

SURVEY OF PUBLIC PERCEPTIONS REGARDING WATER REUSE IN AZ: CHALLENGES AND OPPORTUNITIES



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CHALLENGES FOR OPTIMIZATION OF WATER REUSE

The Triple Bottom Line

1. **Economics** - life cycle costs
2. **Environmental aspects** - energy consumption
the “carbon footprint”, water quality
3. **Societal views** - public perception

STATEMENT OF NEED

- ◉ Currently, there is a critical need to assess effluent generation and reuse in Arizona, both statewide and on a regional basis as well as public perception regarding this vital resource.
- ◉ Due to the lack of a centralized database for wastewater generation and reuse information, a critical gap has formed in the tabulation of water availability in Arizona.

PHASE 1-DATA COLLECTION AND ORGANIZATION

1. Summarize the statutes, rules, and respective jurisdictional authorities regarding treated wastewater (effluent/reclaimed water).
2. Compile an annotated list of the types of records relating to treated wastewater available.
3. Treatment Plant Data
 - Location
 - Population served
 - Volume of wastewater treated
 - Disposal method and location
 - Water quality class (A+, A, B+, B, or C)
4. Establish a central "Clearinghouse" database



PHASE 2-EVALUATION

1. Evaluate the strengths and weaknesses of Incentive programs
2. Identify Reuse Trends
3. Identify public perceptions regarding wastewater reuse and how these may affect current and future utilization of the resource
4. Identify impediments and opportunities for wastewater reuse including
 - Financial
 - Regulatory
 - Resource



NORTHERN ARIZONA
UNIVERSITY
Social Research Laboratory

- The Social Research Laboratory at Northern Arizona University surveyed 400 randomly-selected Arizona adults by telephone between September 27 and October 2, 2008.
- Survey results are subject to a margin of error of +/- 4.9 percent.

STATEWIDE PUBLIC PERCEPTION SURVEY

- ◉ Perception of Terms
- ◉ Support for Potential Uses of Reclaimed Water
- ◉ Concerns about Using Reclaimed Water
- ◉ Support of Implementation Strategies
- ◉ “What would reduce your concerns about reclaimed water?”

TERMINOLOGY

⊙ Positive

- “water re-use”
- “recycled water”
- “re-purified water”
- “reclaimed water”



⊙ Negative

- “effluent”
- “tertiary treated wastewater”
- “wastewater”
- “toilet to tap”

