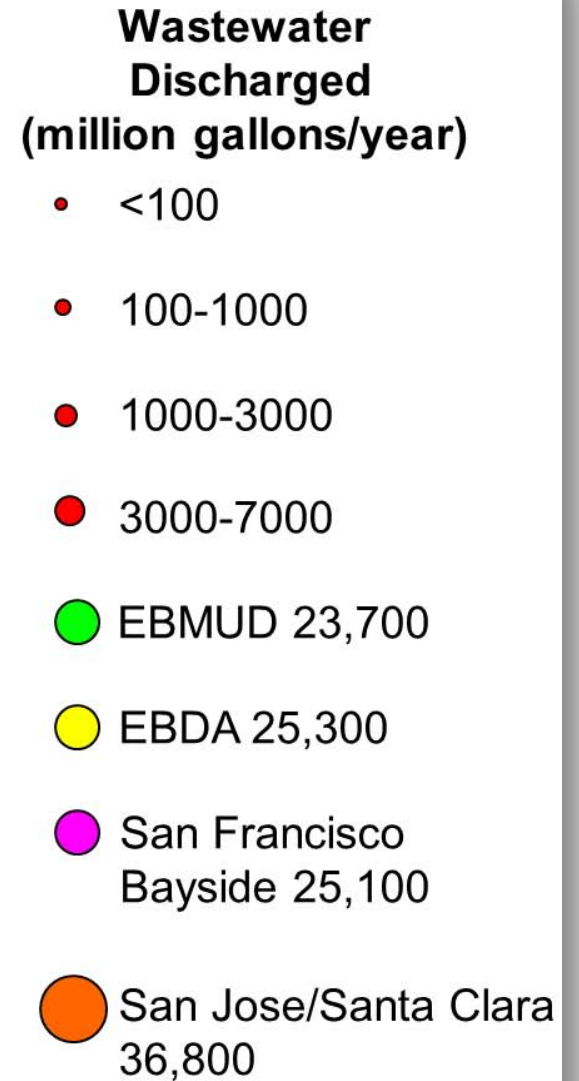


Future of Water Recycling in Bay Area



BACWA Annual Members Meeting
January 30, 2014

200 Billion Gallons of Wastewater Generated Annually, 10% Recycled



