G2 Green Fund

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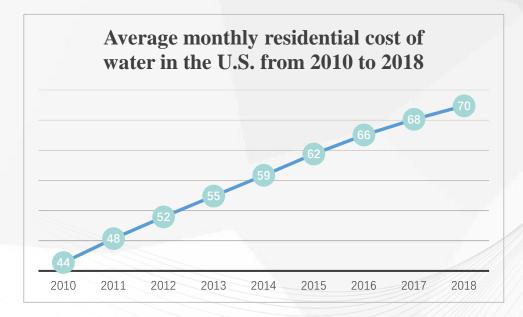


Water Rate Increases Everywhere

From cities with the lowest to the highest water prices

Water bills started rising significantly faster than inflation in the mid-2000s. Over the past decade, water rate increased average 5.5% a year, more than 3 times the rate of inflation. On average, the water cost rose 69%.

2010-2018



Data source: EPA, 2018



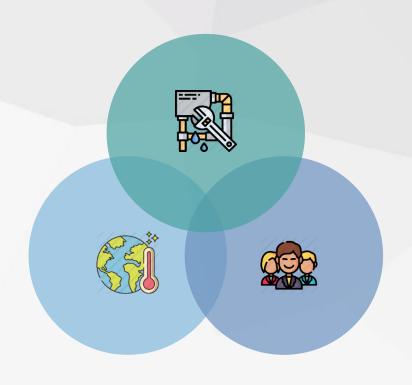
Graph: Combined water, sewer, and storm prices for households in 30 major cities Source: Circle of Blue

Lowest to Highest

The increase of water rate affected a wide range of cities. Monterey, with most expensive water services, saw a price hike of 68% from 2015 to 2017. Fresno, with lowest water prices, is predicted to see a more than 20% price increase in the next five years.

Reasons Why Water Rate Increase

Water rates will continue to rise in the coming decades



Infrastructure Investment

"Upgrading existing water systems and meeting the water infrastructure needs... will require 1 trillion USD" -- American Water Works Association.

Climate Change

If climate change is the shark, then water is its teeth. For example, when higher temperatures coincided with minimal precipitation during the California drought, drought conditions worsened.

Population Growth

According to the US Census Bureau, the population of the United States is set to grow by 78 million people in the next four decades, from 326 mil to 404 mil between 2016 and 2060.

Water Shortages is Already a Concern

for a Significant Portion of the US Population and Businesses

35.6% of US households will struggle to afford their water bills in the next five years.*

36%

60% of US S&P 500 companies regard water risk a reality in their operations and supply chains.

60%



Greywater Reuse Becomes Cost-Effective in Most of Cities

Typical Monthly Combined Water and Wastewater Rate

Cost-effective in 40 out of 50 largest cities

Atlanta	24.2	Yes	Los Angeles	9.8	Yes	Tulsa	7.7	Yes	Tucson	6.5	Yes	Albuquerque	3.7	No
Seattle	20.4	Yes	San Diego	9.7	Yes	Milwaukee	7.5	Yes	Oklahoma City	6.2	Yes	Long Beach	3.6	No
San Francisco	18.8	Yes	Houston	9.4	Yes	Nashville	7.5	Yes	Miami	5.8	Yes	Omaha	3.6	No
Portland	15.4	Yes	Virginia Beach	8.8	Yes	Colorado Springs	7.4	Yes	Louisville	5.7	Yes	San Jose	3.3	No
Boston	13.8	Yes	Raleigh	8.7	Yes	Dallas	7.4	Yes	Chicago	5.5	Yes	Mesa	2.8	No
New York	11.7	Yes	Columbus	8.6	Yes	Denver	4.7	Yes	Arlington	5.2	Yes	Memphis	2.5	No
Cleveland	11.0	Yes	Minneapolis	8.6	Yes	Indianapolis	7.2	Yes	San Antonio	5.0	Yes	El Paso	2.4	No
Austin	10.5	Yes	Charlotte	8.5	Yes	Jacksonville	7.2	Yes	Phoenix	4.7	Yes	Las Vegas	1.8	No
Kansas City	10.2	Yes	Detroit	8.1	Yes	Baltimore	6.7	Yes	Wichita	4.5	Yes	Sacramento	1.1	No
D.C.	10.1	Yes	Philadelphia	8.0	Yes	Fort Worth	6.6	Yes	Oakland	4.3	Yes	Fresno	0.8	No

Water usage: 7,500 gallons billable water usage. With considerations of fix rate.