Reactions to terms related to water



POTENTIAL USE

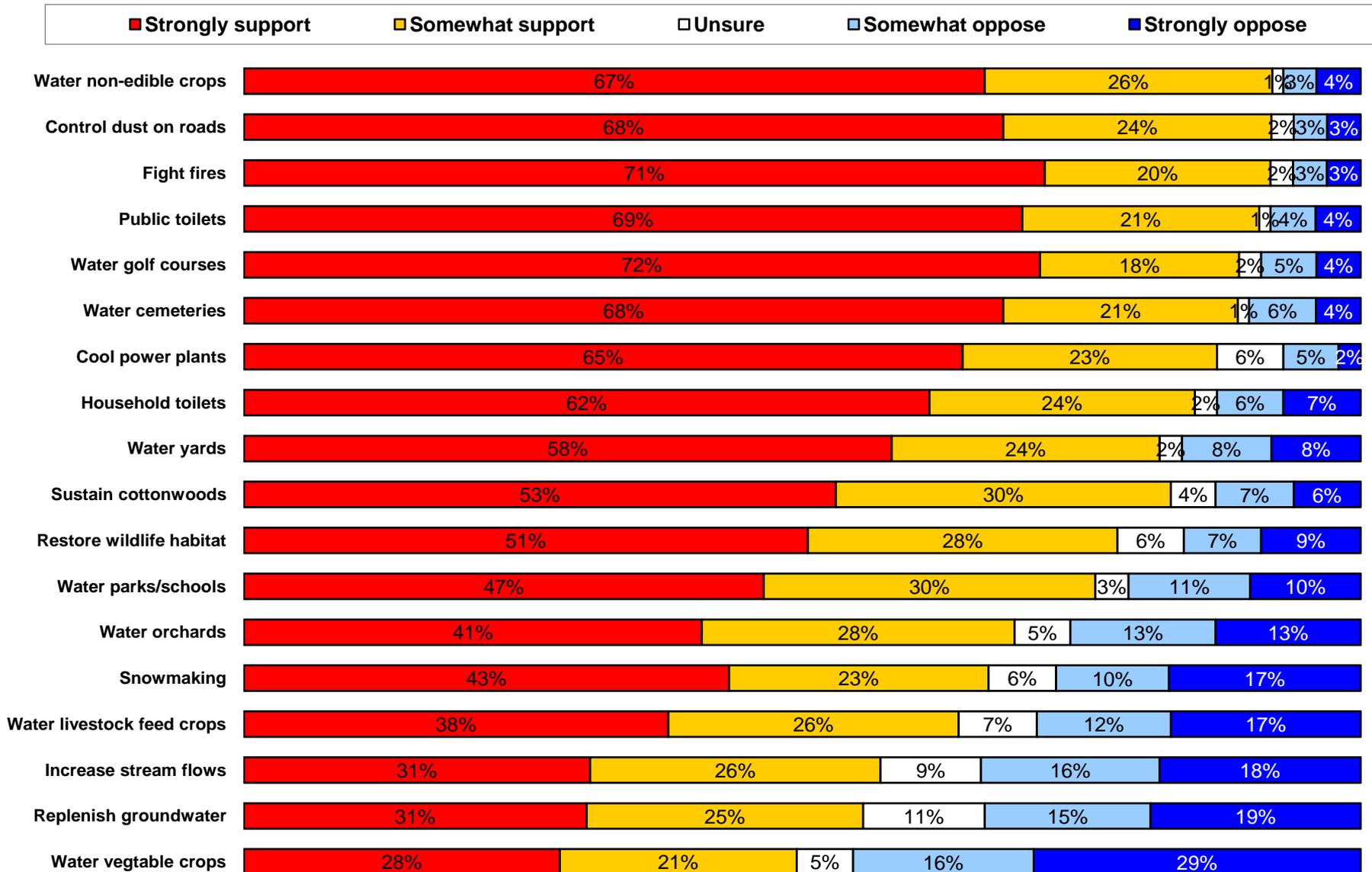
- Arizona residents generally support most potential uses of reclaimed water.
 - for **cooling towers** in power plants
 - **fire hydrants** for fire fighting
 - to control **dust** on roads and at construction sites
 - for **watering the grass** at cemeteries
 - for **watering the grass** at golf courses
 - for watering **non-edible crops**, such as cotton
 - for **toilet flushing** in public or commercial buildings
 - to sustain **cottonwood trees** and other plants along rivers

POTENTIAL USE CONT...

- for watering **household yards**
- for watering **public parks** and **schoolyards**
- for watering **orchards**
- to restore **habitat** for wildlife
- for watering livestock **feed crops**, such as hay or alfalfa
- for **snowmaking** at ski areas
- to increase **stream flows** to support recreational activities like fishing and camping
- to replenish **groundwater** supplies

