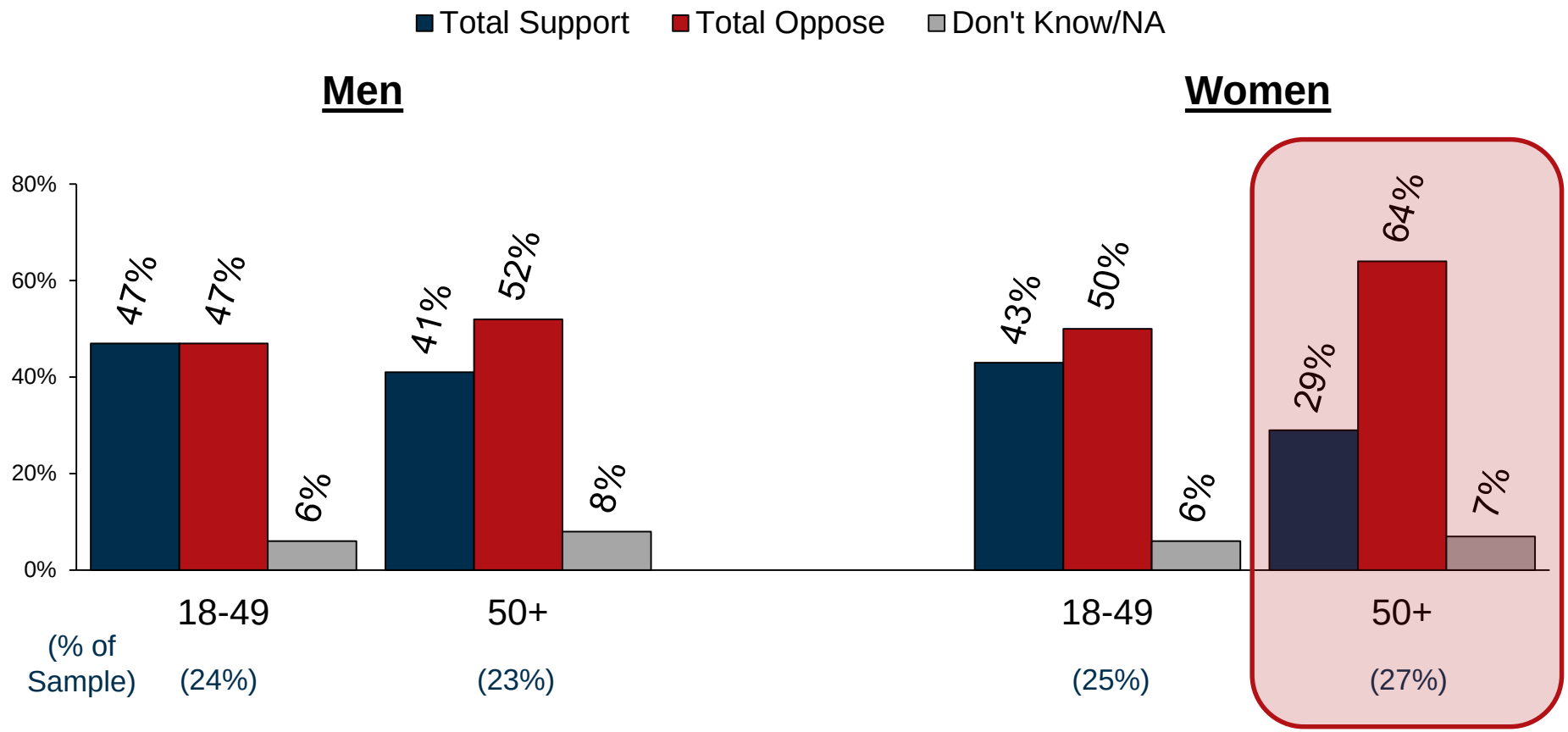
Initial DPR Support by Age



13 Total. Would you support or oppose the direct reuse of recycled water in your community?

Combining these variables, women over 50 stand out as key opponents.

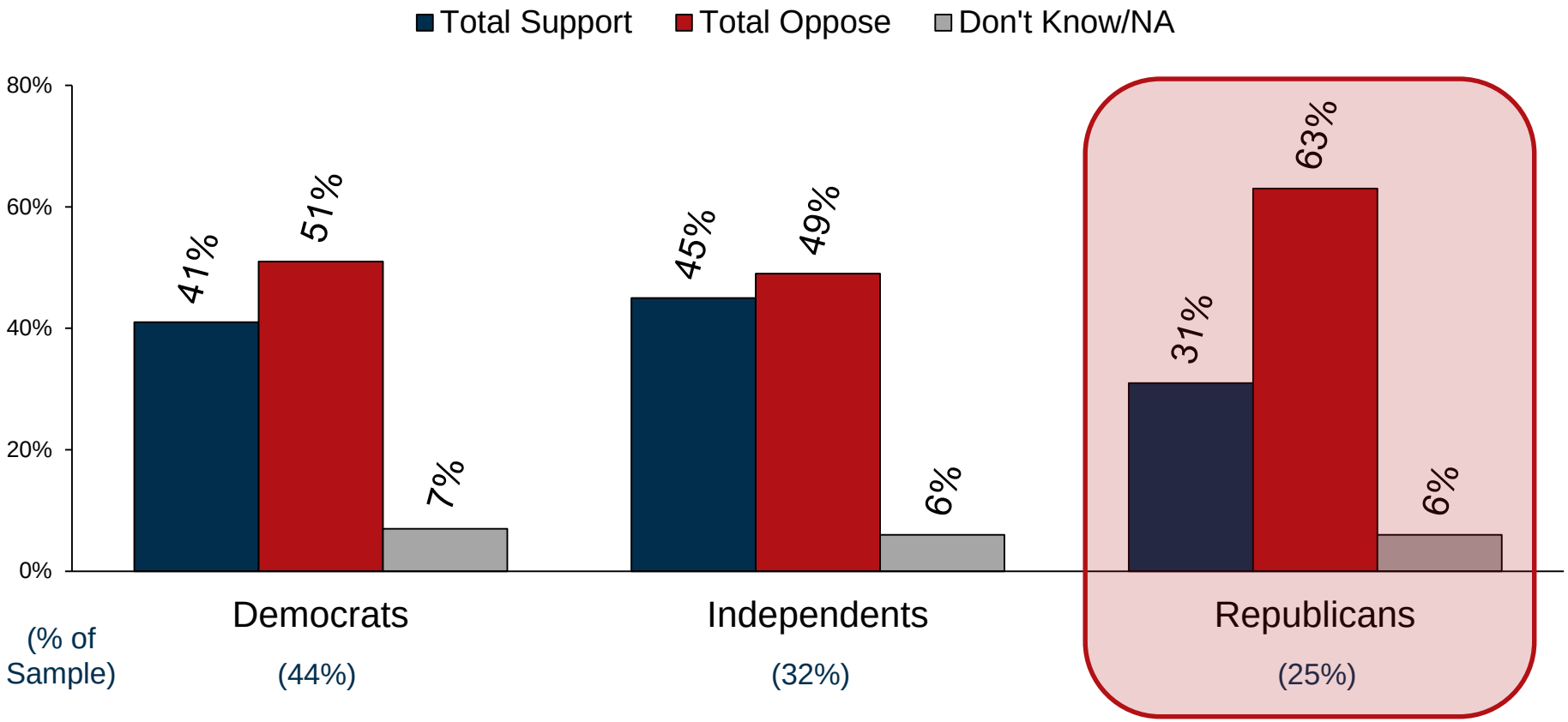
Initial DPR Support by Gender by Age



13 Total. Would you support or oppose the direct reuse of recycled water in your community?

GOP voters also have significant initial reservations.

