



Health impacts of urban water conservation alternatives:

What's big? What's small?

What's important? What's not?

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Key Points

1. California's urban water conservation mandate
2. Purpose of the water conservation HIA
3. How urban water conservation is connected to health
4. Gauging the potential magnitude and significance of health impacts
5. Recommendations for HIA practitioners

Acknowledgements

Technical Advisory Committee

- Mike Antos, *Council for Watershed Health*
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Project Staff

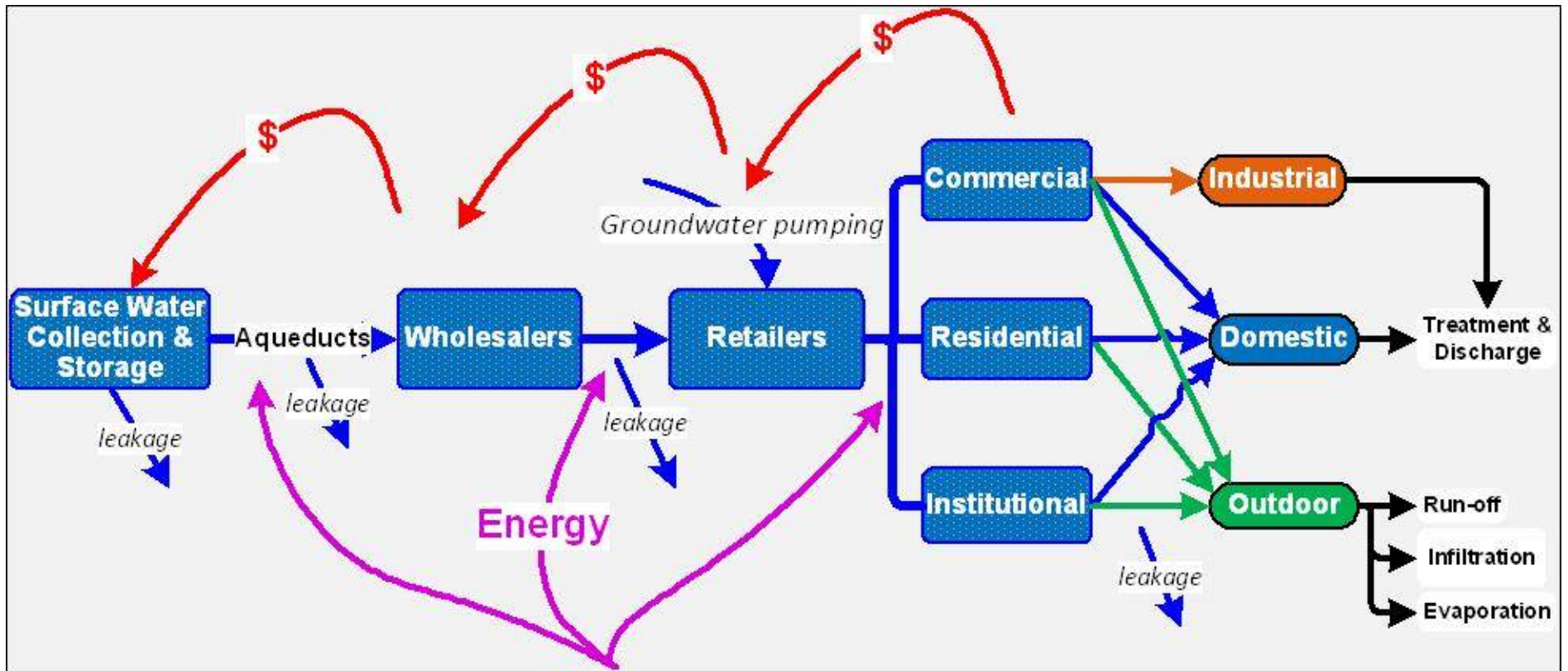
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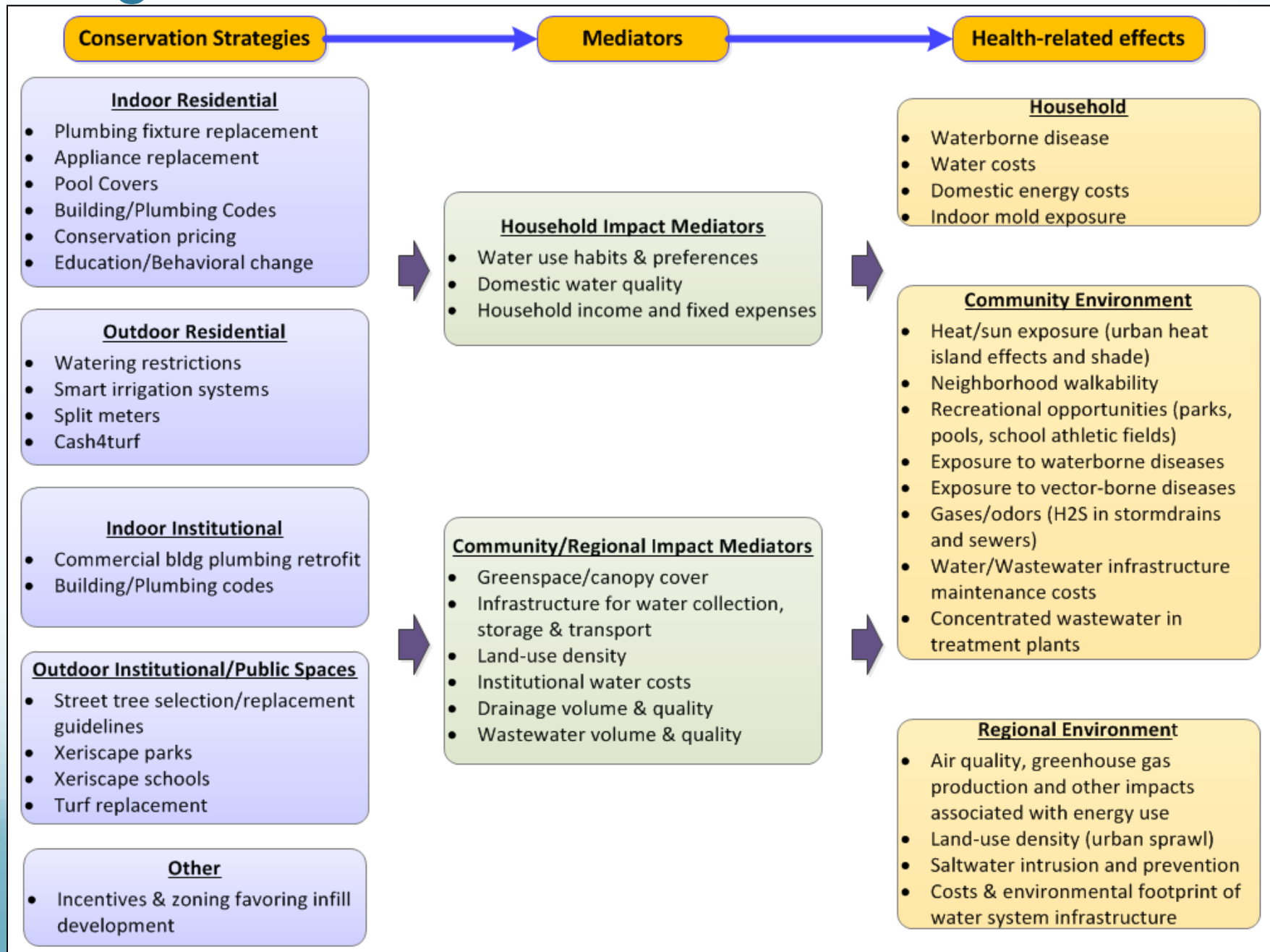
Rationale

