California Plumbing Code
2016 Recycled Water Revisions

WateReuse
Central Valley/Sierra Foothills Chapter
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Richard A. Mills
Water Recycling and Desalination Section
California Department of Water Resources
Presentation Overview

- Plumbing Code Background
- AB 2282
- Issues to Consider
- Plumbing Code Revision Process
What is California Plumbing Code?

• California Building Standards Code: 12 parts
  – California Code of Regulations, Title 24
  – Adopted by California Building Standards Commission (CBSC)

• California Plumbing Code
  – Part 5 of Title 24
  – Based on model code selected by CBSC: International Association of Plumbing and Mechanical Officials (IAPMO) Uniform Plumbing Code
  – Amendments by California State agencies
Current Recycled Water Provisions

• 2013 California Plumbing Code, Chapter 16A, Part II, Non-Potable Water Reuse Systems

• Focus: dual plumbed buildings with recycled and potable water systems

• All building types: commercial, office buildings, theatres, condominiums, schools, prisons, etc. as allowed by SWRCB (Title 22)

• Uses: toilets, urinals, trap primers for floor drains, & other allowed uses

• Reclaimed water source: municipal wastewater
Dual Plumbing Code History

• Before 2010: No California adopted plumbing code for recycled water

• 2002 Recycled Water Task Force: recommendations

• 2006: Water Code §13577, DWR authorized to adopt design standards for Plumbing Code for dual plumbed buildings

Other Dual Plumbing Regulations

• Title 22 Water Recycling Criteria, Division 4, Chapter 3
  – Article 4, Use Area Requirements
  – Article 5, Dual Plumbed Recycled Water Systems
    (in buildings or irrigation at individual residences)
  – Signage, cross-connection testing, etc.

• Title 17, Div. 1, Ch. 5, Art. 2, Protection of Water Systems
  – Backflow protections for public water supply
AB 2282

• Passed 2014

• Required Actions
  – Mandatory Installation: Establish criteria for mandating installation of recycled water systems for newly constructed single-family and multifamily residential buildings (HCD) and commercial and public buildings (CBSC)
  – How: Establish standards for construction of recycled water systems (HCD & CBSC)
  – Undertake research
Overlapping Authorities

- Four state agencies
- Plumbing Code (Title 24)
  - Department of Water Resources
  - California Building Standards Commission
  - Department of Housing and Community Development
- Titles 17 & 22
  - State Water Resources Control Board
AB 2282 Coverage

• Research:
  – Indoor applications
  – Potential outdoor applications consistent with Title 22

• Adoption of standards
  – Installation of recycled water systems for newly constructed buildings
  – Implied: building site landscaped areas
AB 2282 Implementation Assumptions

- Applies to recycled water provided from source external to use site
- Implies source is treated municipal wastewater in definition of “recycled water” reference to Title 22 regulations (H&SC §17921.5(a), 18940.6(a))
- Excludes water sources on use site (rainwater, graywater, black water, etc.)
“Whether”: Criteria to Mandate

- Objectives (implied in AB 2282)
  - Facilitate future cost-effective expansion of recycled water use in areas where recycled water may be served in future
Criteria to Mandate

• Areas identified in local planning efforts
  – Master plans, feasibility studies, facilities plans
  – Facilities plans funded by SWRCB
  – Urban Water Management Plans
  – Local ordinances

• New construction within areas identified within certain time horizon

• Note: Water Code §13579-13580.7

• Potential for indirect or direct potable reuse that precludes need for dual distribution & plumbing
Criteria to Mandate: Cost

• Water agencies often ignore costs of dual distribution or on-site plumbing if paid for by developers or home buyers
  – Not free: A real cost to society
• Cost-effectiveness to serve residential areas
  – Not well documented, needs research: costs may be very high (>$10,000/AF)
• Incremental cost to dual plumb new buildings vs retrofit existing buildings
• Incremental cost to dual plumb from property line to buildings in new construction vs retrofit
• Design point of connection to facilitate later retrofit
Criteria to Mandate: Stranded Costs

• Dual plumbing that is never used is equivalent of stranded cost to homeowner and society generally

• Unused dual plumbing essentially increases the unit cost of recycled water for society as whole
“What” to Mandate

• Which components of recycled water plumbing system to mandate
• Just within buildings, ready for future connection to reclaimed water?
• Special landscape irrigation features?
“How”: Chapter 16A, Part II