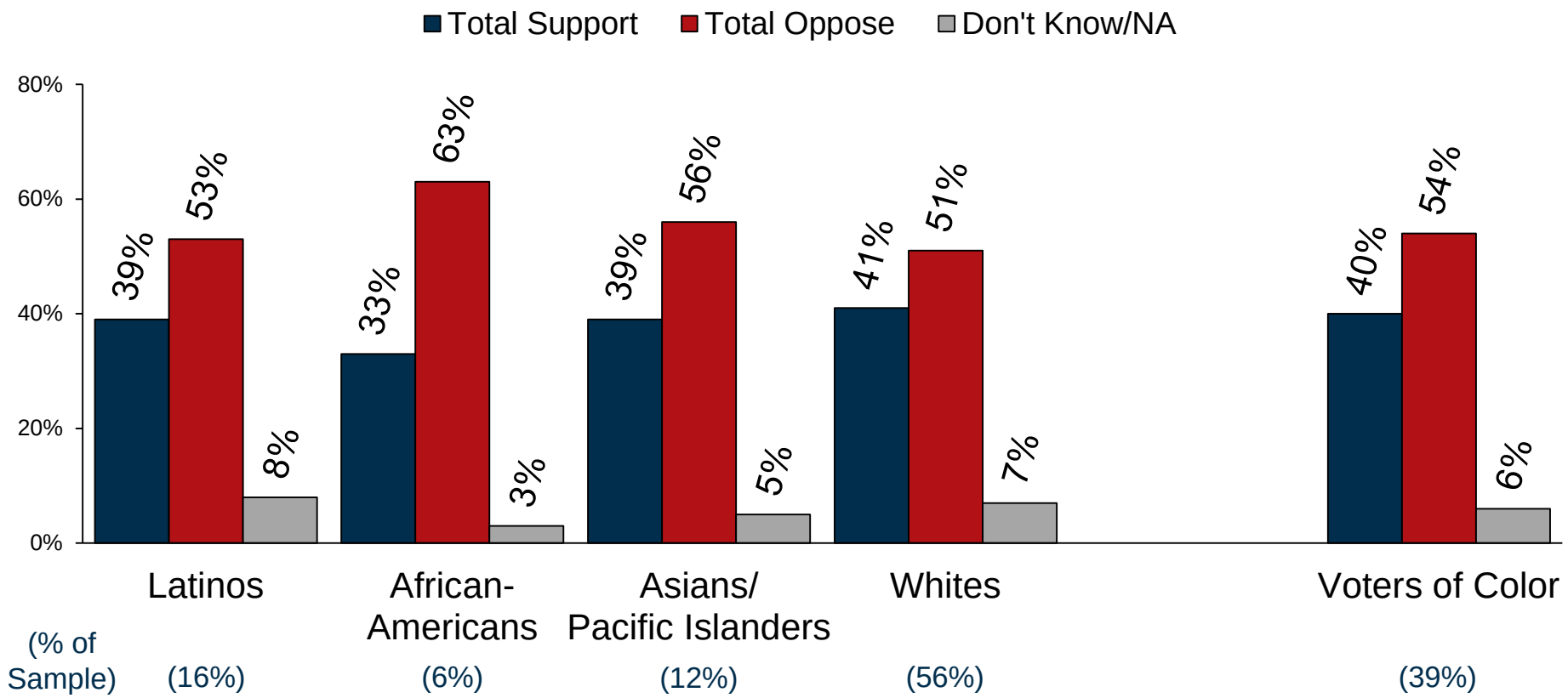
Initial DPR Support by Party



13 Total. Would you support or oppose the direct reuse of recycled water in your community?

Though a small sub-sample, African Americans have more reservations than others.

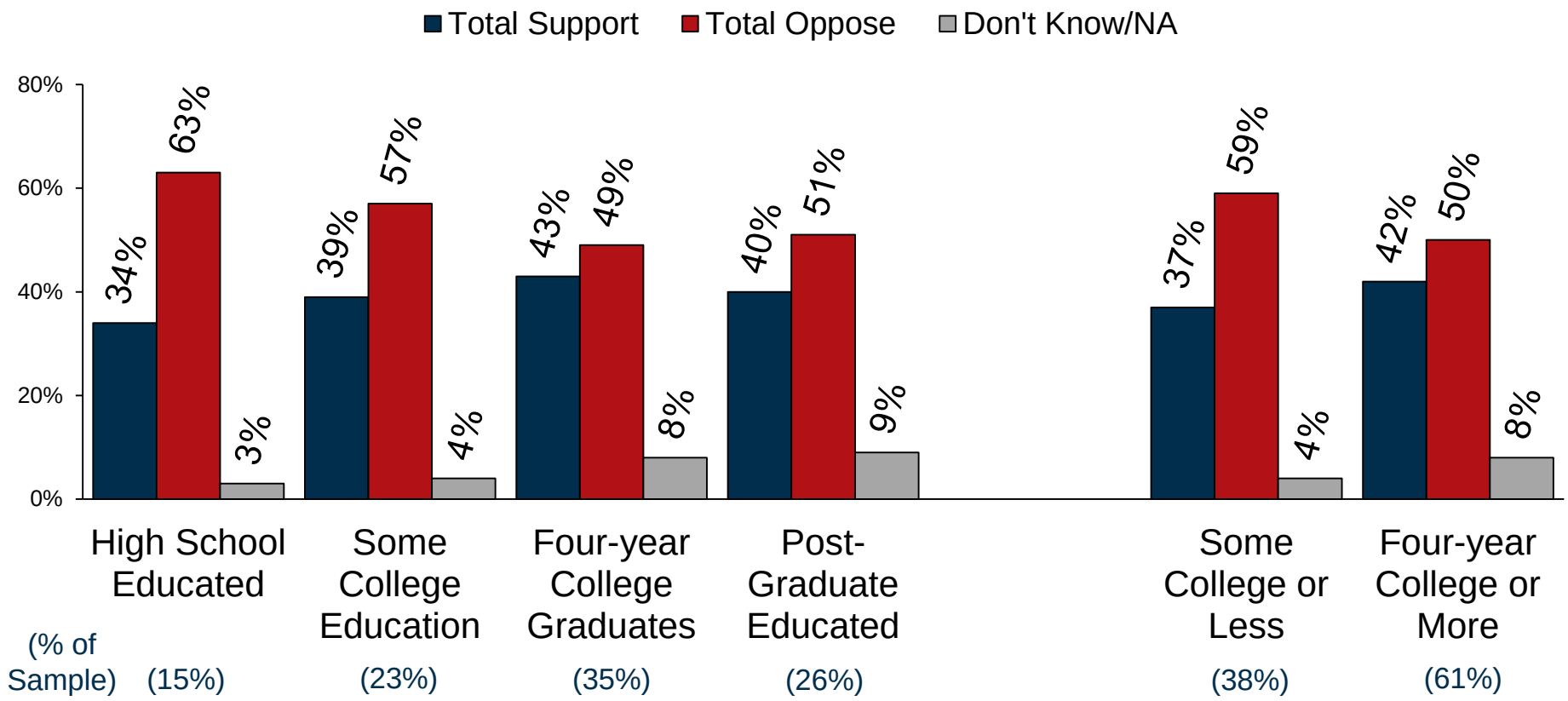
Initial DPR Support by Ethnicity



13 Total. Would you support or oppose the direct reuse of recycled water in your community?

Though support for DPR increases with education, even highly-educated voters are opposed…