Data source: BLACK & VEATCH (2013)

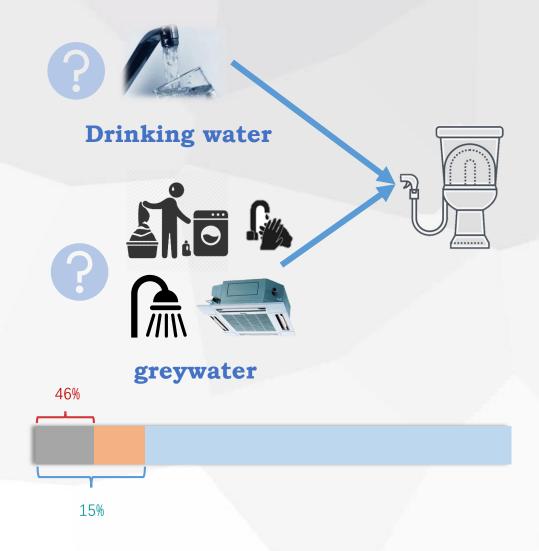
Greywater reuse system: cost estimation according to National Academies' report. System size: 2000 gpd

\$ in 2013. Considering water rate growth rate is higher than inflation, this result is conservative.

Cities: 50 largest cities in the U.S.

Alternative Water Sources:

Reused water is the cheapest water resource



Why is only small percentage of greywater reused?

Regulation Uncertainties

Plumbing Codes Fragmented local Standards

data source: EPA, 2016

It is not a fear of failure,
it is a lack of direction, uncertainty



Resolve the "SAD" Situation with a "SMART" Strategy

Stagnating Regulations

Two major obstacles: uncertainty of local regulations on greywater system and unclarity of local plumbing code on double plumbing. One of the most important concerns for policymakers is the risk of public health.

Higher Average Price

Because of the uncertainty, the market is constrained, with fewer suppliers and fewer customers. To achieve a certain profit margin, manufacturers have to price highly on individual projects to compensate for the fixed costs.

Low Demand

The high product price further keep customers away from the market. Without an active market, policymakers are less motivated to facilitate the regulation making process. A vicious circle is formed.

Standardize Business Practice

For public health concerns, we partner with and encourage local manufacturers to establish third-party management model. To solve the lack of regulations on double plumbing, we provide capital and local solutions by partnerships.

Increase Market Activity

With our investment and partners' business practices, we create a market for greywater reuse systems where data and information about the relevant products and services are shared. The standardized process will significantly reduce transaction costs.

Affordable Solutions for Customers

With a bigger market, manufacturers can benefit from economy of scale and therefore provide better services at lower a price. This will further encourage customers to step into the market.

Attractive Investment Return

We provide capital and form partnerships in this process. The market itself has a huge potential for attractive investment returns. By engaging the relevant stakeholders and creating a market for greywater reuse systems, we help investors harvest sweet returns.

An investment strategy that provides the direction and aggregates the market.



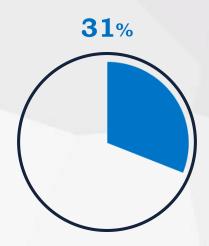


G2G Fund Solution

Target Clients, Market Size, Fund Structure, Target Investors, Expected Returns, Sensitivity Analysis, Social Impacts

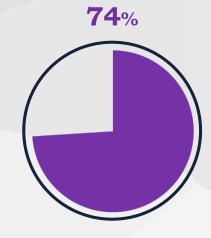
Target Market: New Hotels and Apartment Buildings

We see sustainable demand amidst the steady growth of hotel and apartment establishments in the US



Business Travelers

Corporate sustainable goal extending to employees' carbon footprints



Upper Mid and Upper-Scale

87,659 new rooms opening in the US in 2019 and 2020 are upper mid to upper scale hotel rooms





Apartment Demand

1 in 8 Americans live in apartment buildings. On average 325,000 new apartment homes are needed each year by 2030 to meet the growing demand



High-end Apartment

Around 80% of apartment new construction in 2018 and 19 are luxury rental properties, which are more open to technology investment and green design

Data source: IBISWorld, Lodging Econometrics & National Apartment Association

The Advantages of Targeting

Middle-scale to high-end apartments and middle-scale to luxury hotels

Pro-Green Technologies and Investments



More open to green investment



Heavily rely on efficient technical solution







Technology

Buildings

Geography

Multidimensional Scalability

G2G Fund creates Greywater System Program with Positive Economic and Social Returns

Middle-scale to high-end apartment and middle-scale to luxury hotels

A typical project: 200-room hotel

Annual water usage for toilets (gallon)	8,176,000
Frist year average water rate (Variable)	10.9
Annual growth rate (Baseline)	5%
Water rate Discount	40%
Performance share-Mezzanine/Equity	45%/55%
Project Size	\$400,000