Source: SF Bay RWQCB, V. Christian, 1/16/14

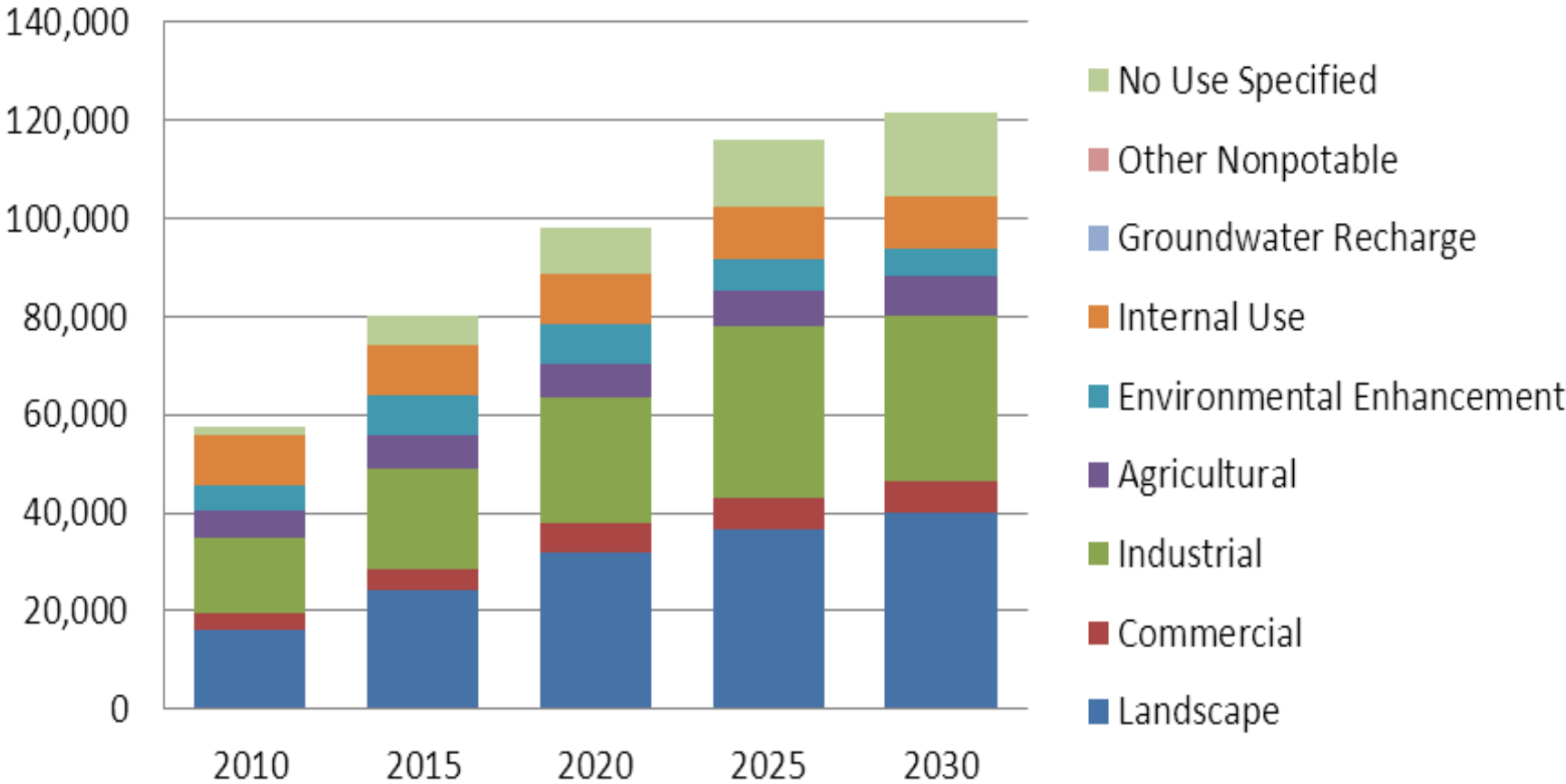
BACWA 2011 Survey Results

Bay Area Recycled Water Production and Use in Acre-Feet per Year (AFY)