- Chronic shortages and multiple demands for California's limited water resources prompted passage of California Senate Bill x7-7 (aka "20 by 2020"), which calls for a 20% reduction in water deliveries in all of California's urban water districts by 2020.
- A Health Impact Assessment (HIA) of alternative strategies for achieving SBx7-7 goals will provide policy-makers with information to help achieve water management goals while maximizing potential public health benefits and minimizing potential harm.

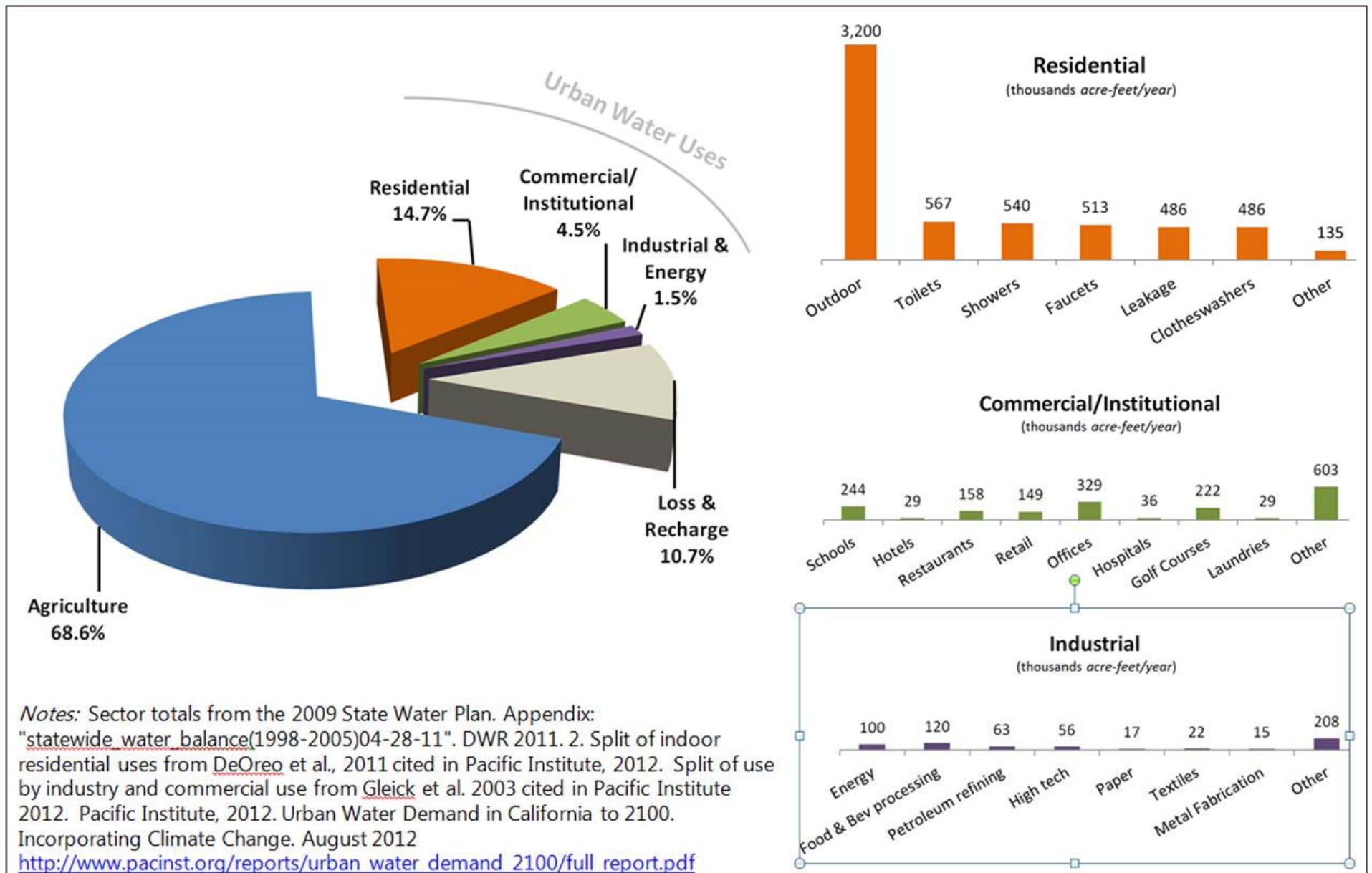
Flow of water, energy and money in the urban water system