Daily indoor water use



1250~1600 toilet flushing



Avoided annual water bill



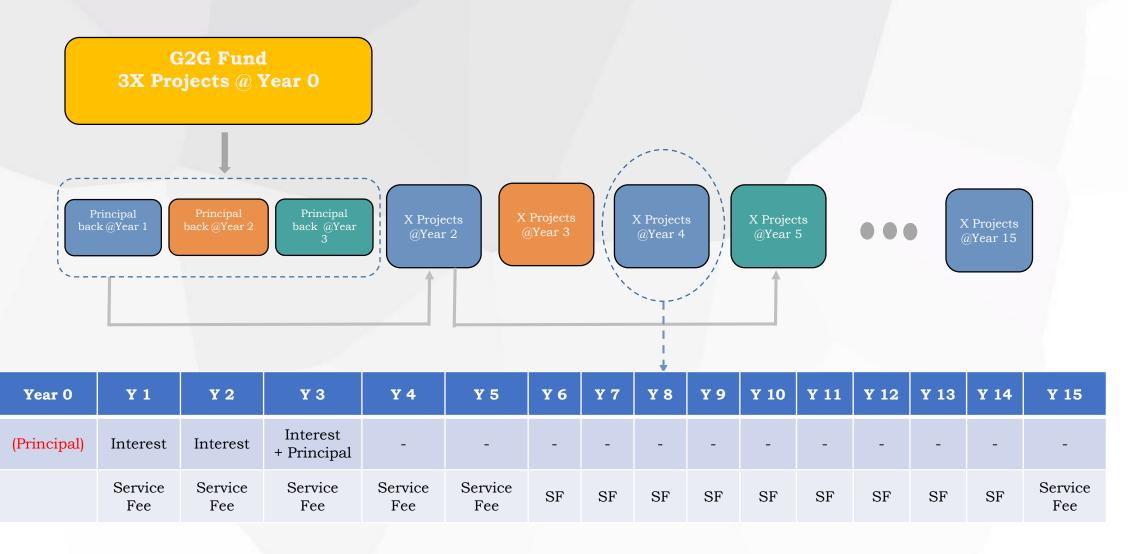
\$3.84 /Kgal lifecycle cost



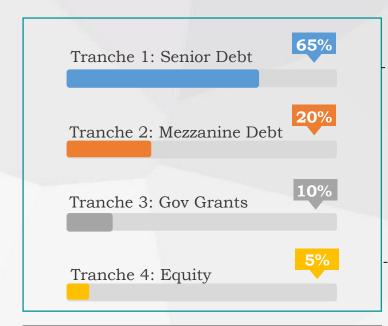
TripAdvisor GreenLeaders
LEED certification
EPA H2Otel Challenge

A Financially Passive, Socially Active Fund

Every investment in projects will generate two parts of cashflow, for investors with diversified risk appetites



Target Investors and Estimated Fund Performance

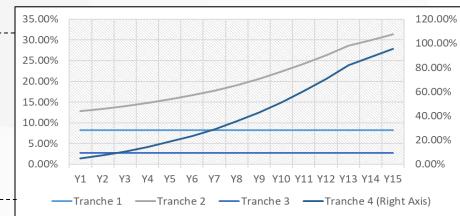




- All type of bond investors, especially those facing higher water risks in their daily operations and supply chains, Green bond investors
- Equity investors in search of both global impacts and local solutions, such as university endowment, private equities and water utilities.
- Potential government supports: Water Infrastructure Finance and Innovation Act (WIFIA), Clean Water State Revolving Fund (CWSRF), Community Development Financial Institution (CDFI), Water Recycling Funding Program (WRFP), Community Assistance for Resiliency and Excellence (Water CARE)

Tranche	IRR	Compare with BR	(BR=Benchmark)
1	BR + 25bp	> BR	Note: Without ABS,
2	16.6%	> BR	IRR for Tranche
3	2.7%	= BR	2 & 4 are
4	23.4%	> BR	15.2%, 21.0%







Social Impact of G2G Solutions

We kick start a sustainable greywater reuse cycle for local communities...

Attractive returns for investors



Funding Sources								
Debts	Share	Investment return						
Senior Debt	65%	M.R. +25 bp						
Mezzanine	20%	16.6%						
Grant	10%	2.70%						
Equity	5%	23.4%						

Note: Without ABS, IRR for Tranche 2 & 4 are 15.2%, 21.0% respectively

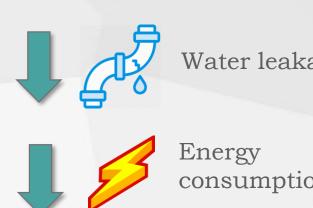




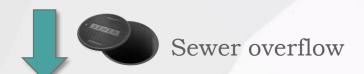
Green tourism

National Impact of G2G Solutions

... and complements a fragmented water supply systems











Breaking Through the Virtuous Cycle

We provide capital and create markets



Regulators

By standardizing the implementation of greywater reuse systems, we help regulators to reduce monitoring costs and ensure standards are met.



Manufacturers

We create a market of stable demand, helping manufacturers to reach economy of scale, which lead to a reduction in product price.



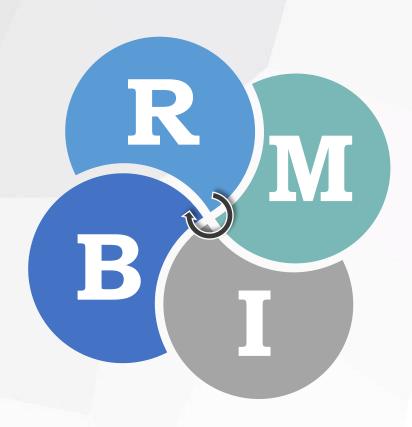
Building Owners

We help owners to manage the costs, planning and liabilities associated with greywater reuse. Lower product price will lead to more demands



Investors

We provide an attractive fund for investors. Every investment we made will generate two passive cashflows at higher-than-benchmark IRR.







