



Session 1: Evaluating Desalination as a Water Supply Option in the Bay Area

*The Who, What, When, Where, Why and How
of Regional Water Supply Planning*

March 31, 2012

Sierra Club Bay Chapter Public Workshop



What is “Bay Area Regional Desalination”?

Who are the agencies studying regional desalination in the Bay Area? **Where** would the water flow?

Why are the partners studying desalination?
How could it fit in with other options for the future?

What has been done so far and what remains ahead? (**When**)

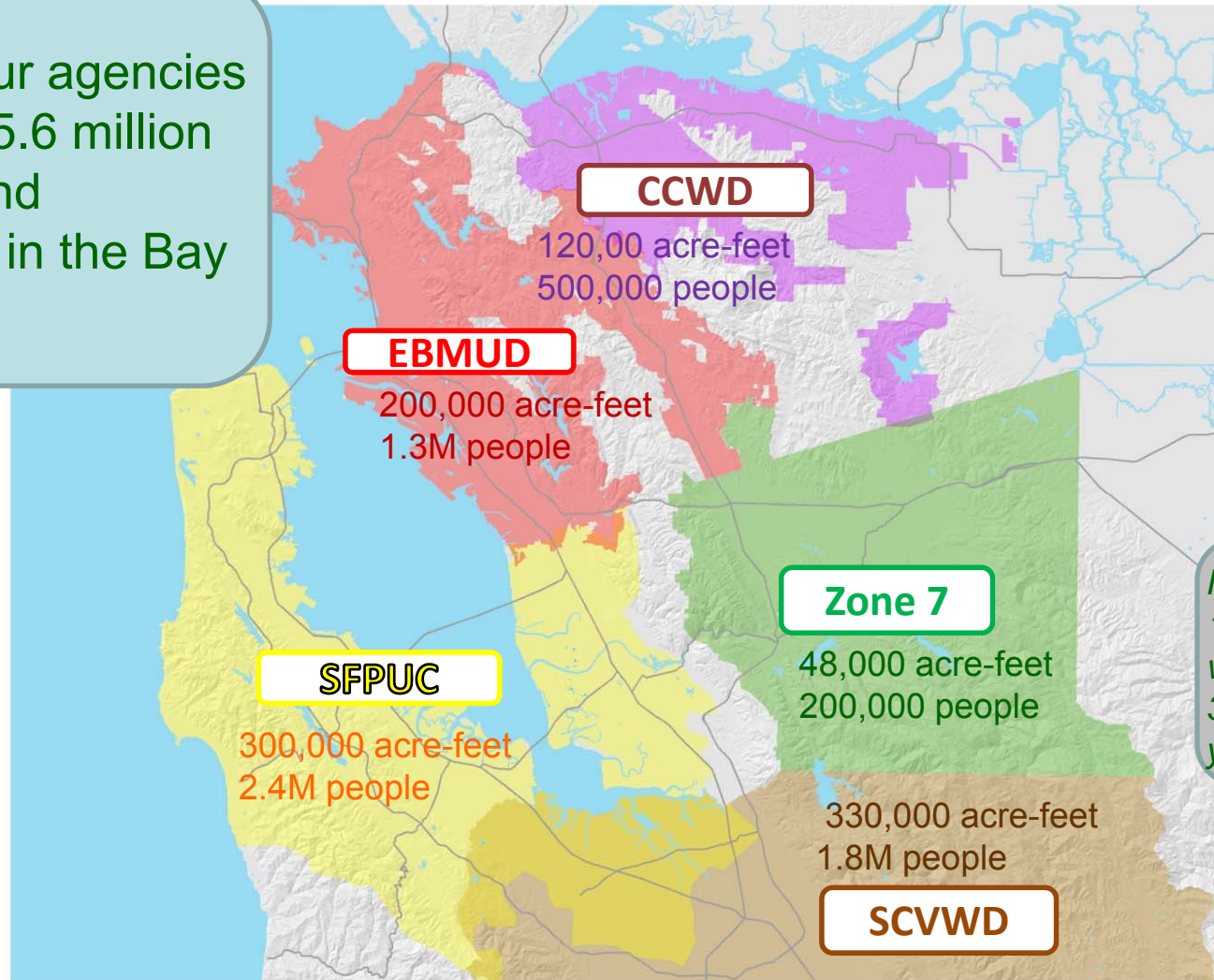


What is the Regional Desalination Project?