Logic Framework

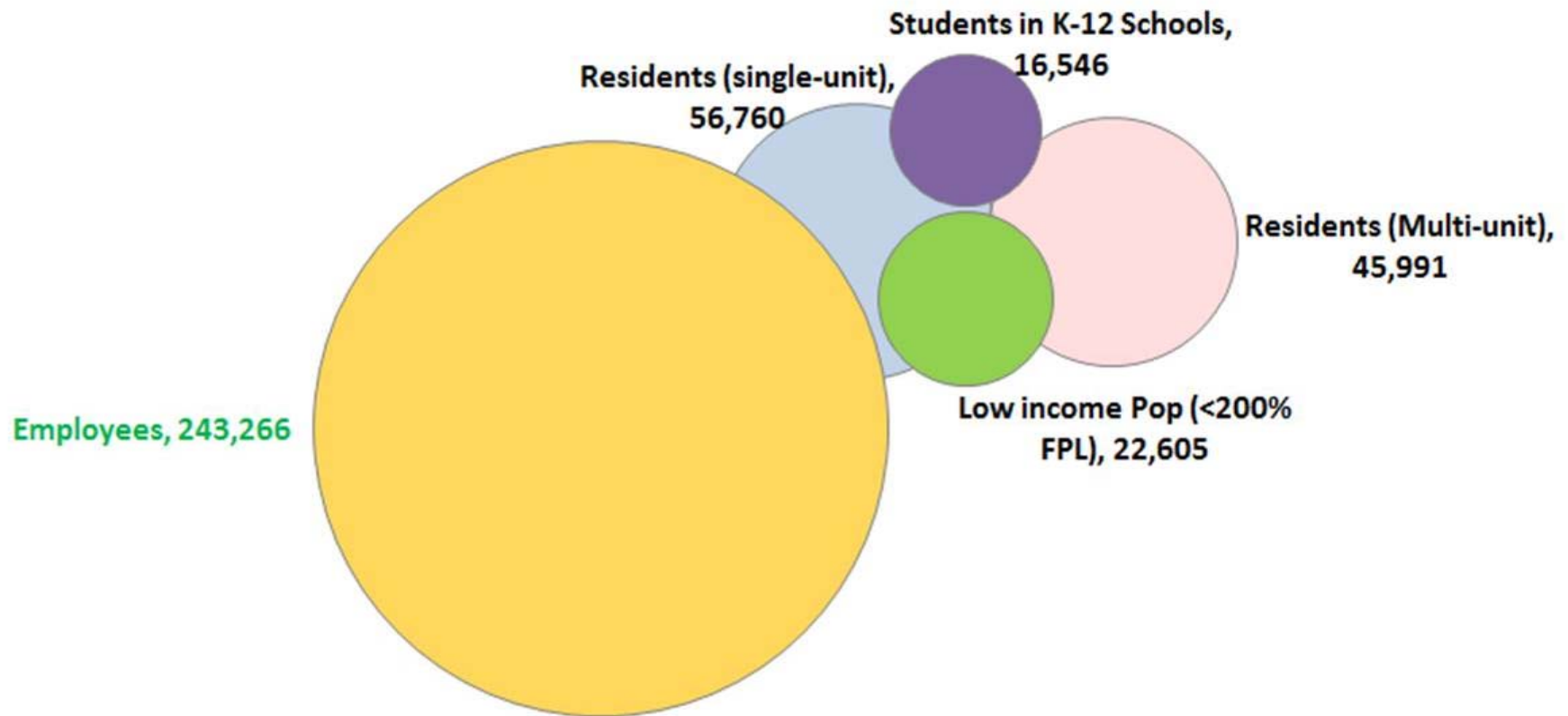


Water use in California



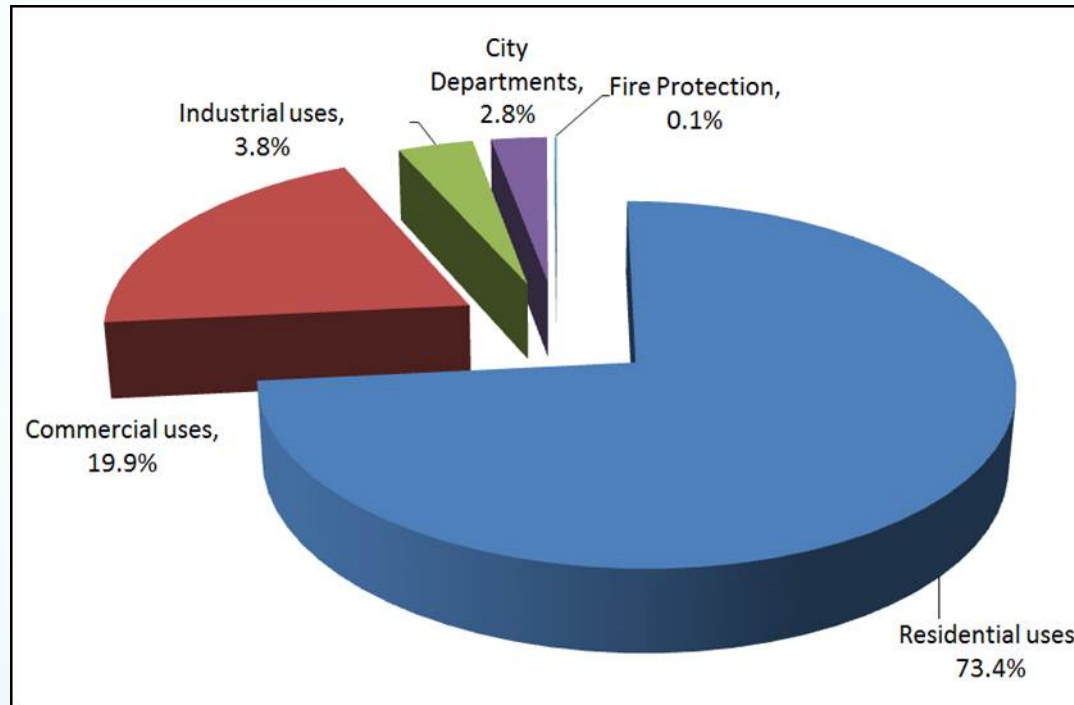
Case-study site: City of Burbank

Potentially affected populations



Case-study site: City of Burbank

Water conservation potential



1 acre-foot = 325,851 gallons