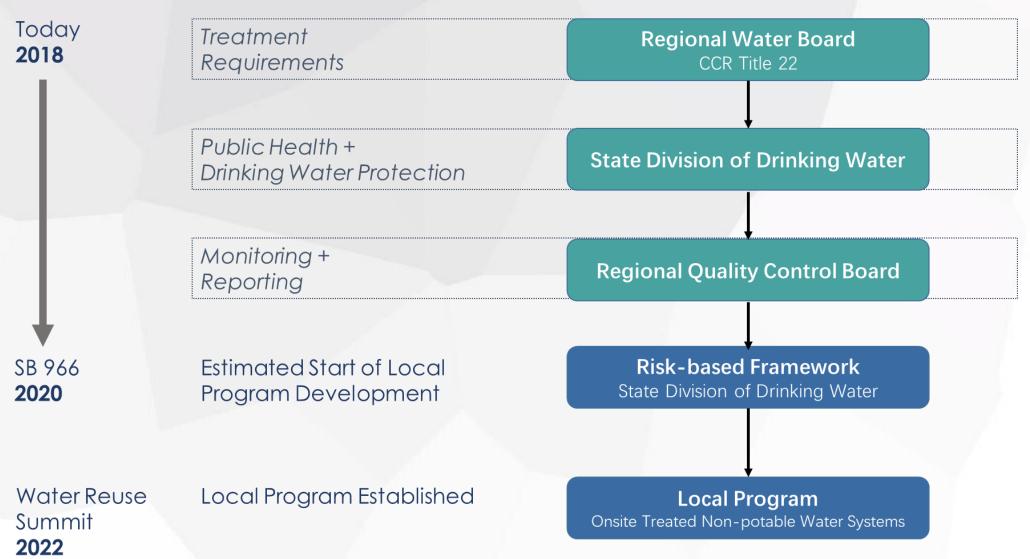
Constructed Now



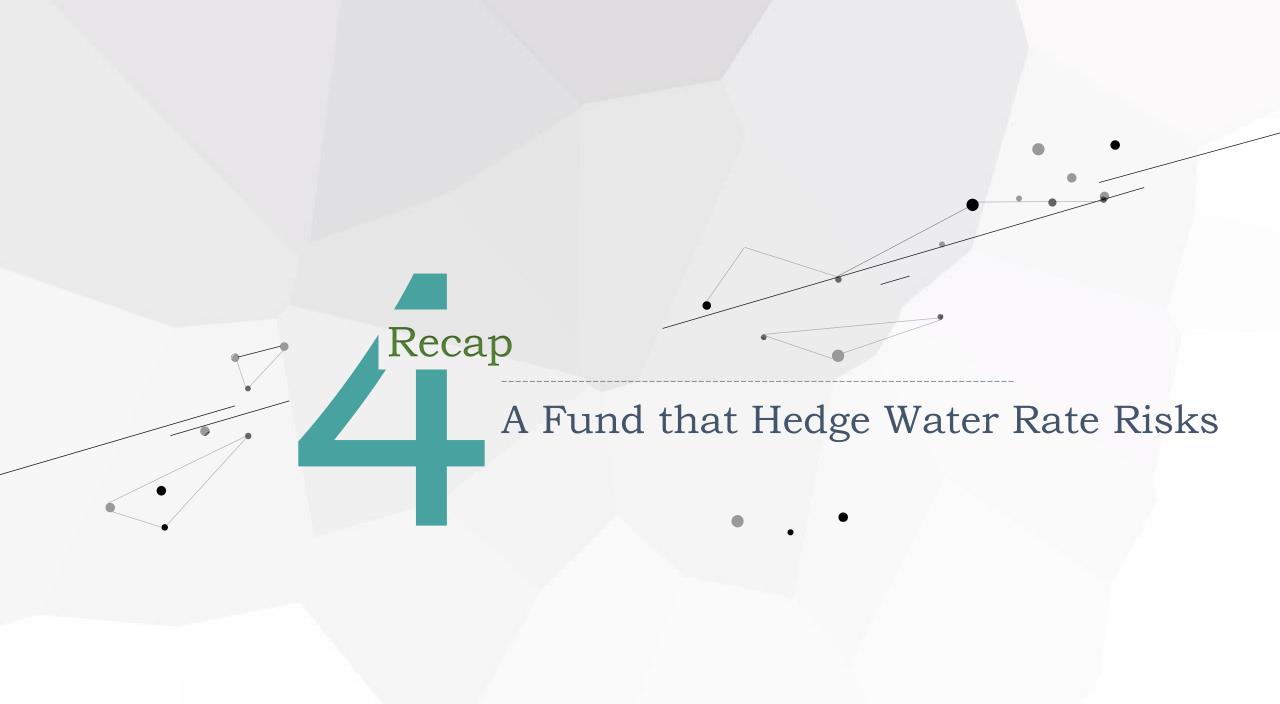
On average, it takes an additional 22 weeks or an extra 7 million USD to retrofit an existing hotel with double plumbing as compared to installing a similar system in a new building. A total of 218 weeks of hotel operations will be affected by plumbing installation for existing buildings.