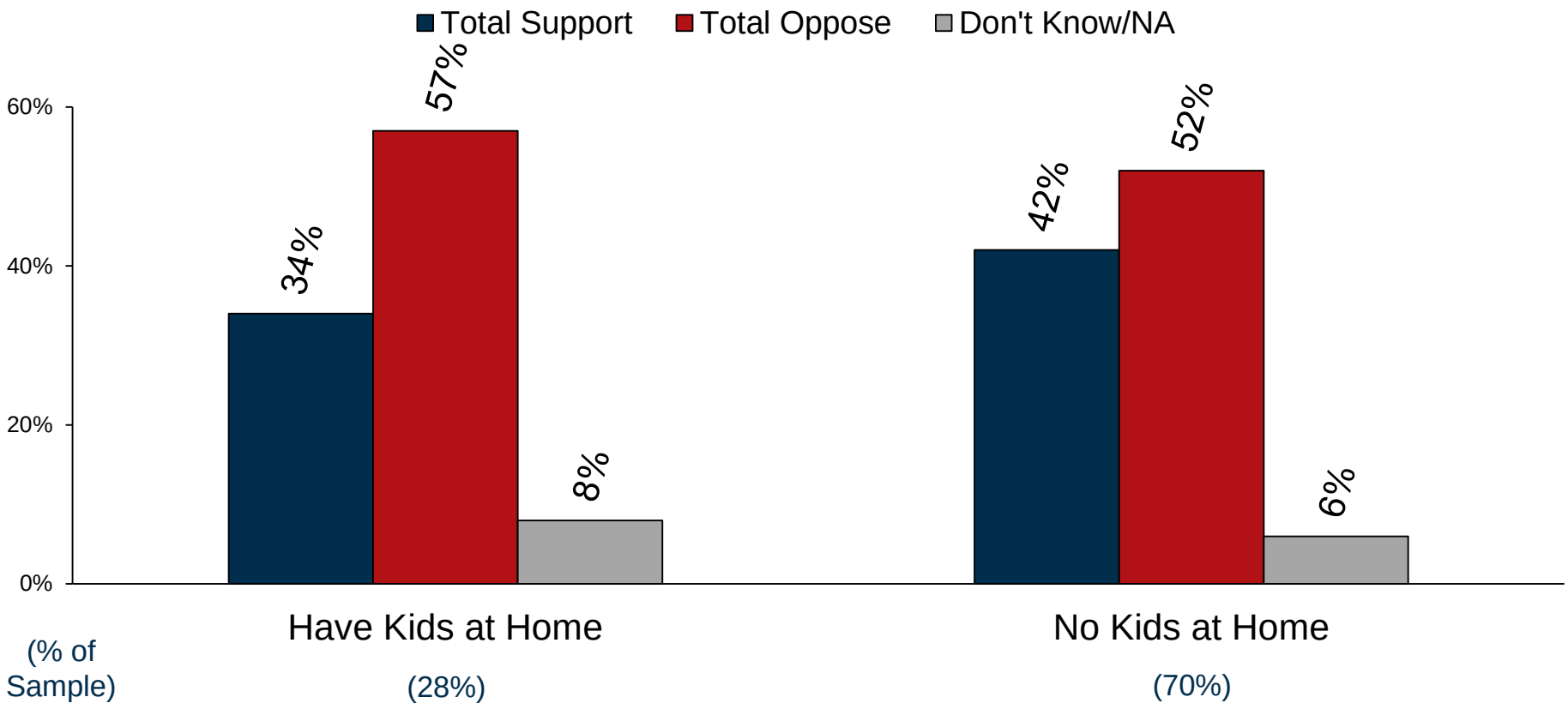
Initial DPR Support by Education



13 Total. Would you support or oppose the direct reuse of recycled water in your community?

Parents have more concerns about DPR than do those without children at home.

Initial DPR Support by Children at Home



13 Total. Would you support or oppose the direct reuse of recycled water in your community?

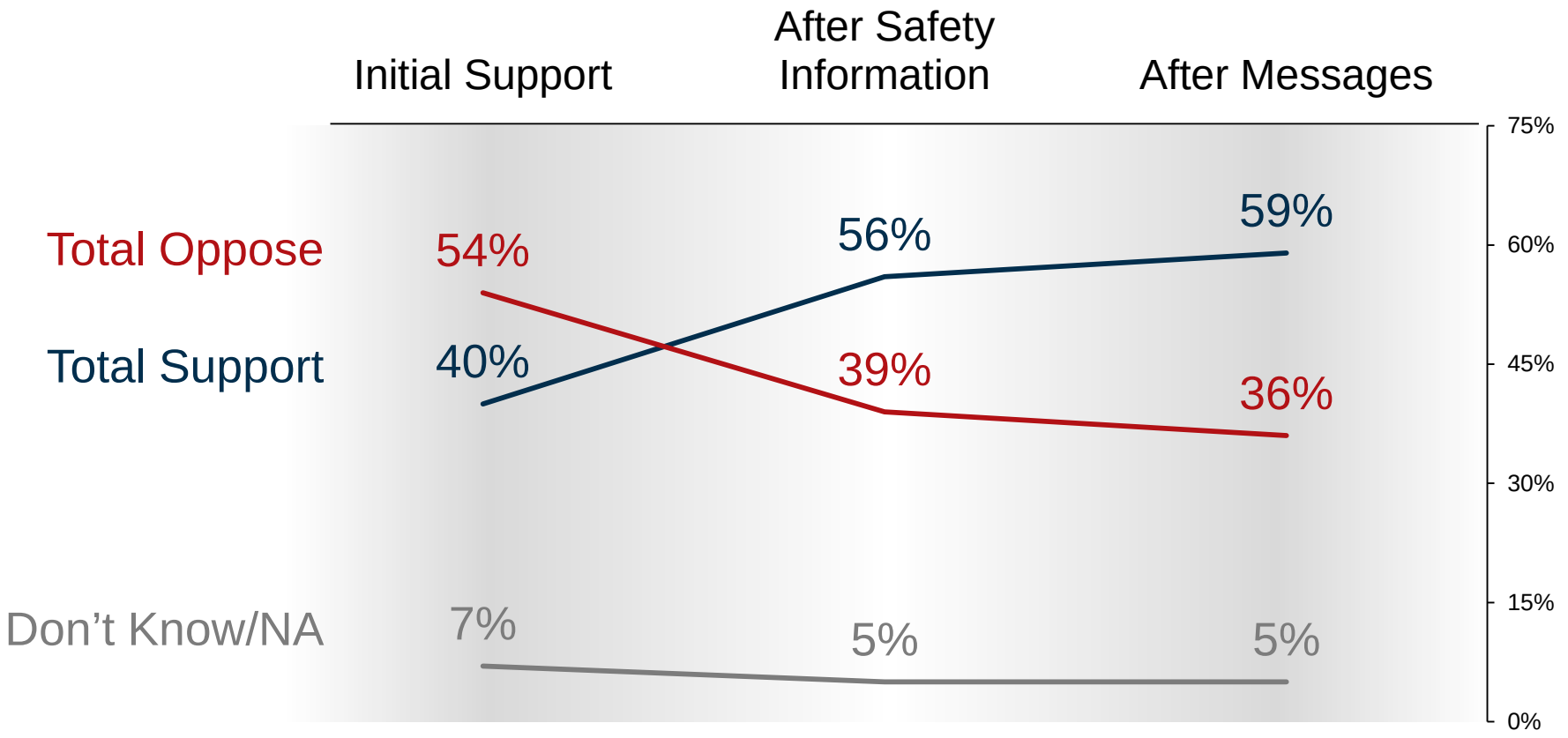
WATEREUSE ASSOCIATION

Sustainable Solutions for a Thirsty Planet®

Identifying Persuadables

Though they are initially opposed, voters quickly become more comfortable with direct potable reuse after information about safety.

Do you support or oppose direct reuse of recycled water in your community for all household purposes, including drinking?



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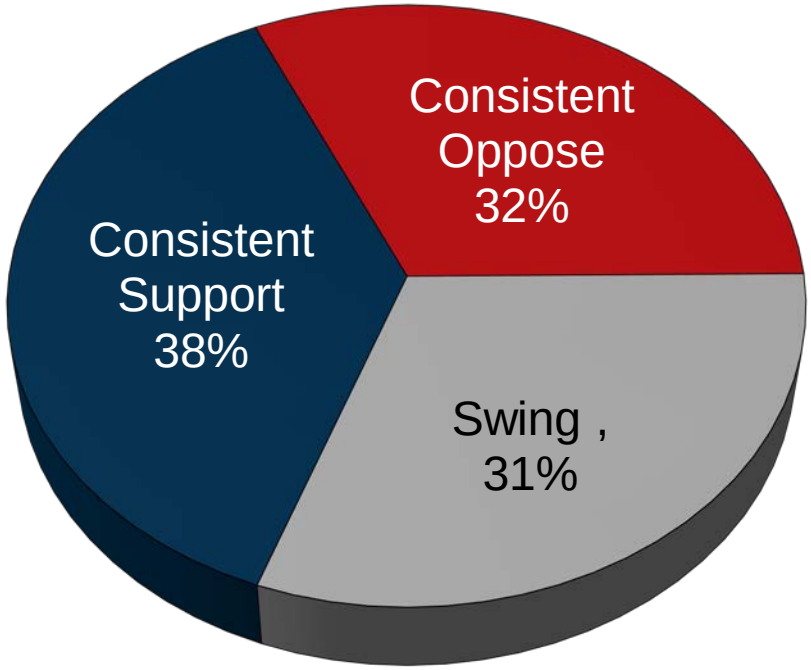
Q13 Total/Q18/Q20.