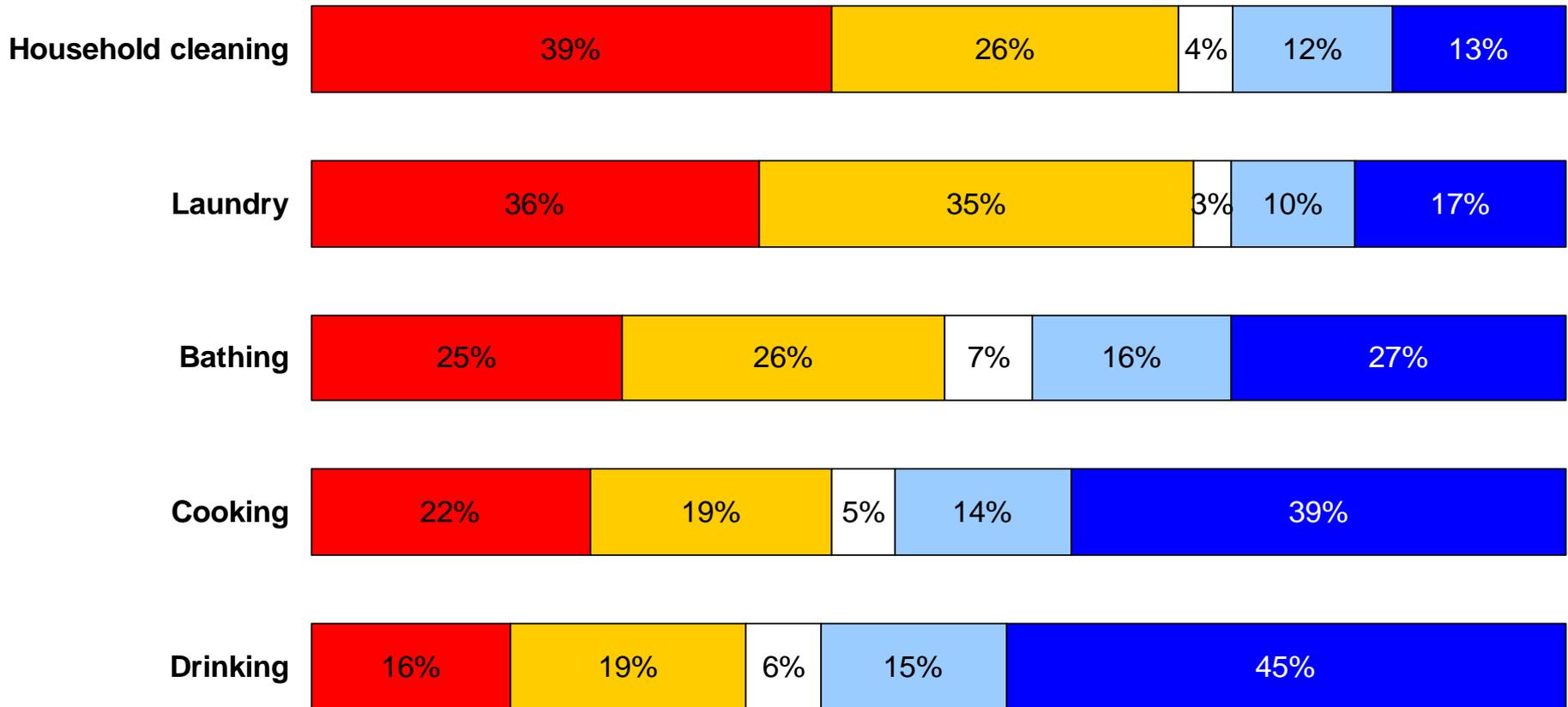
- for watering **vegetable crops**

Support/Opposition for potential uses of reclaimed water



Support/Opposition for potential uses of reclaimed water treated to higher standards

■ Strongly support ■ Somewhat support □ Unsure ■ Somewhat oppose ■ Strongly oppose