Policies are Moving Forward Fast





Source: William J Worthen Foundation. Water Reuse Summit.





Hedging Water Rate Risks

Our Mezzanine tranche and Equity tranche provide performance-based IRR

Businesses Exposed to Water Risks

Food and Beverage
Basic Resources
Utilities
Chemicals
Personal & Household Goods
Retail
Construction & Materials
Automobiles & Parts
Industrial Goods & Services
Oil & Gas
Travel & Leisure
Healthcare
Insurance

Source: Trucost

Mezzanine Tranche

	Water Rate Annual Growth Rate											
		2%	3%	4%	5%	6%	7%	8%	9%			
	40%	9.31%	9.94%	10.59%	11.25%	11.92%	12.60%	13.29%	14.00%			
Service Fee	50%	11.27%	11.95%	12.63%	13.33%	14.04%	14.76%	15.48%	16.22%			
– Discounted	60%	13.03%	13.74%	14.45%	15.18%	15.92%	16.67%	17.42%	18.18%			
Water Rate		14.63%	15.37%	16.11%	16.86%	17.63%	18.39%	19.17%	19.96%			
	80%	16.12%	16.88%	17.64%	18.41%	19.20%	19.98%	20.78%	21.58%			

Equity Tranche

	Water Rate Annual Growth Rate											
		2%	3%	4%	5%	6%	7%	8%	9%			
	40%	-1.50%	2.77%	6.05%	8.79%	11.18%	13.33%	15.31%	17.15%			
Service Fee	50%	8.47%	11.16%	13.52%	15.66%	17.63%	19.47%	21.21%	22.87%			
– Discounted	60%	14.97%	17.16%	19.16%	21.04%	22.81%	24.50%	26.12%	27.69%			
Water Rate	70%	20.16%	22.09%	23.91%	25.65%	27.31%	28.91%	30.45%	31.96%			
	80%	24.63%	26.42%	28.13%	29.78%	31.36%	32.90%	34.40%	35.87%			

Risks and Mitigation

Risk Categories	Risks	Mitigation
Operations	Equipment and technology	Choose equipment suppliers with track record of comparable operations and local teams
Operations	Equipment and technology	Warranty and insurance expenses have been incorporated in the financial model
Operations	Water quality and public health	Choose suppliers with NSF/ANSI 350 Onsite Water Reuse certification
Operations	Water quality and public health	Actively engage with local Division of Public Health and Department of Public Health during the permitting process
Market	Demand for greywater system	Conduct in-depth market research and stakeholder engagement, negotiate contracts with hotels before drawing large-scale investments
Regulation	State and regional standard	Actively engage with the US Water Alliance in the development of risk-based standards for onsite non-portable water reuse systems

Q&A Thank you

We Welcome Your Questions and Discussions

THANKS!

Appendix

Content for Appendix:

- Stakeholder Analysis
- Fund Cashflow
- Trend of Regulation
- Current Policy Incentives
- 10 Steps for Developing Local Water Program
- Cases of Large-Scale Greywater System in Hotels and Apartment
- Technology and System

We help the following stakeholders by...

Providing expertise

Owners might be worried of potential risks associated with greywater use. We mitigate this by becoming specialist in the area of greywater reuse, and provide cheaper insurance to cover liabilities with economy of scale.





Upgrading technology consistently

We help owners to keep their greywater reuse system upgraded on a regular basis.



Greywater reuse system requires longterm budgeting from installation to daily maintenance. We handle all of these for the owners, to give them a peace of mind.







Owners

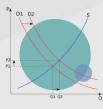
Ensuring water quality

Owners might be worried of uneven greywater quality. We ensure consistency by engaging with reputable suppliers and plumbers.

We help the following stakeholders by...

Creating stable demand

By creating stable, predictable demand, manufacturers can scale up operations and keep cost down while increasing profit.





Matching customers

Our fund will help manufacturers to find customers, hence reducing transaction costs involved in searching for customers.

Providing information on pricing

Manufacturers can respond better to changing demand when we as a fund help to link up market across the US together.





Manufacturers

Promoting harmonization

Manufacturers will no longer have to produce different versions of machines to meet local standards.

We help the following stakeholders by...

Hedging against rising water prices

Our fund promises greater returns as water price rises in the future.



Maximizing returns with Green bonds

This helps to maximize returns.

Providing consistent returns

Our fund structure provides consistent returns.