- A **partnership** between some of the Bay Area's largest water supply agencies.
- A **study** to evaluate how a new water supply can move through our shared region, if and when it is needed.

Partners

Together, our agencies serve over 5.6 million residents and businesses in the Bay Area.



*Note:
1 acre-foot of
water serves 2-
3 families in one
year*

Water Supply Planning





Use Less, Conserve More

- Conservation is a priority:
 - *grants, rebates, and other incentives*
 - *water-wise gardening and turf-conversion programs*
 - *leak and fixture audits*
 - *support of improved plumbing codes*
 - *public education*
- Current annual investments in conservation: **\$20M+**
- Our agencies are also developing automated meter reading, improving leak detection and repair, and tracking down other system losses to manage demand.

Use Less, Conserve More



This screenshot shows the EBMUD WaterSmart Center website. The header includes the EBMUD logo and navigation links like 'Home', 'For Customers', 'Backpacks', 'Business Operations', 'Resource Center', 'Our Water', and 'About EBMUD'. A search bar is visible. The main content area features a 'Water Emergencies' section with the phone number 1-866-403-2683, and several 'Popular Pages' including 'Conservation and Recycling', 'WaterSmart Tips', 'Recycled Water', 'Toilet Performance Tests, UAR', and 'News'. There are also buttons for 'Residential Services and Rebates', 'Commercial Services and Rebates', and 'Irrigation Services and Rebates'. A 'WaterSmart Home Survey Kit' section is also present.

This screenshot shows the Zone7 website, which is focused on water-wise gardening in the Tri-Valley. The header includes 'Water-Wise Gardening in the Tri-Valley' and navigation links like 'Garden Tours', 'Garden Gallery', 'Plants', 'My List', 'Garden Resources', 'Watering Guide', and 'FAQ'. The main content area features a large banner for 'Water-Wise Gardening in the Tri-Valley' with images of pink flowers. Below the banner, there are sections for 'Free Workshops!' and 'Free Sprinkler Key!!!'. The 'Free Workshops!' section lists two events: one on Saturday, March 17, 10 to 11:30 a.m. at Western Garden Nursery, and another on Saturday, March 24, 10 to 11 a.m. at Western Garden Nursery. The 'Free Sprinkler Key!!!' section describes a free, easy-to-use sprinkler key that can adjust watering overspray onto driveways and sidewalks.