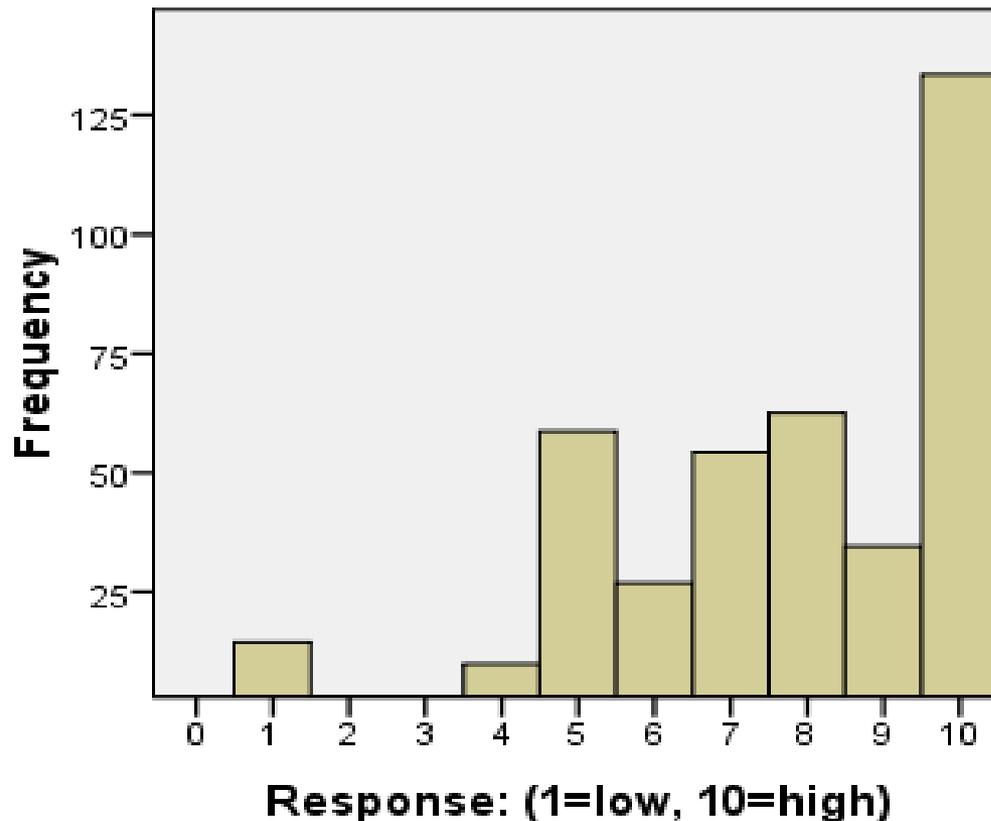
IMPLEMENTATION STRATEGIES

- ◉ 76% of Arizonans support using “consumer incentives for using reclaimed water.”
- ◉ Over two-thirds of Arizonans (67%) support “increasing water or sewer rates to treat water to higher standards.”

MANDATORY USE

- Respondents are divided on “mandatory use of reclaimed water.”
 - 45% support mandatory use,
 - 45% percent oppose it, and
 - the remaining 10% are unsure.

HOW IMPORTANT IS IT TO YOU THAT YOUR COMMUNITY USES RECLAIMED WATER TO HELP MEET ITS WATER NEEDS?



1 means "not at all important" and 10 means "very important"

n = 400, Mean= 7.62, Std. Dev. = 2.357

“OTHER” OPEN- ENDED RESPONSES:

“WHERE DO YOU RECEIVE MOST OF YOUR INFORMATION ABOUT RECLAIMED WATER?”

- ◉ An organization in Tucson about water
- ◉ Area sanitation department
- ◉ Global water
- ◉ From this survey
- ◉ ADWR, seminars
- ◉ From the Arizona Nursery Association
- ◉ From the Arizona Water Reclamation committee
- ◉ From this survey
- ◉ History of living of Arizona
- ◉ I just got it from you
- ◉ Information meeting from Arizona water in person
- ◉ Labels on water bottles
- ◉ Living with it when I was living in the outback in the desert
- ◉ Prescott Valley has two towns that use reclaimed water
- ◉ Telephone surveys
- ◉ US EPA

“WHAT ELSE WOULD REDUCE YOUR CONCERNS ABOUT RECLAIMED WATER?”

“The more that it is used the more comfortable I will be with it”

“Educate the people to use water in the best way.”

“I would like to take a tour of the treatment plant and see for myself and understand that it is safe”

“Knowing who is checking on the water”

“WHAT ELSE WOULD REDUCE YOUR CONCERNS ABOUT RECLAIMED WATER?” CONT.

“If there was some type of speaker that gave positive reasons to use it”

“Assurance that the whole system was secure and that water was treated properly”

“Information from a known source”