Promoting sustainability

We help investors to earn while doing good.



We help the following stakeholders by...

Building technical capacity

Our fund is here to stay for many years, which will allow us to build trust between regulators and manufacturers and develop technical expertise overtime.



Encouraging harmonization

As more successful cases emerge, there will be clearer understanding of the best practices and hence promoting harmonization in regulation between states.

Promoting cooperation across states

Successful cases in one state will help the spread of adoption via cross-state learning





Guaranteeing consistent water quality

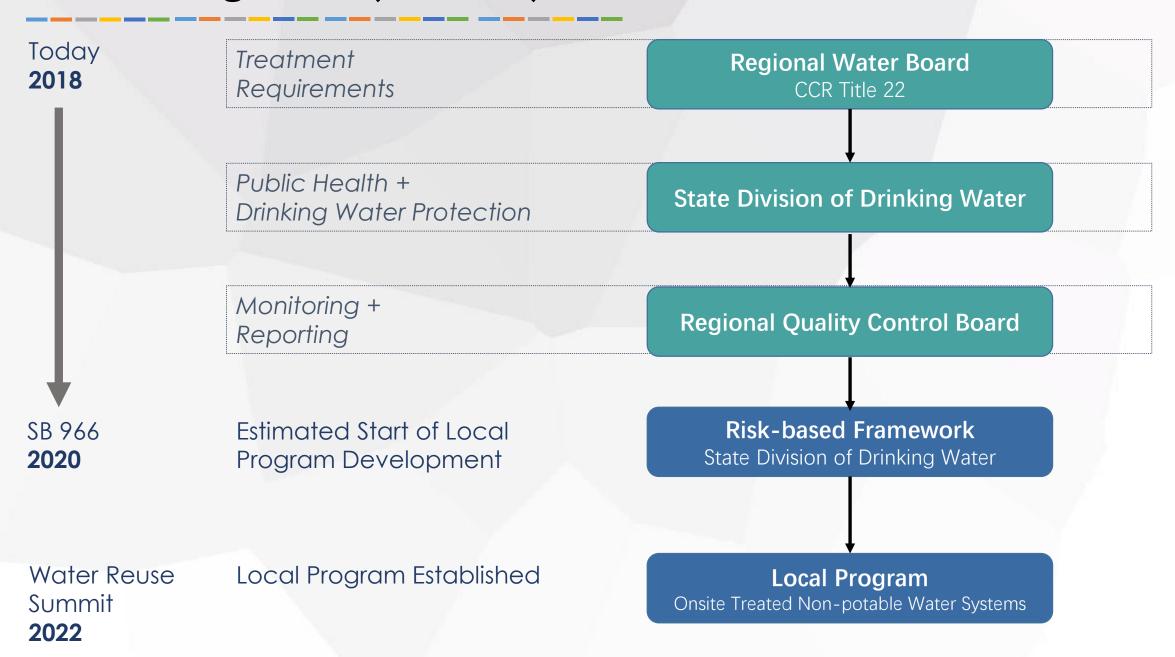
Regulators cannot afford to fail public expectation, especially in drinking water which concerns public health. We help by providing consistent water quality delivery.

Fund Cashflow

	Cash Flow Analysis (Three Scenarios)										
Year	0	1	2	3	4	5	6	7			
Cashflow 1		\$ 19,200,000	19,200,000	19,200,000	19,200,000	19,200,000	19,200,000	19,200,000			
Cashflow 2 L		\$ 1,060,787	1,508,492	2,005,839	2,554,450	3,155,993	3,711,718	4,411,767			
Cashflow 2 B		\$ 1,060,787	1,628,267	2,316,056	3,132,979	4,088,438	5,091,988	6,342,684			
Cashflow 2 H		\$ 1,060,787	1,799,374	2,773,769	4,014,635	5,556,247	7,336,424	9,586,280			
Tranche 2 L \$	-48,000,000	6,159,354	6,360,821	6,584,627	6,831,502	7,102,197	7,352,273	7,667,295			
Tranche 2 B \$	-48,000,000	6,159,354	6,414,720	6,724,225	7,091,840	7,521,797	7,973,395	8,536,208			
Tranche 2 H \$	-48,000,000	6,159,354	6,491,718	6,930,196	7,488,586	8,182,311	8,983,391	9,995,826			
Tranche 4 L \$	-12,000,000	583,433	829,670	1,103,211	1,404,947	1,735,796	2,041,445	2,426,472			
Tranche 4 B \$	-12,000,000	583,433	895,547	1,273,831	1,723,138	2,248,641	2,800,594	3,488,476			
Tranche 4 H \$	-12,000,000	583,433	989,656	1,525,573	2,208,049	3,055,936	4,035,033	5,272,454			
8	9	10	11	12	13	14	15	16-28 (ABS NPV)			
19,200,000	19,200,000	19,200,000	19,200,000	19,200,000	19,200,000	19,200,000	19,200,000	-			
5,170,051	5,988,441	6,868,860	7,813,291	8,823,770	9,902,395	10,360,614	10,828,914	-			
7,763,990	9,368,019	11,167,670	13,176,674	15,409,646	17,882,139	19,322,534	20,834,948	-			
12,265,596	15,427,549	19,131,412	23,443,218	28,436,495	34,193,081	38,253,776	42,679,934	-			
8,008,523	8,376,798	8,772,987	9,197,981	9,652,697	10,138,078	10,344,276	10,555,011	22,673,531			
9,175,795	9,897,609	10,707,452	11,611,503	12,616,341	13,728,963	14,377,140	15,057,727	41,779,505			
11,201,518	12,624,397	14,291,136	16,231,448	18,478,423	21,068,886	22,896,199	24,887,970	83,491,308			
2,843,528	3,293,642	3,777,873	4,297,310	4,853,074	5,446,317	5,698,338	5,955,903	27,712,094			
4,270,194	5,152,410	6,142,219	7,247,171	8,475,305	9,835,177	10,627,394	11,459,222	51,063,840			
6,746,078	8,485,152	10,522,277	12,893,770	15,640,072	18,806,195	21,039,577	23,473,963	102,044,932			