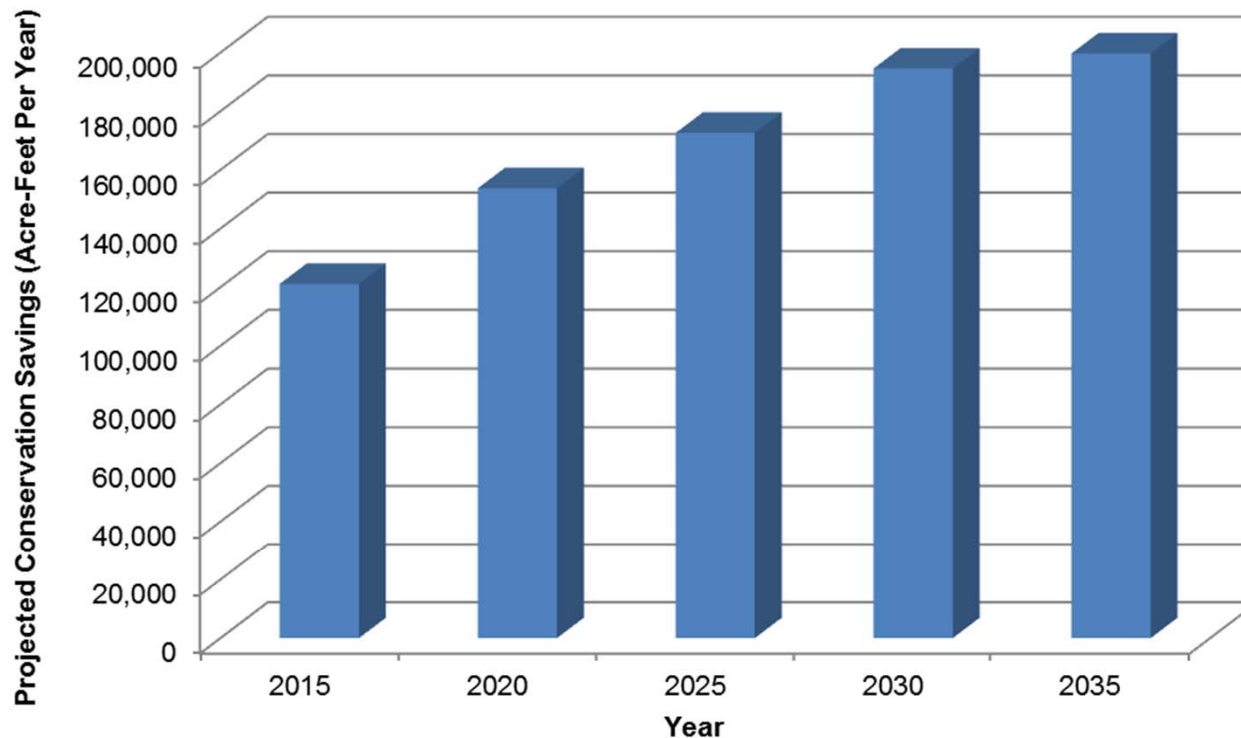
This screenshot shows the Santa Clara Valley Water District website. The header includes the district's logo and navigation links like 'Home', 'Services', 'Newsroom', and 'Business'. The main content area features a 'Water Conservation - Santa Clara Valley' section with a list of programs and services. The 'WATER CONSERVATION' section includes links for 'Rebates', 'Homes', 'Businesses', 'Landscaping', 'Agriculture', 'Free Conservation Items', 'Events And Workshops', 'ADOPT A CREEK', 'TEACHERS & STUDENTS', 'CLEAN SAFE CREEKS PLAN', 'FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM (CIP)', 'CREEKSIDE PROPERTY PROGRAM', 'COMPREHENSIVE WATER RESOURCES MANAGEMENT PLAN', and 'Programs > Water Conservation'. There is also a 'Join Us for our 20th Annual Landscape Workshop' section.

This screenshot shows the San Francisco Water Power Sewer website. The header includes the department's logo and navigation links like 'Jobs', 'Contact Us', and 'Calendar'. The main content area features a 'Conservation' section with a list of services and supply planning options: 'Recycled Water', 'Groundwater', 'Conservation', 'Graywater', 'Rainwater Harvesting', and 'Desalination'. There are also sections for 'At Home', 'For Business', and 'Gardens and Landscaping'. The 'At Home' section includes a 'Rebates' section with the text 'Save resources and money. Rebates are available for qualifying toilets, washers and solar installations.' and a 'Resources & Publications' section with the text 'Additional materials and links provided by our Water Conservation Unit.'.

This screenshot shows the Cowi Water Conservation website. The header includes the website's title and navigation links like 'Home', 'Services', 'Newsroom', and 'Business'. The main content area features a 'Water Smart Programs' section with a list of programs: 'SINGLE-FAMILY RESIDENTIAL', 'MULTI-FAMILY RESIDENTIAL', 'COMMERCIAL PROPERTIES', 'REBATE PROGRAMS', and 'LANDSCAPE TIPS'. The 'SINGLE-FAMILY RESIDENTIAL' section includes 'Home Water Use Survey', 'Clothes Washer Rebate Program', 'High-Efficiency Toilet Rebate', 'Free Water Conservation Devices', and 'Landscape Water Saving Tips'. The 'MULTI-FAMILY RESIDENTIAL' section includes 'Indoor Water Use Survey', 'Large Landscape Water Use Survey', 'High-Efficiency Toilet Rebate', 'Commercial Clothes Washer Rebate', 'Irrigation Equipment Rebates', and 'Smart Sprinkler Timer Rebates'. The 'COMMERCIAL PROPERTIES' section includes 'Commercial Water Use Survey', 'Large Landscape Water Use Survey', 'High-Efficiency Toilet Rebate', 'High-Efficiency Toilet Rebate', 'Commercial Clothes Washer Rebate', 'Irrigation Equipment Rebates', and 'Smart Sprinkler Timer Rebates'. There is also a 'Pilot Water-Efficient Landscape Rebate Program' section.