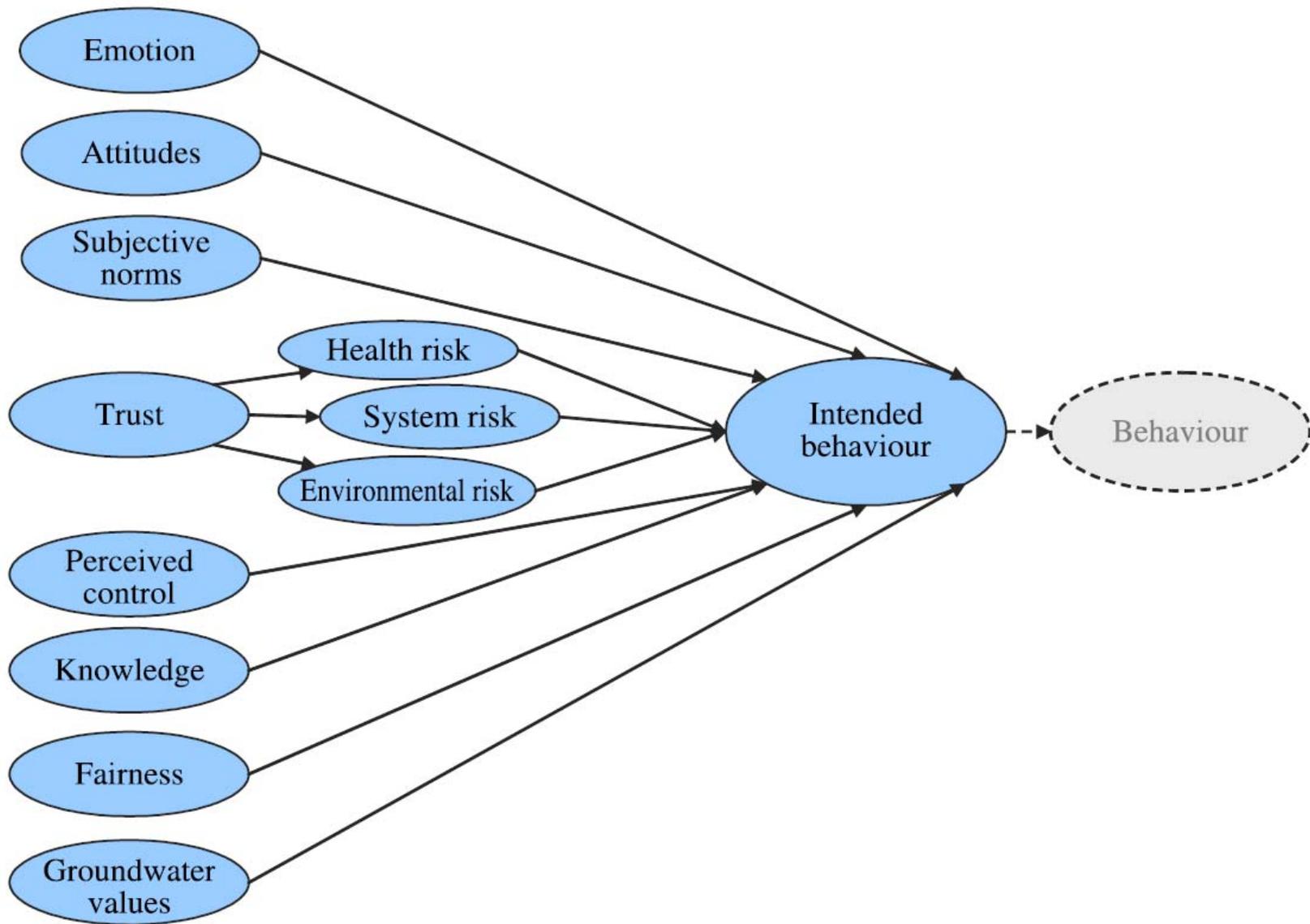
CONCERNS

- Almost two-thirds of Arizonans have concerns about reclaimed water.
- These concerns can be dispelled for respondents by providing
 - “stronger oversight of treatment plants”
 - “better wastewater treatment”
 - “better information about reclaimed water”