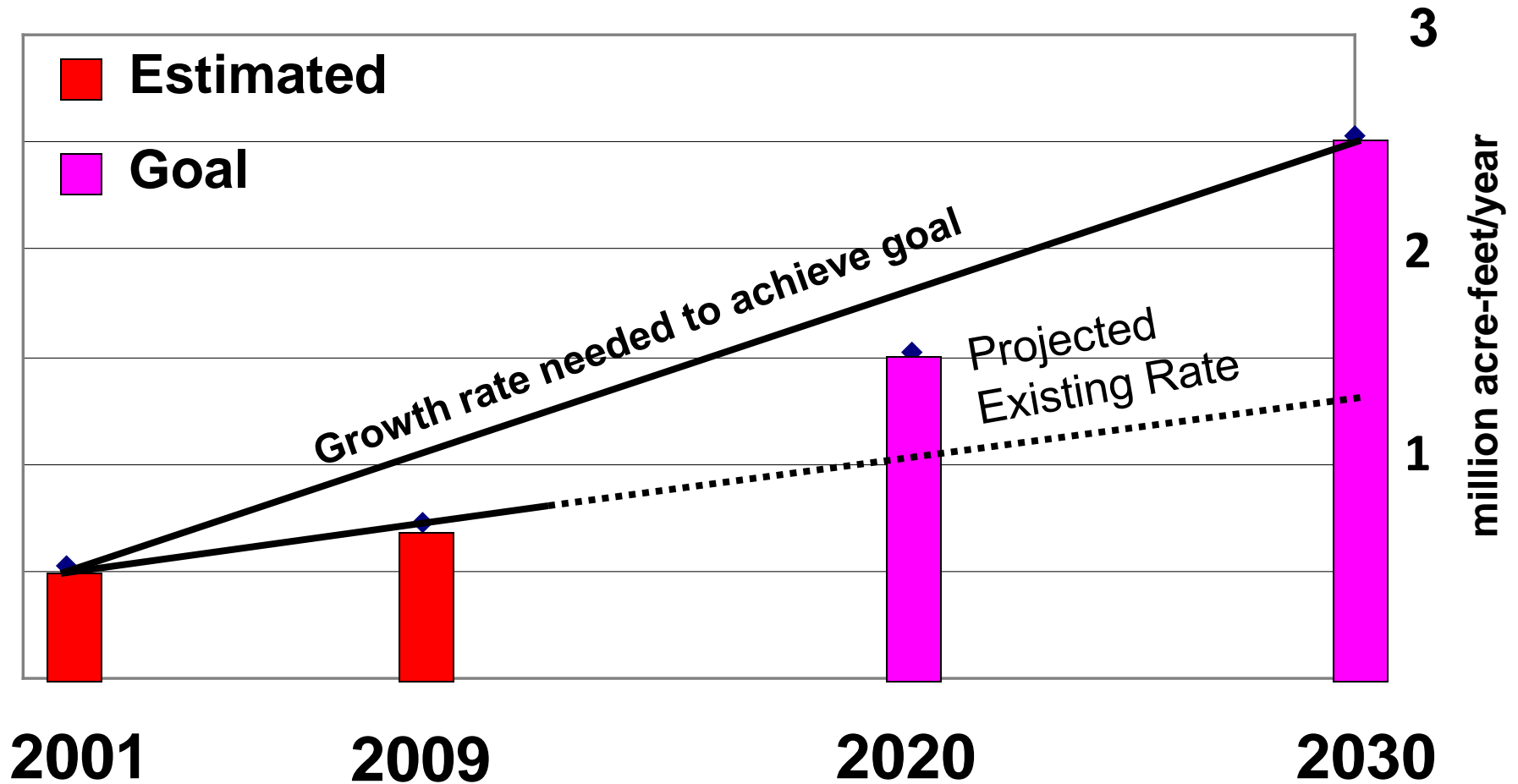
	2010	2015	2020	2025	2030
Landscape	16,048	24,262	31,751	36,572	40,003
Commercial	3,716	4,273	6,058	6,464	6,562
Industrial	15,264	20,624	25,712	34,897	33,666
Agricultural	5,536	6,889	6,889	7,489	7,989
Environmental Enhancement	4,896	7,844	7,844	6,244	5,744
Internal Use	10,448	10,399	10,567	10,567	10,567
Groundwater Recharge	0	0	0	0	0
Other Nonpotable	0	31	96	127	157
No Use Specified	1,782	5,883	8,974	13,487	16,985
YEARLY TOTAL	57,690	80,205	97,891	115,847	121,673

BACWA 2011 Survey Results

Recycled Water Use in Acre-Feet by Year



State Board Policy Goals for Water Recycling



Upcoming Changes

- Future droughts – increase non-potable reuse
- Groundwater recharge
- Direct potable reuse
- Satellite/Building-Scale Reuse
- Drinking water reorganization

Groundwater Recharge

- Recharge groundwater basin with recycled water for use as a water supply source
- CA: Orange County's existing 70 MGD groundwater replenishment system
- Bay Area: Silicon Valley Advanced Water Purification Center (SCVWD/City of San Jose) 8 MGD
 - Construction complete/operational testing: MF/RO/UV
 - Initial step: blend with tertiary recycled water, potable reuse demonstration testing
 - Future step: indirect potable reuse