2010 Deliveries	Accounts	Volume (Acre-feet/yr)	Acre-feet/ year/account
Single-family	18,681	8,663	0.464
Multi-family	3,353	4,027	1.201
Commercial	3,018	3,409	1.130
Industrial	110	660	6.000
Institutional/govt	165	460	2.788
Landscape	187	336	1.797
Other	888	35	0.039
Total	26,402	17,590	0.666

Case-study site: City of Burbank

Water conservation potential

Water Fixture Upgrades in the Multi-Family Sector

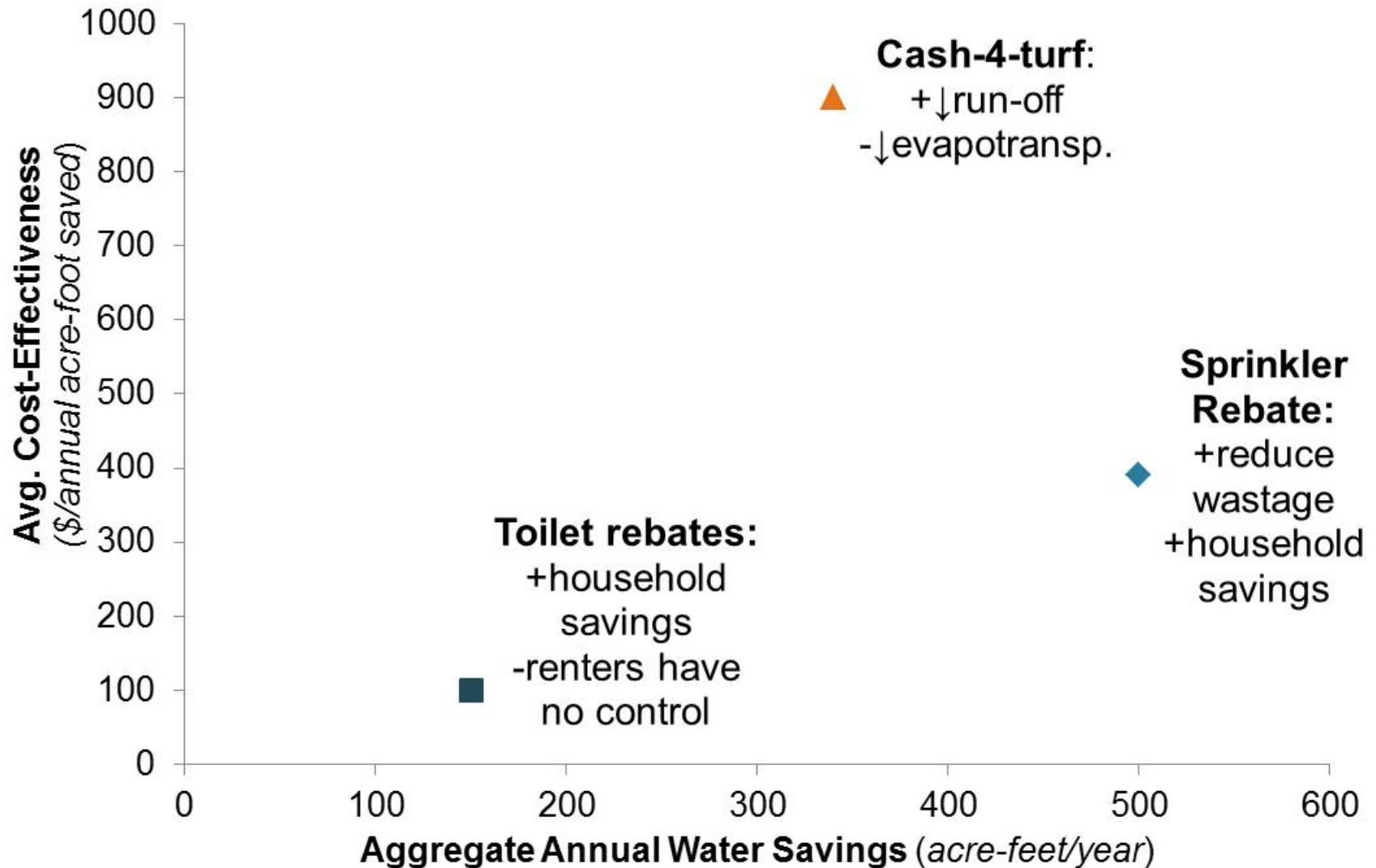
Upgrade	Units Upgraded	Annual Savings Per Upgrade	Annual Water Savings (AF)
Toilets	8,683	8,710	232
Urinals	2	9,775.50	0.1
Showerheads	12,135	3,016	112
Kitchen Aerators	10,208	1,077	34
Bathroom Aerators	13,797	2,182	92
TOTAL			471