Segmenting the Population by Consistency of Support for DPR

- **Consistent Support:** Voters who consistently indicated they would support direct potable reuse of recycled water.
- **Consistent Oppose:** Voters who consistently indicated they would oppose direct potable reuse of recycled water.
- **Swing:** Voters who do not fall into any of the other categories – remaining consistently undecided or switching positions.

The following slide shows demographic groups that *disproportionately* fall into one category or the other.

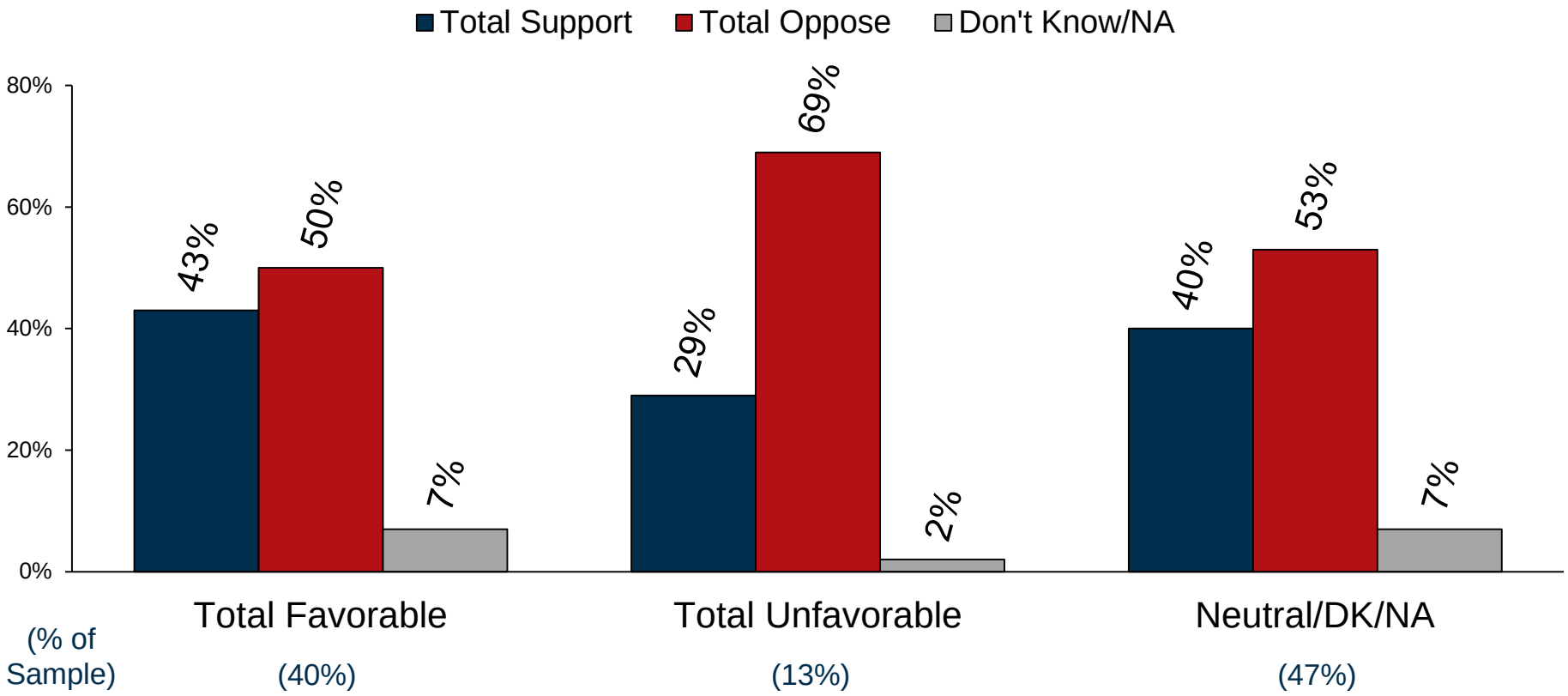


Demographic Profiles of the Segments

Consistent Support	Swing	Consistent Oppose
38% of the Electorate	***31% of the Electorate***	***32% of the Electorate***
Ages 18-29	Ages 75+	Interviewed in Spanish
Independents Ages 18-49	Women Ages 50+	African-Americans
Independent Men	Non-College Educated Women	High School Educated
College-Educated Men	Whites	Republicans
Men Ages 18-49	Santa Clara	Republicans Ages 50+
Democrats Ages 18-49	Democratic Women	Republican Women
Democratic Men	Republican Women	Republican Men
Ages 18-49	Interviewed in English	Republicans Ages 18-49
Use All/Mostly Cell Phone	Women	Women Ages 50+
Men	Ages 50+	Latinos
Interviewed on Cell Phone	College-Educated Women	Voters of Color
Renters	Ages 50-64	Use All/Mostly Landline
HH Income $50,000-$100,000	Have Children at Home	Have Children at Home
San Diego	Post-Graduate Educated	Ages 65+

Those with positive attitudes toward their water agency are more accepting of DPR.

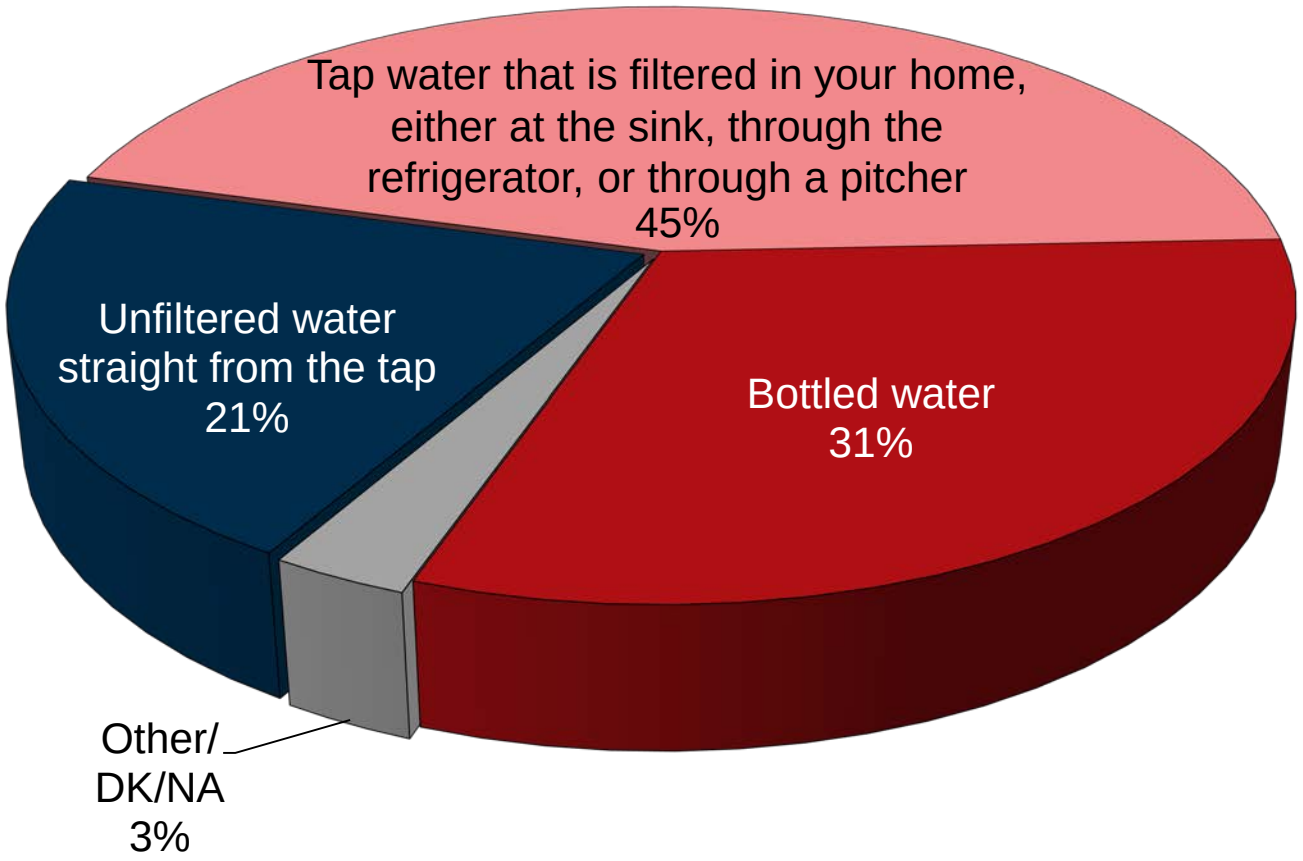
Initial DPR Support by Water Agency Favorability