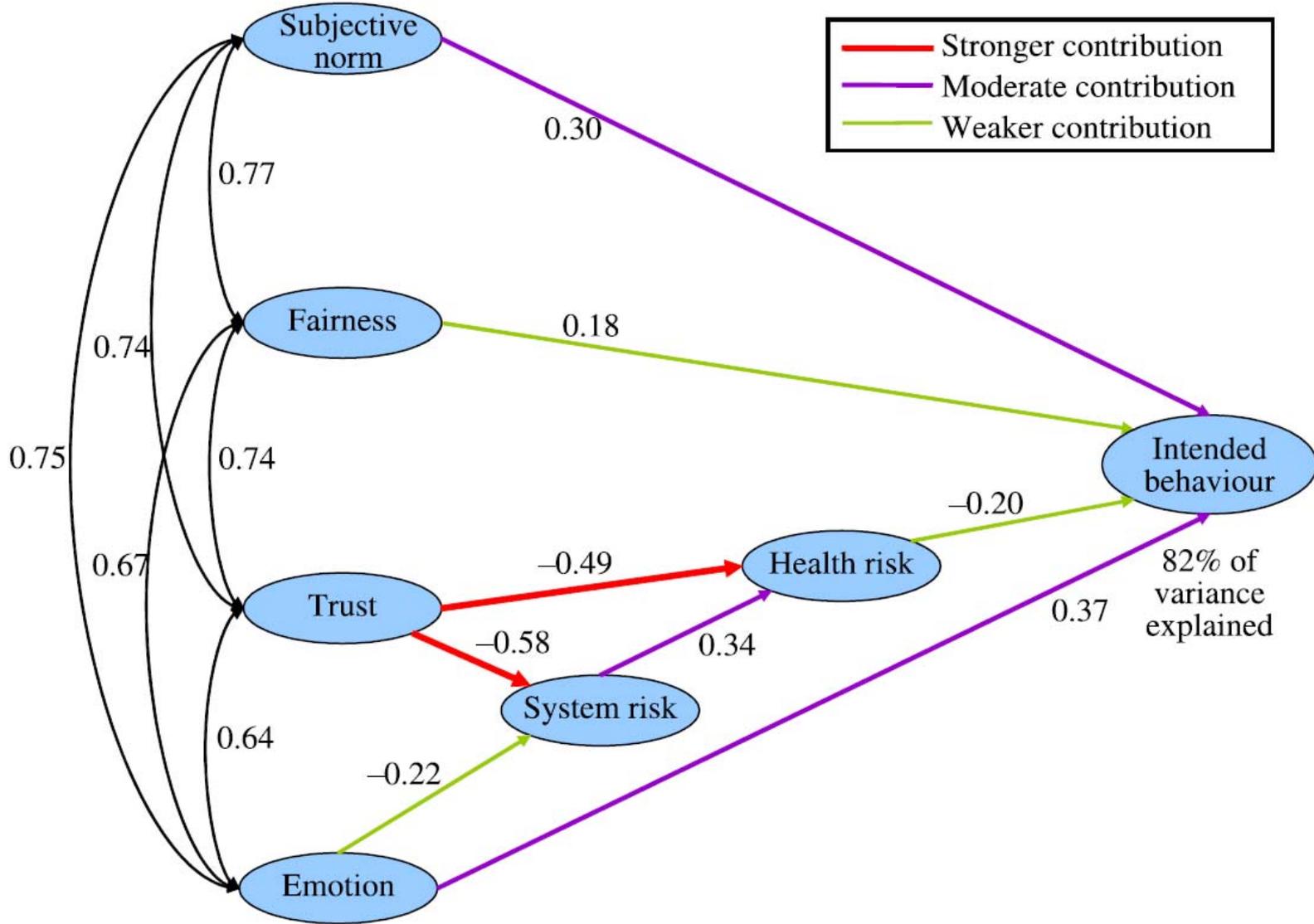
How do we facilitate change and combat community concerns while encouraging positive responsiveness in society?

TOOLS TO IMPLEMENT CHANGE

- ◉ Decision-making agencies need to identify and address key factors in their communities that are likely to influence their support or otherwise, of the schemes.
 - identify what is important to people in their decisions
 - focus community engagement programs on the key areas to address.



B. E. Nancarrow, Z. Leviston, M. Po, N. B. Porter and D. I. Tucker;
What drives communities' decisions and behaviors in the reuse of wastewater, 2008,
p.485 Water Science and Technology



RISK AND TRUST

- Factors such as risk perceptions or organizational trust are potentially more receptive to change.
- High correlations between **Risk and Trust** suggest that if one is able to exert change in people's risk and trust perceptions, one might also promote change in variables otherwise less receptive to change.

US public acceptance of water reuse seems to be higher when [2–5]:

- Degree of human contact is minimal
 - Protection of public health is clear
 - Protection of the environment is a clear benefit of the reuse
 - Promotion of water conservation is a clear benefit of the reuse
 - Cost of treatment and distribution technologies and systems is reasonable
 - Perception of wastewater as the source of reclaimed water is minimal
 - Awareness of water supply problems in the community is high
 - Role of reclaimed water in overall water supply scheme is clear
 - Perception of the quality of reclaimed water is high
 - Confidence in local management of public utilities and technologies is high
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CHALLENGES FOR REUSE IN ARIZONA



- ◉ Planning and infrastructure
- ◉ Treatment effectiveness
- ◉ Public Perception
- ◉ Quality Assurance

PRINCIPLES FOR UNDERTAKING WATER RESOURCE PLANNING INITIATIVES:

- ◉ *Demonstrate organizational commitment*
- ◉ *Promote communication and public dialog*
- ◉ *Ensure fair and sound decision-making and decisions*
- ◉ *Build and maintain trust*

FUTURE VISION FOR SUCCESSFUL WATER MANAGEMENT



- These principles aim to promote a more constructive public dialog on water reuse and contribute to the potential for building public trust and confidence.

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