Water Fixture Upgrades in the Commercial/Industrial Sector

Upgrade	Units Upgraded	Annual Savings Per Upgrade	Annual Water Savings (AF)
Toilets	4,740	8,015	117
Urinals	1,205	9,775	36
Showerheads	1,457	3,016	13
Kitchen Aerators	2,564	1,077	8
Bathroom Aerators	7,829	2,182	52
TOTAL			239

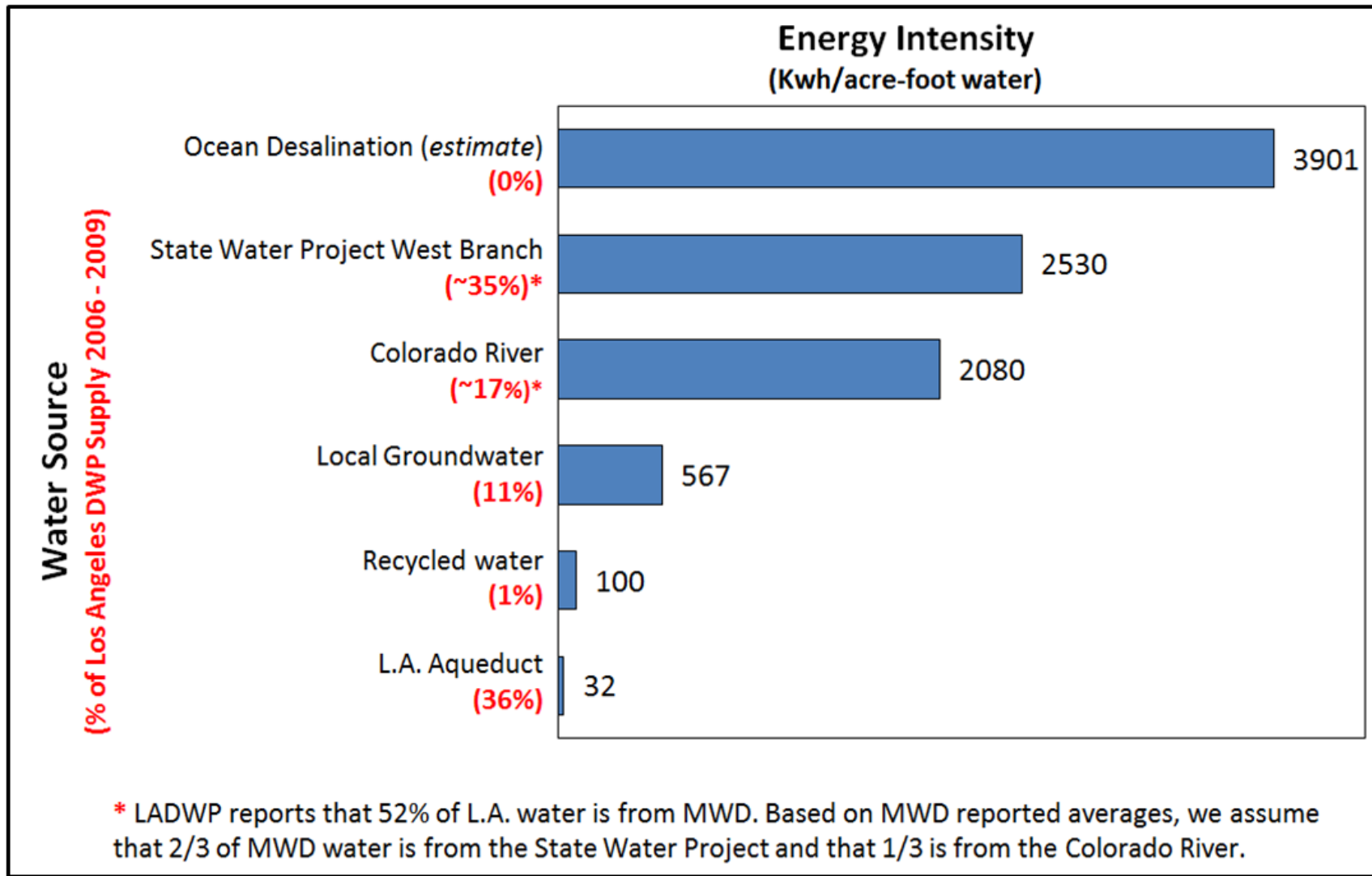
Case-study site: City of Burbank

Water conservation potential



Intermediate effects

Embedded energy in L.A. City water



Prioritizing based on benefit/harm – Top 3's

Embedded energy reduction

1. Expanded use of recycled water
2. Incentives for low-flow plumbing fixtures
3. Conservation pricing

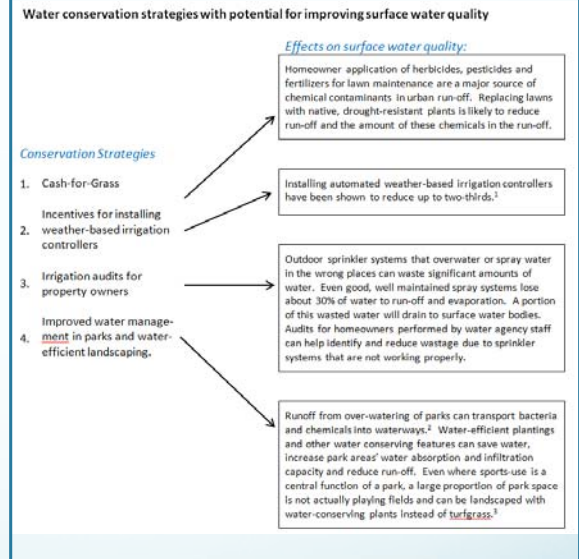
Financial impact on low-income households

1. Cash-for-Grass
2. No Action
3. Conservation Pricing

Reduced availability/quality of park greenspace

1. Emergency conservation orders that prohibit irrigation of public spaces
2. Conservation pricing applied to institutional users
3. Emergency conservation orders that prohibit outdoor watering