13 Total. Would you support or oppose the direct reuse of recycled water in your community?

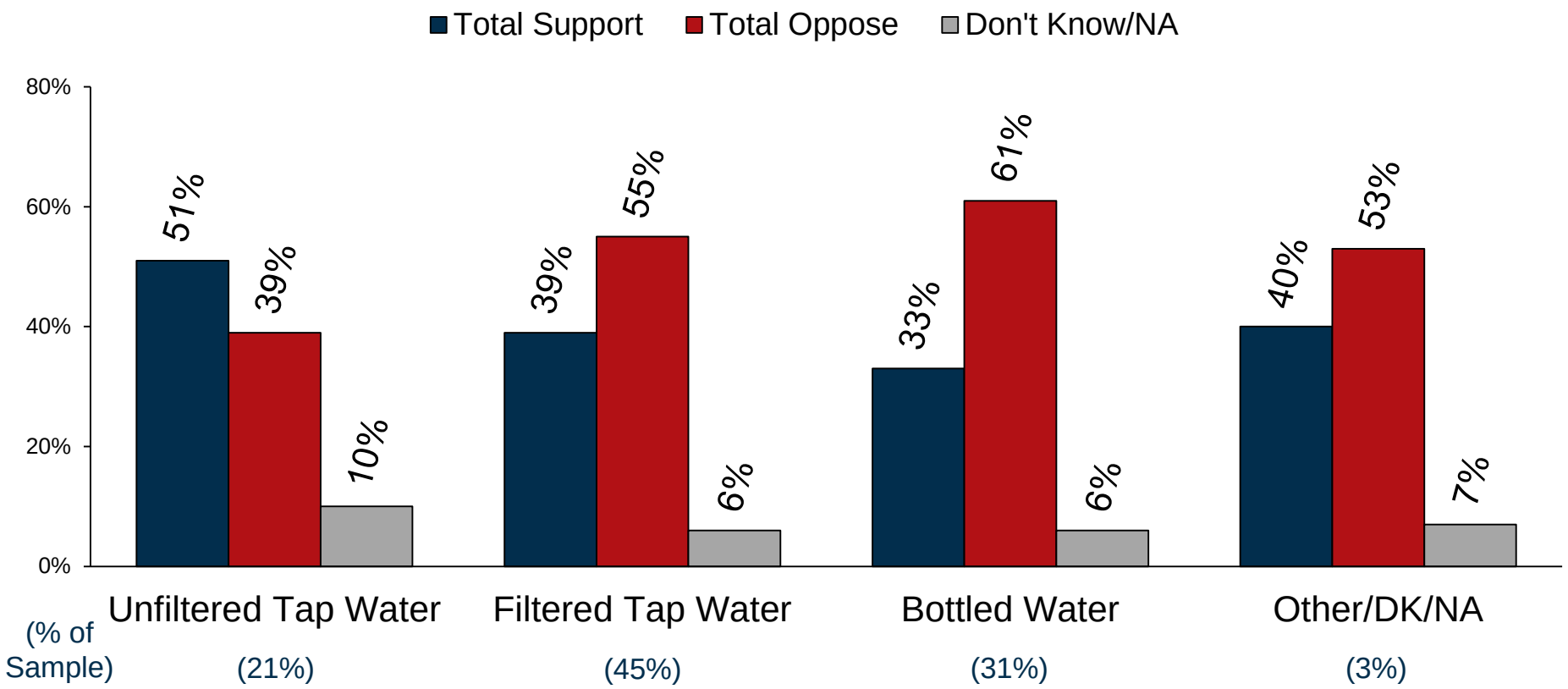
Most voters do not drink water straight from the tap.

Thinking about the water that you drink at home, do you <u>most</u> often drink?



Interestingly, those who actually drink unfiltered tap water are *more* accepting of DPR.

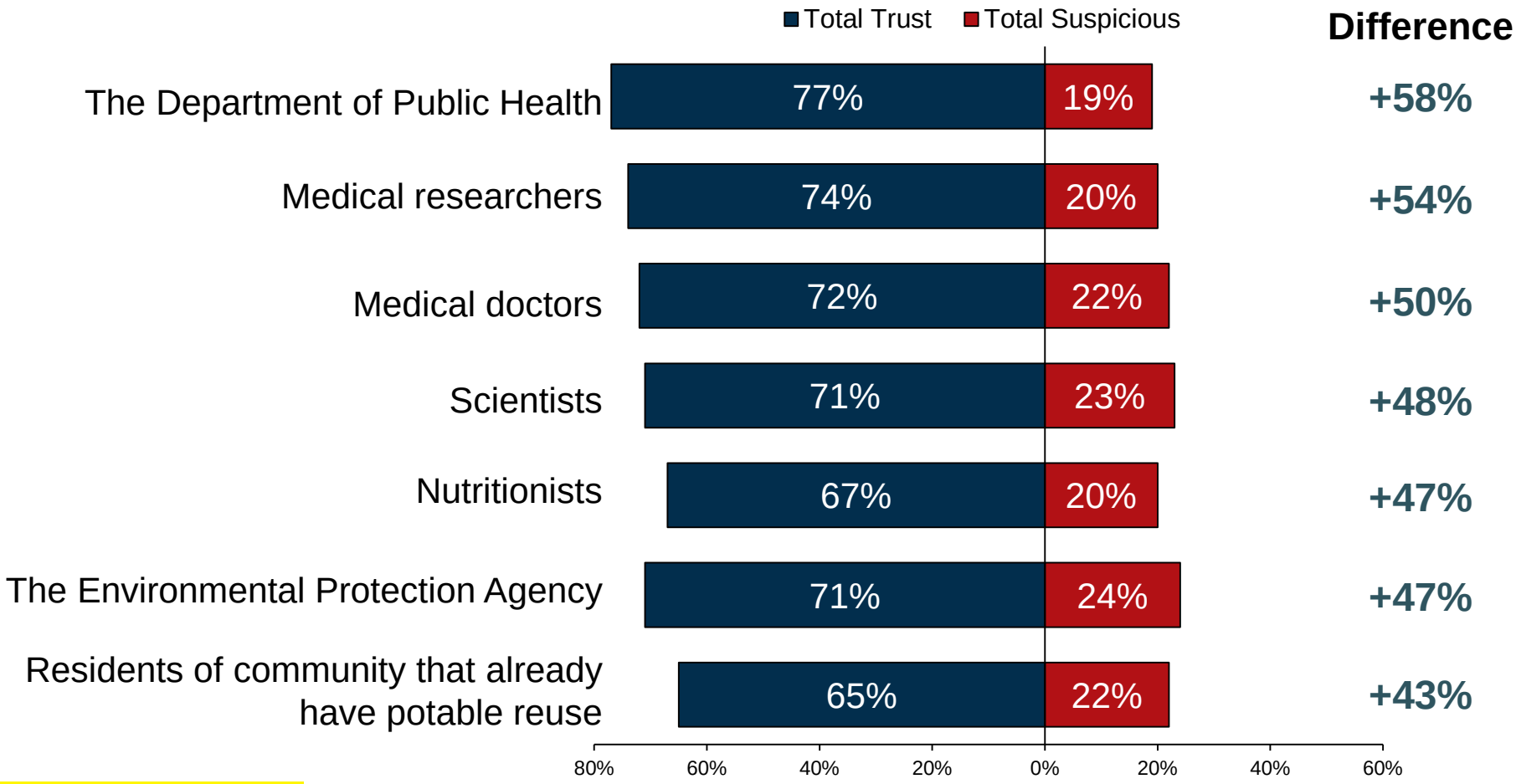
Initial DPR Support by Primary Source of Water at Home



13 Total. Would you support or oppose the direct reuse of recycled water in your community?

Top messengers are generally those with scientific expertise.

I am going to read you a list of people and organizations that may provide information about recycled water. Please tell me if you would generally trust that person's or organization's opinion on this issue, or if you would be suspicious of it.