Photo Source: SCVWD

Direct Potable Reuse

- Advance treated recycled water (MF/RO/UV/AOP) added into the potable water system
- Multiple year study - WaterReuse, Water Research Foundation
- CA: San Diego
- Bay Area: Silicon Valley Advanced Water Purification Center (SCVWD/City of San Jose)
 - Future step: direct potable reuse



Photo Source: Singapore PUB



Satellite/Building-Scale Reuse

- Decentralized recycling at point of use
- Building/District-Scale Reuse: SFPUC's Living Machine and future plans
- Satellite Reuse: EBMUD studying on-site reuse at golf courses (MBR)



Photo Source: SFPUC

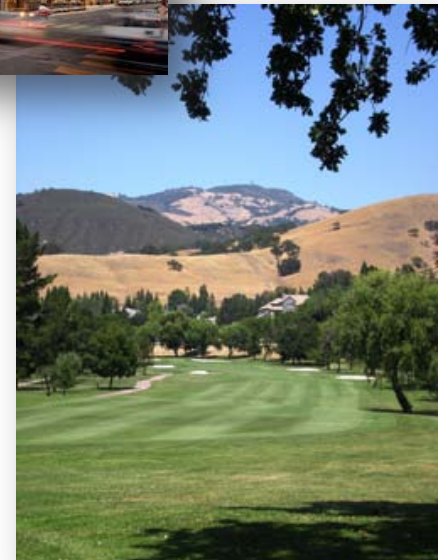


Photo Source: EBMUD

Drinking Water Reorganization

- Drinking water program to move from CDPH to SWRCB by July 2014
- Transition plan in progress, including recycled water
- SWRCB will oversee drinking water program
- Impacts to recycling: permitting, state general permit, update T22 regulations

Challenges

- High cost of new recycled water infrastructure
- Funding in short supply
- Public perception of potable reuse

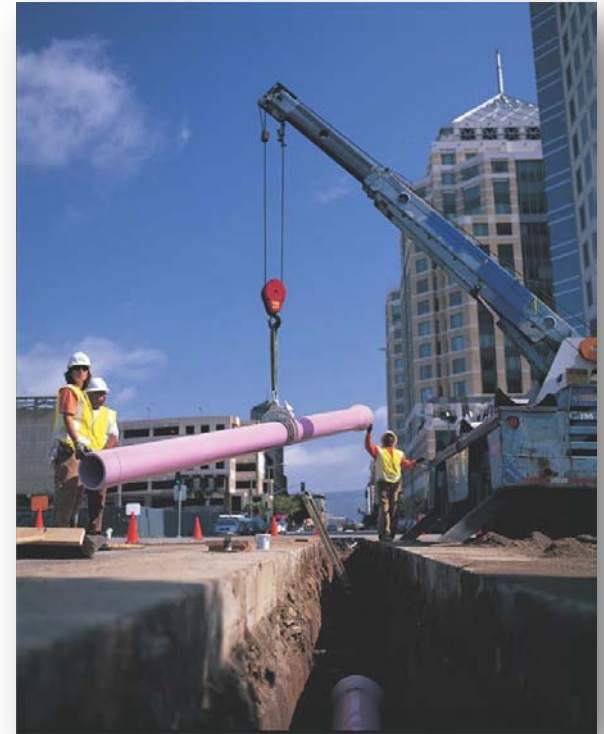


Photo Source: EBMUD

Questions?