Lists supported by clear, concise documentation



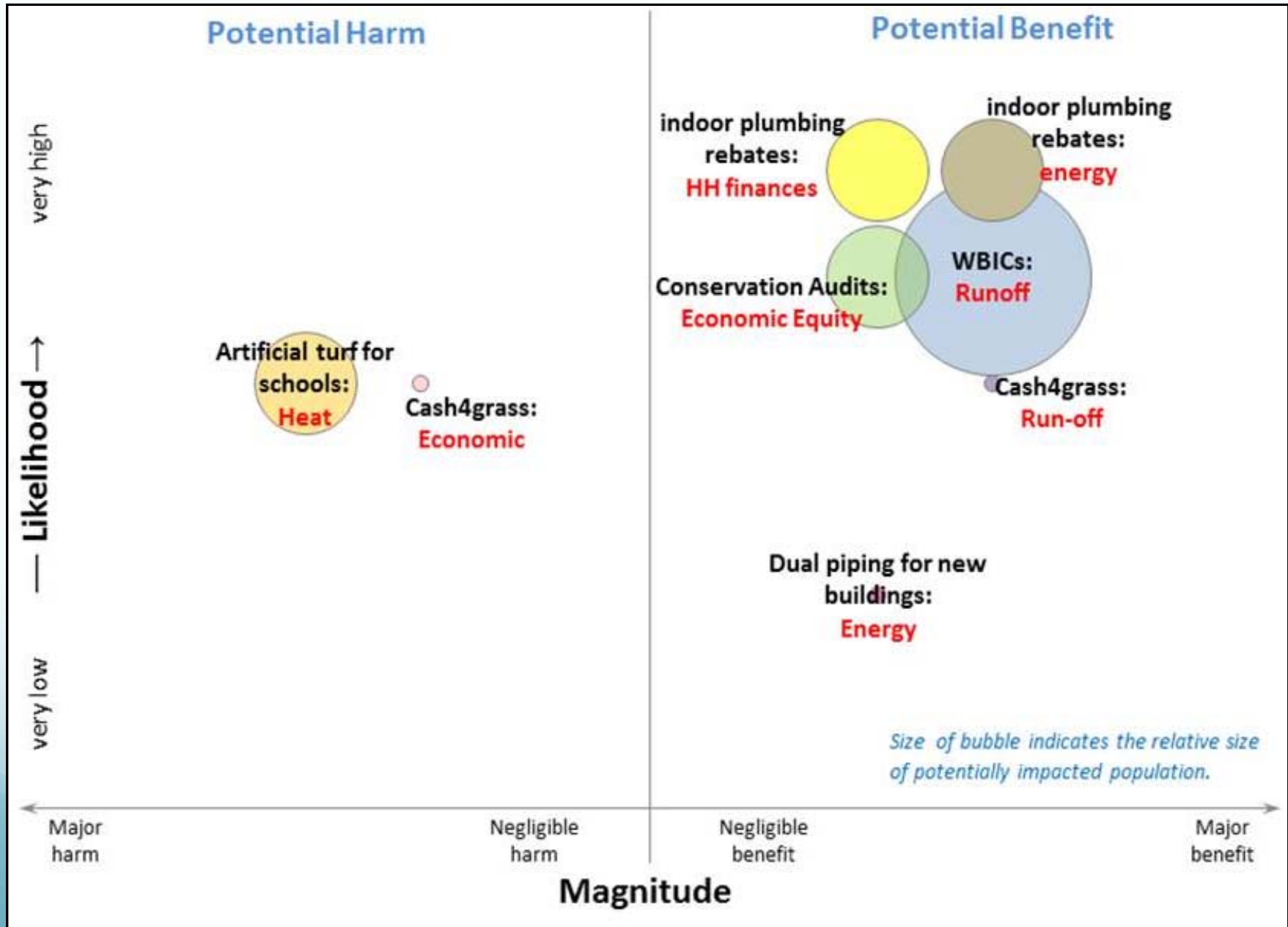
Subjective rating of benefit/harm - matrix

Conservation Strategy ↓	Air quality & greenhouse gas emissions ⁵	Ambient temperature/urban heat islands	Water quality and water-borne diseases	Arthropod-borne diseases	Household finances	Access to greenspace	Physical activity	Exposure to mold and indoor air pollution	Wastewater treatment systems	Land-use density
Water-efficient fixtures, appliances	●							◆		
Building standards								◆	◆?	
Residential plumbing retrofit	●			◆?				◆		
Conservation pricing		●		◆◆ ²				◆		●
Metering				◆◆ ²				◆		
Residential xeriscape cash-for-grass		●		◆◆ ²						
Specified days for residential landscape watering										
WBICs										
Water-efficient design and management for parks, street sides	● ³	?	● ³	●		?	?		◆ ⁴	

Potential Impact

- benefit
- ◆ harm
- ? uncertain

Subjective rating of significance



Recommendations for HIA practitioners

1. Use the logic framework to tell a cohesive story that connects policy action with health impacts;
2. Support the story with numbers, support the numbers with the story;
3. Use targeted sector's data, metrics and terminology;
4. Think clearly about how different populations may be impacted differently;
5. Use subjective rating with caution, always refer back to the review of existing research to support the subjective ratings (if possible, use internal hyperlinks in documents to make it easy to toggle back and forth between charts, figures and text.