Q22. ^Not Part of Split Sample

WRRF 13-02: Key Messages

- Potable reuse provides a safe, reliable and sustainable drinking water supply.
- Using advanced purified water is good for the environment.
- Potable reuse provides a locally controlled, drought-proof water supply.

Sample of tools being made available

Potable Reuse Summary

Commonly Referred to as Purified Water

Multiple Benefits of Purified Water

Safe, reliable water supply
Potable reuse uses proven technology to purify recycled water to provide a safe water source. Multiple treatment methods separate pollutants, producing water that is cleaner than most bottled water.

Sustainable water supply option
Potable reuse provides a sustainable and cost-competitive water supply option using less energy than many other options.

Environmental benefits
Potable reuse allows us to leave more water in rivers, lakes and streams for fish, plants and wildlife, while reducing discharges to these water bodies and the ocean.

Drought proof
Potable reuse is a drought-proof water supply. It can help ensure safe, sustainable water now and into the future.

Responsive to weather variability
Potable reuse is part of a diversified water portfolio and is independent of climate or weather.

Understanding Potable Reuse — A Key Part of Our Water Supply Solutions

Numerous regions of the world are experiencing drought and resulting lack of water supplies. While using purified water for drinking is not new, innovative projects in Australia, Texas, California and elsewhere are living examples of advanced purification practices being used to increase scarce water supplies.

Water Reuse Happens Naturally

The term "potable" water means "suitable for drinking." Water reuse, including potable reuse, happens naturally all over our planet — on rivers and water bodies everywhere. If your community is downstream from another, chances are you are reusing its water and likewise communities downstream from you are most likely reusing your water.

Reused or recycled water is water used more than one time before it passes back into the natural water cycle. It is wastewater, including sewage, which has been treated or purified to a level that allows for reuse for beneficial purposes.

Potable Reuse — Direct and Indirect

Potable reuse refers to water meeting all federal and state drinking water standards and is safe for human consumption. Potable reuse may be created by indirect potable reuse (IPR) or direct potable reuse (DPR).

To Learn More

WateReuse is a nonprofit organization wh
and efficient uses of high-quality, locally p
the betterment of society and the environ
and outreach, research, and membership.
communities are facing water supply chall
drought, depletion and contamination of
single source of supply. To learn more, visit

Excerpted from WRRF-13-02 Model Communication Plans for Increasing Awareness and Fostering Acceptance

Draft Your Message Plan

— ESSENTIAL —

Water Terminology for Potable Reuse

The messages here introduce new terminology for potable reuse — namely, **"advanced purified water"** or, **"purified water."** This reflects the preferred terminology from the focus groups and telephone surveys conducted in the WRRF-13-02 project. **The research clearly demonstrates that "potable reuse" and "direct potable reuse" are not understood by the mainstream population and that, even when explained, they do not resonate well.**

We reference direct potable reuse (DPR) and indirect potable reuse (IPR) as "potable reuse." This is fine when talking among those in your agency and industry, but the public neither recognizes nor understands the term — we will substitute with "purified water" from here forward.

Get Ready for Public Engagement

Carefully craft your community's project story

At a minimum, answer the following questions about potable reuse:

1. What is potable reuse?
2. Where does it fit in our water supply portfolio?
3. Why is the potable reuse project needed?
4. What purpose will it serve?
5. How safe is the water?
6. How will it be monitored to ensure safety?
7. How much will it cost?
8. When will it be implemented?

Messaging Tips

Develop key messages in terms understandable to a non-technical audience and avoid jargon.

can help improve technological literacy.

Effective messaging is not enough. According to by Dr. Paul Slovic in *The Feeling of Risk: New Perspectives on Risk Perception*, 2010, information must also convey emotion or feeling to be meaningful.

Goals of Messaging

The goal of messages included here is to provide coordinated, consistent, effective communication ideas about the role and importance of potable reuse that can be uniformly used with a variety of stakeholders, from children to parents and health professionals to business interests. There are three basic objectives:

- to identify messages that help to create public understanding of water use, treatment, and potable reuse in water cycle context;
- establish messages in the context of your water agency's mission;

Key Messages

Top Three Key Messages

Potable reuse provides a safe, reliable and sustainable drinking water supply.

Using advanced purified water is good for the environment.

Potable reuse provides a locally controlled, drought-proof water supply.

Key Messages Explained

Potable reuse, or purified water as described below, uses advanced, multi-stage treatment to provide a safe, reliable and sustainable drinking water supply.

Here are some tested and useful message bullets :

- Proven engineered treatment processes are used to purify water to a level that is safe to drink
- Purifying water is a "multi-barrier process" designed to separate water from pollutants.
- There are various treatment processes to accomplish this objective.
- Purified water is tested, in real-time, with online sensors and will be strictly monitored by the Department of Health.
- Purified water will comply with or exceed strict state and federal drinking water standards.
- The purification process produces water that is more pure than most bottled waters.
- Purified water is currently used to supplement drinking water in many communities in the United States and around the world. There have been no problems from using purified water to augment drinking water supplies.

At times it may be advantageous to include a more detailed description of the advanced technological processes used to purify recycled water. In such instances, the following language is an example of how to describe the microfiltration/reverse osmosis/ultraviolet light treatment train:

- The water first goes through microfiltration, a pretreatment process, where water is pumped through tubes filled with tiny membranes. Each membrane is made up of hollow fibers, perforated with holes 1/300th the width of a human hair! As the water moves through the tubes, solids and bacteria are caught in the fibers.
- The water then goes through reverse osmosis where it's forced through membranes that remove salt and microorganisms, including viruses, bacteria and most chemicals of emerging concern.
- Now the water is very clean, but one more step ensures its safety: exposing the water to ultraviolet light to cause any remaining organic molecules to break down.

Using advanced purified water is good for the environment.

The more recycled water we use for whatever purpose we use it, the less we have to take out

Communication and Outreach Tools

Building Trust — Why Tools are Needed

Since public acceptance of potable reuse is one of the primary challenges facing this source of water supply, developing clear and informative tools will help gain acceptance and build trust in your community for your project.

Develop Informational Materials

The following are strategies for developing informational materials:

- Make available easy-to-understand materials highlighting key messages appropriate for target audiences and provide them in print and electronic formats; consider using QR codes and social media platform strategies;
- Develop materials tailored to the interests of specific audiences;
- Ensure all materials are responsive to multicultural, multiethnic, and age-specific audiences; translate key items into other languages as needed;
- Consistently update all materials (both electronic and print) to make sure designated audiences, including agency employees, have timely and accurate materials;
- Link to other places that provide information about purified water projects.

Menu of Informational Materials and Tools

Collaterals

- Purified water fact sheet
- Purified water FAQ
- Pocket brochure
- Bill inserts
- Posters and banners
- Materials for children
- White papers
- Template articles

Web and Digital

- Website
- Presentations
- E-newsletter
- Program DVD
- Quarterly videos

Libraries and Databases

- Graphics "catalog"
- Quote/Cite bank
- Mailing list
- Centralized internal information station

Other

- Learning/visitor's center at the advanced water treatment facility
- Key messages card
- Supporter/comment cards

Speakers Bureau

- Detailed information on *Strategies & Activities for Creating Your Speakers Bureau* are available at www.waterreuse.

For more detailed and helpful information on each of these bulleted items see section 5.10 of the WRRF 13-02 report.

Sample Timeline on reverse

Spring 2015 – Water Reuse Solutions

WATEREUSE

Understanding Potable Reuse

A Key Part of Our Water Supply Solutions

Potable Reuse Education — Sharing Solutions to Water Supply Challenges

Numerous regions of the world are experiencing drought and resulting lack of water supplies. While using purified water for drinking is not new, innovative projects in Australia, Texas, California and elsewhere are currently providing advanced water purification to increase water supplies. These projects can serve as models for other states and municipalities.

WateReuse provides countries, states, municipalities and water districts with information and tools that can lead to establishment of Direct Potable Reuse (DPR) or Indirect Potable Reuse (IPR) projects that are both sustainable and protective of public health. As new water supply options, DPR projects treat wastewater, including sewer water, that has been cleaned for return to the environment and actually further clean or purify it to meet all drinking water standards. This purified water is regulated by water quality and health officials and implemented by water utilities in a safe, cost-effective and environmentally responsible manner. Uses may include purifying water to distilled quality for industrial processes, as well as for drinking. IPR projects add the step of passing the highly treated water through an environmental buffer, such as a groundwater aquifer or surface water reservoir.