- Addresses the “How to”
- Standards for construction, monitoring, cross-connection testing of recycled water systems at use sites, signage
- Within buildings
- Vague reference to plumbing on premises outside buildings (DWR authority may not apply)
Chapter 16A, Part II
Indoor Single Family Residence Issues

• Building types:
  – Single family houses not addressed (not currently allowed in Title 22)
  – Must Title 22 be amended to allow single family house use?
  – Are current provisions in Chapter 16A adequate or practical for single family structures?
Cross-Connection Protection of Occupants

- Potable water may be used as makeup water for recycled water
- Gray water or rainwater may be used as makeup water for recycled water
- Recycled water may be used as makeup water for gray water or rainwater systems
- What backflow protection is adequate to protect potable water from nonpotable water?
- What backflow protection is adequate to protect recycled water from other nonpotable water?
CAUTION
RECYCLED WATER,
DO NOT DRINK.
DO NOT CONNECT TO
DRINKING WATER
SYSTEM.
NOTICE
CONTACT
BUILDING MANAGEMENT
BEFORE PERFORMING
ANY WORK ON THIS
WATER SYSTEM.
3 Scenarios in Title 17, §6703
(c)(1) Potable Supplements Recycled

Protects public water supply

Protects residence water supply

Protects reclaimed water supply
3 Scenarios in Title 17, §6703
(c)(2) No interconnection with the potable

Protector

- **AG, RP, DC?**
  - Protects reclaimed water supply

- **AG?**
  - Protects residence water supply

- **RP**
  - Protects public water supply

GW

RW

PW
3 Scenarios in Title 17, §6703

(c)(3) Residences using RW for landscape irrigation conforming with Title 22 dual plumbing regulations (Art. 5)

- **GW**: Protects public water supply
- **RW**: Any connection prohibited by Title 17?
- **PW**: Protects reclaimed water supply

Diagram:
- GW
- RW
- PW
- Property Line
- AG, RP, DC?
- AG?
- DC

Questions:
- Any connection prohibited by Title 17?
The Gap

- Plumbing between point of connection or property line and structures
- Plumbing for irrigation or other external uses
- Not clearly addressed in Ch 16A
- An item of confusion for local building officials that needs clarification
- Is there legal authority to adopt standards for this (DWR, CBSC, HCD, SWRCB)?
Chapter 16A Improvements

• How well are current standards working?
• Are current standards adequate or suitable for single-family residences to protect occupants?
Where to Put AB 2282 Standards

- 2015 IAPMO model plumbing code, Chapter 15
  - Alternate water sources (gray, recycled)
- 2015 IAPMO model plumbing code, Chapter 16
  - Now rainwater capture systems
- Green Building Code
- Considerations
  - Consolidating related standards in one location facilitates
    - Consistency
    - Use by builders, water purveyors, state officials
    - Integration of Ch 16A provisions with any new AB 2282 provisions
- Cross Reference between Green and Plumbing Codes
Drafting Committee

- California Building Standards Commission
- California Department of Housing and Community Development
- California Department of Water Resources
- State Water Resources Control Board
  - Division of Drinking Water
  - Division of Water Quality
- State Architect
- State Fire Marshall
Stakeholder Input

• **Steering committee**
  – State agencies, representatives of key stakeholder perspectives

• **Subcommittees**
  – Maintenance, Testing and Inspection
  – Backflow Prevention and Cross-Connection
  – Enforcement, Compliance, Minimum Water Quality
  – Onsite Treated Water
  – Ad Hoc (Beneficial Uses, Fire Suppression Systems, etc.)
  – Missing Need: Criteria for Mandated Plumbing in New Construction

• Public workshops for all stakeholders

• Public comment period
Schedule

- 14 June 2016: Stakeholder meeting
- 28-29 July 2016: Subcommittee meetings
- Aug-Oct 2016: Stakeholder/Subcommittee meetings
- Aug-Nov 2016: Green Building Focus Group meetings
- Dec 2016: State agency initial submittal of code changes to CBSC
- Spring 2017: DWR adoption
- June 2017: CBSC adoption
Contacts

• Department of Water Resources
  – Rich Mills
    (916) 651-0715
    richard.mills@water.ca.gov

• California Building Standards Commission
  – Kevin Day
    (916) 263-0355
    kevin.day@dgs.ca.gov