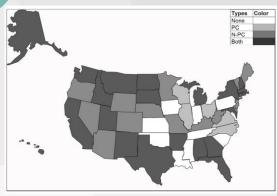
L: water rate growth rate = 2.2%, B water rate growth rate = 5%, H: water rate growth rate = 9%

Trend of Regulation (CA CASE)



Current Policy Incentive

Provision of regulatory definitions of greywater



Simplifying the process of permitting or registering

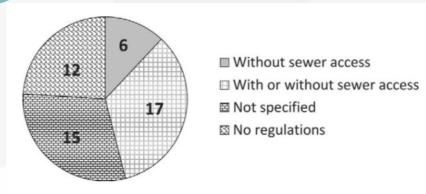
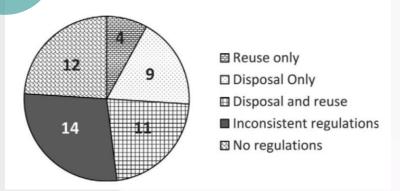
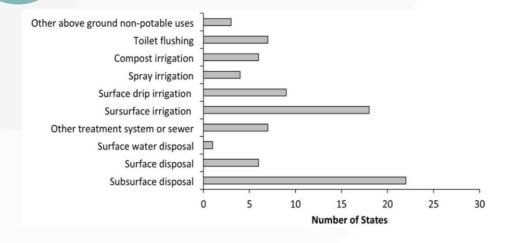


Figure 3—Allowance of graywater collection.

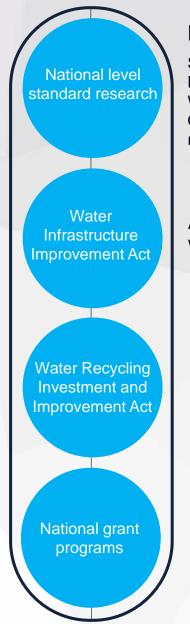
Allowance of greywater collection in areas with sewer



Allowance of diversified greywater use applications



Recent Federal Regulation and Policy Action



EPA, 2017~

Since around 2017, EPA is actively collaborating with the National Blue Ribbon Commission for Onsite Non-Potable Water Systems (NBRC) to advance the safe adoption of Onsite Nonportable Water System (ONWS). Risk-based regulation guidance has been released in 2018

Federal legislation, 2019

Allow municipalities to develop a plan that integrates wastewater and stormwater management

Federal legislation, 2019

H.R.1162 was introduced in house, with 17 co-sponsors from CA, TX, NV, NJ, NM, and PA, this proposed legislation aims to establish a grant program for the funding of water recycling and reuse projects.

WaterSmart, 2019

Focusing on the West US, the WaterSmart program under the Department of Interior offer funding for water efficiency projects of various scales and jurisdiction levels, including small-scale water efficiency projects. By far, the program has released around 60 million grants.

Step 1: Convene a Working Group

Establish a small working group, consisting of public health, planning, and building officials along with water and wastewater utilities that have jurisdictional authority, to guide the development of the local program.

G2G Working Group

- Experts on greywater reuse, public health and building
- Developers
- Policymakers
- Companies exposed to water risks
- Return-chasing investors

Step 2: Select the Types of Alternate Water Sources

Identify the specific types of alternate water sources that will be approved for collection and treatment, including:

- Rainwater
- Storm water
- Greywater
- Blackwater

G2G Alternative Water Sources Focus

- Greywater

Step 3: Identify End Uses

Classify specific non-potable end uses for program, such as:

- Toilet/urinal flushing
- Irrigation
- Clothes washers
- Cooling/ heating applications
- Process water

G2G End Use: Toilet Flushing

Step 4: Establish Water Quality Standards

Currently, there are no overarching national standards for water quality or required treatment for alternate water sources. Establish water quality standards for each alternative water source and/or end use based on existing codes, such as plumbing codes of International Plumbing Code (IPC) or the Uniform Plumbing Code (UPC).