Since 2012, two Texas cities (see page 3) have been operating the nation's first DPR plants. Likewise, in 2012, California has embarked on an awareness effort to help establish DPR as a water supply option. The ongoing effort is to address the regulatory, scientific, technical, and attitudinal issues surrounding potable reuse projects. This is being accomplished through funding of independent and rigorous scientific research and communicating findings and data through public outreach and awareness programs.

WateReuse is sharing solutions and best practices from 26 independent research projects, made with investments of over $11.5 million, to evaluate and demonstrate the feasibility of DPR. The research revolves around developing a robust monitoring and redundant water purification system. These projects will help inform other communities and governments moving forward when considering a range of potable reuse projects.

Wichita Falls' DPR Project went online July 9, 2014 following extensive testing by the City of Wichita Falls and the Texas Commission on Environmental Quality (TCEQ). Shown here is one of their clarifers.

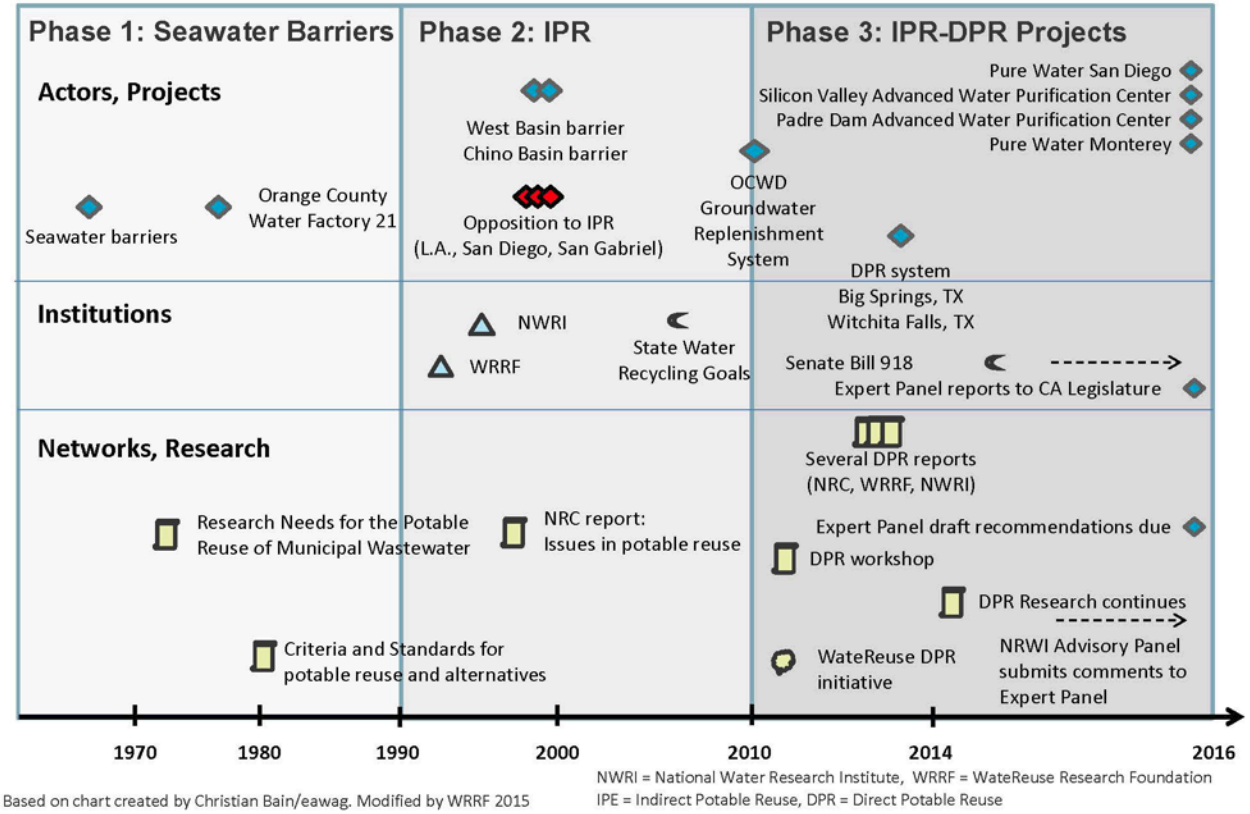
What is Potable Reuse?

Potable reuse refers to purified water you can drink. It's highly treated to meet or exceed federal and state drinking water standards and is safe for human consumption. How potable reused water is delivered determines if it is called Indirect Potable Reuse (IPR) or Direct Potable Reuse (DPR).

Indirect Potable Reuse means the water is delivered to you indirectly. After it is purified, the reused water blends with other supplies and/or sits a while in some sort of man-made or natural storage before it gets delivered to a pipeline that leads to a drinking water plant or distribution system. That storage could be a groundwater basin or a surface water reservoir.

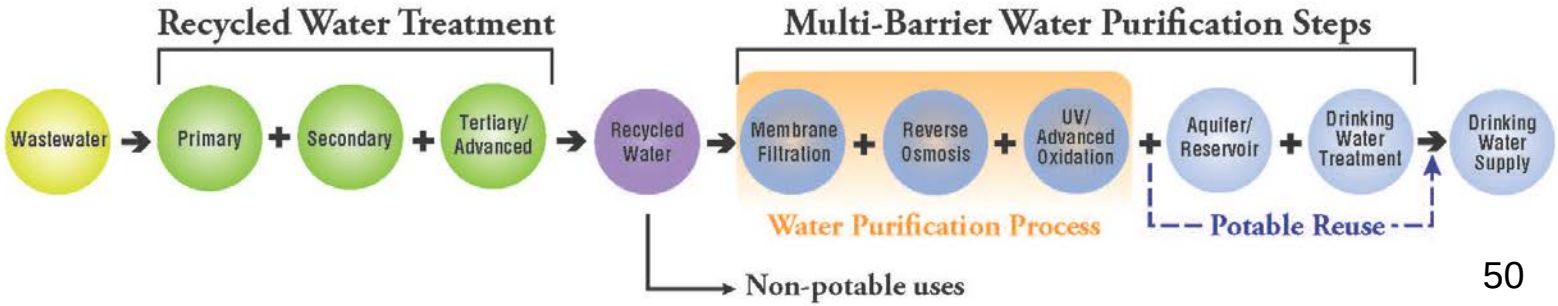
Direct Potable Reuse means the purified water is put directly into pipelines that go to a drinking water plant or distribution system. Direct potable reuse may occur with or without "engineered storage" such as underground or above ground tanks.