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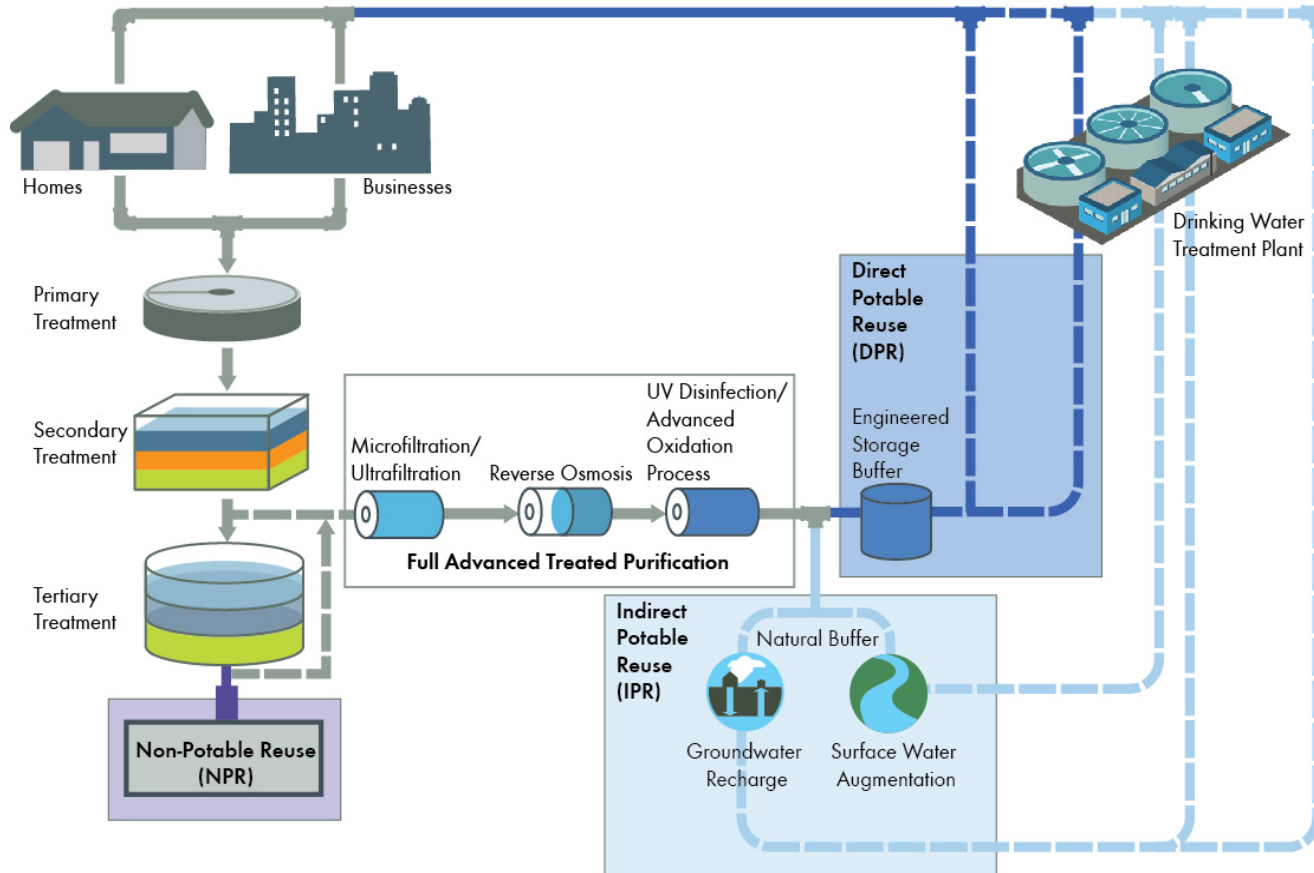
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Reuse Treatment and Intended Uses



Non-potable reuse. NPR includes any application of recycled water not involving drinking water for human consumption. NPR water originates from homes and businesses as municipal wastewater and undergoes tertiary treatment at a reclamation facility to meet specific water quality standards (i.e., Title 22 of the California Code of Requirements).

Indirect potable reuse. IPR is the application of multiple levels of treatment to achieve full advanced treated purified water for groundwater recharge or surface water augmentation, upstream of a water treatment plant, using these natural buffers for treatment.

Direct potable reuse. DPR is the planned introduction of full advanced treated purified water directly into a public water system's treated or raw water supply using engineered storage buffers, generally tanks or other closely controlled storage.