G2G Follow Current Water Quality Standards

Step 5: Identify and Supplement Local Building Practices

Integrate your program into local construction requirements and building permit processes.

Take consideration of:

- System bypass
- Backflow prevention devices
- Cross connection control
- Storage tanks
- Non-portable system identification

G2G in Local Building Practice

- Non-portable system identification
- Provide data and information on best practices
- Form local partnerships
- Facilitate standardization of permission process

Step 6: Establish Monitoring and Reporting Requirements

Establish water quality monitoring and reporting requirements for ongoing operations. Establishing a monitoring regime and reporting requirements are critical to protecting public health and public water systems. The oversight authority may need to be identified or authorized to act.

G2G Monitoring and Reporting

- Conform to the requirements of Green Bond reporting annually in details
- File updates on significant changes

Step 7: Prepare an Operating Permit Process Step 8: Implement Guidelines and the Program

Establish the permit process for initial and ongoing operations for onsite water systems, including the following permit phases:

- Start-up permit
- Temporary use permit
- Final permit

G2G Operating Permit

- Regular permits at the stage of start-up, temporary use and final stage
- Green Bond Certificate

Publicize the program to provide clear direction for project sponsors and developers, preferably including the elements:

- Design Phase: application, engineering report and construction permits
- Construction Phase: treatment system review, construction certification and cross connection control test
- Operation Phase: permit, monitoring and reporting

G2G Guidelines

- Design Phase: dual-plumbing for new construction
- Construction Phase: installation of greywater reuse system
- Operation Phase: applying for Green Bond Certificate

Step 9: Evaluate the Program

Monitor regulatory compliance of projects and collect data on the types and end uses of alternate water sources for inclusion in summary reports and status updates. Promote best practices for onsite water systems

G2G Evaluation Criteria

- Sustainability: water saving, energy saving and ecological benefits
- Financial returns
- Policy or reform impacts

Step 10: Grow the Program

Explore opportunities to expand and encourage onsite water systems. Local programs can be expanded by increasing the types of alternate water sources and non-potable applications, and by increasing the scale from a single building to a district or neighborhood level. Programs can also include financial incentives to encourage the proliferation of onsite water systems.

G2G Program Expansion and Generalization

- Expand the usage scale through existing hotel network across the country or even across the world
- Promote policy changes and reforms to engage more actors in similar projects in the future

Cases of Large-Scale Greywater System in Hotels and Apartment



Solaire Building, NYC, 2003

SYSTEM SIZE

- 25,000 gallons/day
- 293-unit apartment building

REUSE PURPOSE

- flushing toilets
- Cooling tower make-up
- Laundry
- irrigation

SAVINGS

- -48% water consumption
- -56% wastewater discharge



181 Fremont, San Francisco, 2015

- 5,000 gallons/day
- 420300 sq feet of office
 + 68 residential units
- flushing toilets
- irrigation

 reduce potable water use by 40%



Hassalo on 8th, Portland, 2015

- 45,000 gallons/day (100% waste water including blackwater)
- flushing toilets
- Irrigation
- Discharge to groundwater
- -7 million fresh water annually



Hilton Istanbul, Turkey, 2011

- ~22,000 gallons/day (by 2014)
- 240 hotel rooms (by 2014)
- flushing toilets
- Irrigation

 Return initial investment in 2 years

Technology and System

Technology options

plumbing

- · Combined source
- Separate source

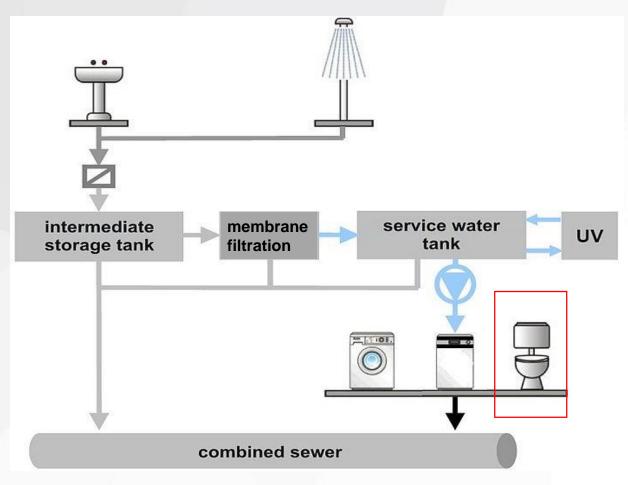
Treatment

- AeMBR
- AnMBR
- Vertical Flow Wetland
- Heat Recovery
- ...

Source & Purpose

- Laundry to landscape
- Laundry, bath, and bathroom sink to toilet flushing and landscape
- ...

Simplified Flow Chart of One Operating Greywater System



Adapted from Huber greywater system in a German Spa hotel (retrofit program, 2008)

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