History of Potable Reuse in California



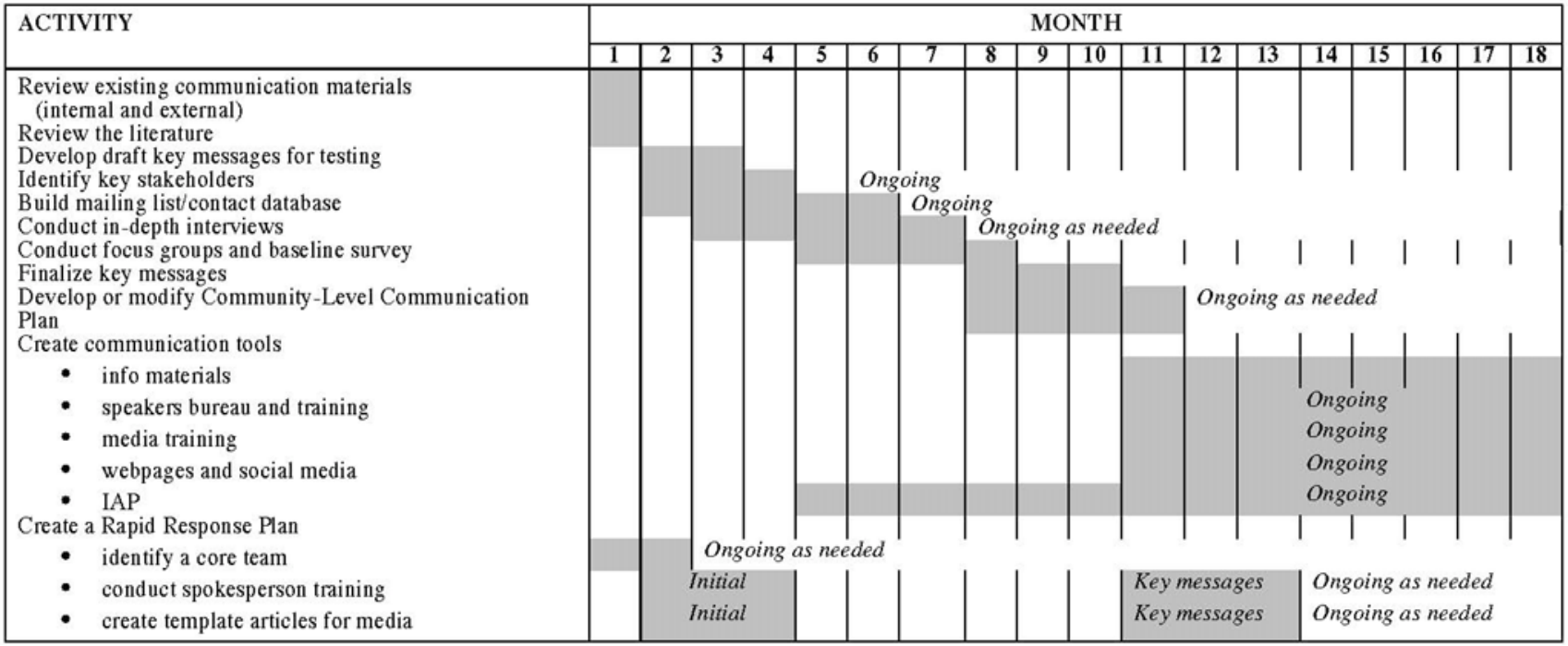
Based on chart created by Christian Bain/eawag. Modified by WRRF 2015

NWRI = National Water Research Institute, WRRF = WateReuse Research Foundation
IPE = Indirect Potable Reuse, DPR = Direct Potable Reuse



Key Plan Element Prioritization and Timeline

An example of a timeline you can adapt for your own public outreach planning.



Opinion Leader Outreach

Goals of Opinion Leader Outreach

- establish or enhance the relationship between the opinion leader and the agency;
- build awareness, trust, and confidence in purified water treatment technology processes;
- inform leaders of water supply demands and shortages and how purified water can meet demands;
- listen to these stakeholders and be responsive to concerns related to purified water project implementation;
- secure written support of purified water projects from strategic community and opinion leaders.

Opinion leaders influence attitudes, beliefs, motivations, and behaviors of others. They influence opinions by raising awareness, persuading others, establishing or reinforcing norms, and leveraging resources. They usually have high visibility and a defined constituency. Opinion leader outreach builds strong relationships and garners third-party involvement in disseminating information to a broader network.

Identifying Opinion Leaders

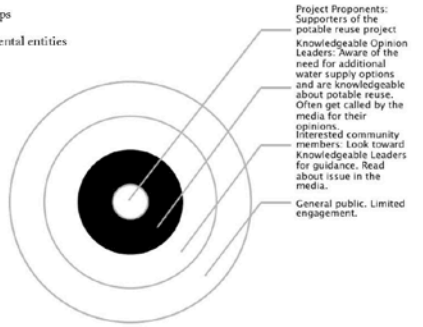
Each community will have its own unique set of influencers, which will likely change and grow as the project progresses. Keeping an accurate database of opinion leaders, contact information, preferred communication methods, and other pertinent notes is imperative to a successful outreach program.

It's important to identify the leaders and their staff. Characteristics include: t appointed or elected position, values and traits, competence or expertise, and social position. Opinion leaders can include, but are not limited to, the following (in alphabetical order):

- academic/education leaders
- business organizations
- civic groups
- environmental entities
- media
- medical, public health, and water quality experts
- multicultural and faith-based leaders and groups these leaders/groups may be found within the other audiences listed)
- state and local elected officials and their staff

Relationship of opinion leaders to other target audiences

The graphic below illustrates the opinion leaders in relation to other community members. As a core group, from which information spreads to other community members, opinion leaders must be made aware of the need to increase water supply sources and should be knowledgeable about purified water as an option.



Rapid Response Plan

When unexpected events occur, the agency must be prepared to respond quickly. During emergency and unplanned events, it is the project team's responsibility to communicate promptly, effectively, and efficiently with affected internal and external stakeholder groups. If the team is prepared and executes the plan appropriately, consistently, and often, vital information will be provided and lasting effects on the organization's reputation and credibility will be positive.

This Rapid Response Plan is intended to be a living document that provides guidelines and recommendations for how the agency should work to provide a consistent and prompt communication response.

Strategy

The strategy behind the Rapid

Rapid Response Plan Activities

Rapid Response Team
Identify a core team within the agency that is designated as the rapid response team. This team should include the board chair, the CEO, legal counsel, operations staff, communication staff, and customer service staff. This group should meet periodically to review potential scenarios and strategize responses. When a crisis occurs, convene the team immediately to develop a specific response.

Message Development
Develop three key messages in response to the situation or event and share those with key staff and board members. These are the three messages that should be included in all written and verbal communication about the event.

Employee Communication
Employees are one of the most important stakeholders in a crisis or rapid response situation, and they are often forgotten because of other pressing issues, such as responding to media inquiries and ensuring the safety of the agency's customers. An all-employee e-mail should be developed and distributed with the details of the event and the agency's response. This communication should also include the contact information for someone at the agency who can answer employee questions. This needs to be the assigned responsibility of a

"Dark" web pages and Public Notices
Create web pages and public notices for potential crisis situations and keep them ready to upload/print in the event of an actual crisis.

Phone Lists
Keep up-to-date phone lists (both hard and electronic versions) with home and cell phone numbers of board members, agency management and elected officials, and top staff from other local agencies.

Op-eds and Letters to the Editor
Address inaccurate news coverage by writing letters to the editor and submitting op-ed articles stating the agency's position. Always include appropriate agency messages to leverage any opportunity for providing correct information about potable reuse.

Media Outreach
Identify one spokesperson or select spokespeople for the agency staff (the board members will likely be contacted and speak for themselves) and ensure that all employees know to direct any inquiries to that designated person or persons. The identified spokesperson/people should be aware of the key messages developed and should incorporate them as they respond to media questions.

Social Media

Public Acceptance:
How is it shaping up for Potable Reuse projects?

Mark Millan

Phone: 707.836.0300

Email: Millan@DataInstincts.com

Public Perceptions

- Any new water project can face opposition
- Robust public outreach programs:
  - Increase community awareness
  - Build trust
  - Contribute to understanding and support

Opposition Happens

- Opposition CAN'T be totally controlled
- Opposition CAN develop at any time
- Opposition may not be able to be neutralized

You need a good "insurance policy" – an effective outreach program.

Model Communication Plans

- Basic approach: Listen, Learn, Adapt
- Local Community Level
  - Customize to meet ***your*** specific needs
  - Tailor questions to ***your*** demographics
- State Level
  - Aimed at legislators/staff

Community Level Communication Plan

- Public acceptance primary challenge
- Build awareness: need, benefits, safety, high quality water
- Messaging, terminology
- Audience-driven; opinion leader focus
- Targets, strategies, activities, measurable objectives

Three Key Guidelines

- Define purpose/need
- Identify range of community interests, understand concerns and issues
- Outreach must be consistent and sustained or no one will remember the program/project

Consistency Counts

- Orange County's GWRS is a model
  - Leadership at board and staff level
  - Research-based messages
  - Effective multi-cultural outreach
  - Frequent briefings: policy makers/media
  - Comprehensive, sustained outreach program

"We talked to anyone who would listen to us!"

Outreach Lessons Learned

- Ensure water agency is project lead
- Emphasize importance/need for **all** local water supply sources
- Correct inaccuracies immediately
- Conduct repeated policy maker briefings
- Identify/work with strong third-party allies

More Outreach Lessons

- Emphasize the urban water cycle!
- Terminology matters
- Know your community
- Tours/tasting opportunities
- Media outreach/social media
- “Go to them” vs. “Come to us”