Use Less, Conserve More

Projected Conservation Savings: CCWD, EBMUD, SCVWD, SFPUC, and Zone 7



By 2035, conservation savings are projected to be equivalent to the potable water needs of **400,000 households** or **about 1.2 million people**.

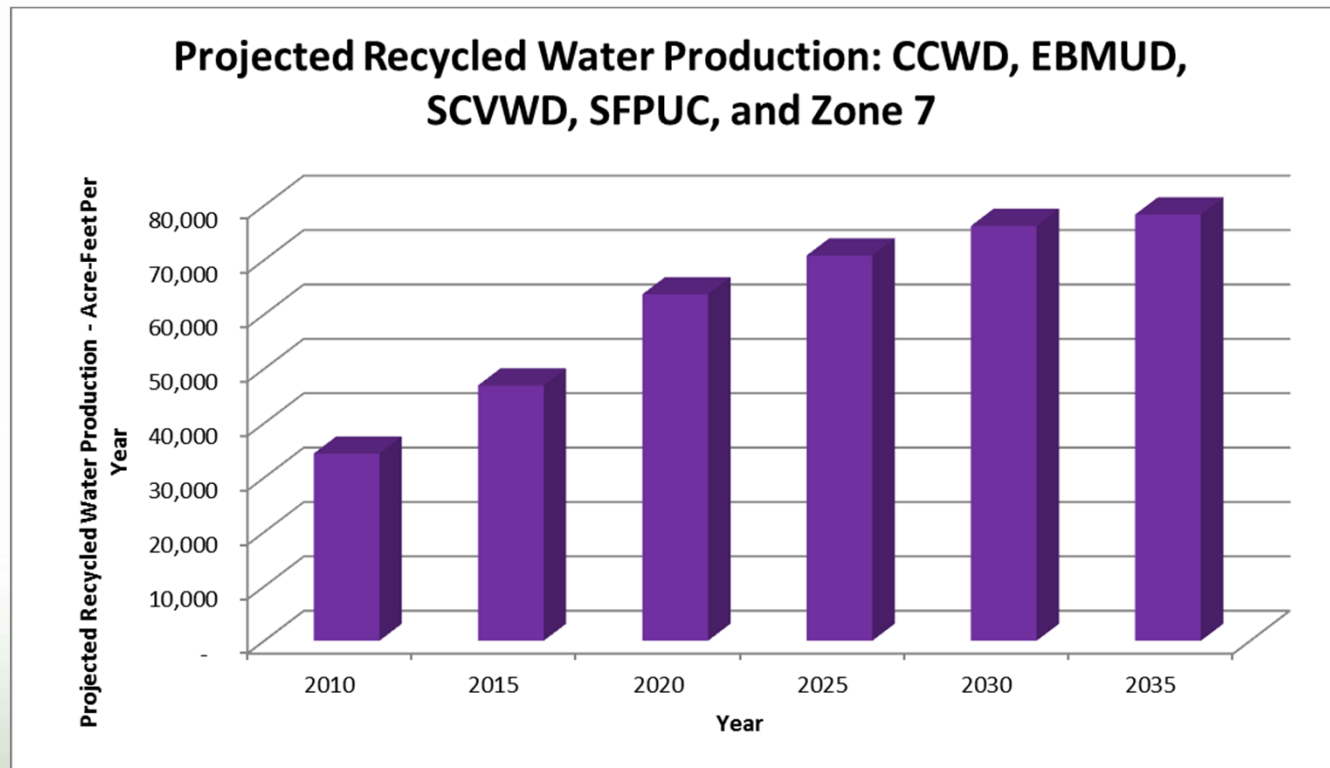
Recycle and Reuse



- **EBMUD:** 20 mgd of recycled water by 2040.
- **SCVWD:** Evaluating the feasibility of using advanced treated recycled water for indirect potable reuse, such as groundwater recharge.
- **SFPUC:** Requiring new commercial/mixed-use developments to reuse graywater and treat rainwater on-site.
- **Zone 7:** Evaluating the expansion of recycled water to maximize its use for irrigation.
- **CCWD:** 10% of existing supply is recycled water, evaluating new opportunities.



Recycle and Reuse



By 2035, use of recycled water is projected to free up drinking water supplies for **160,000 households or nearly half a million people.**

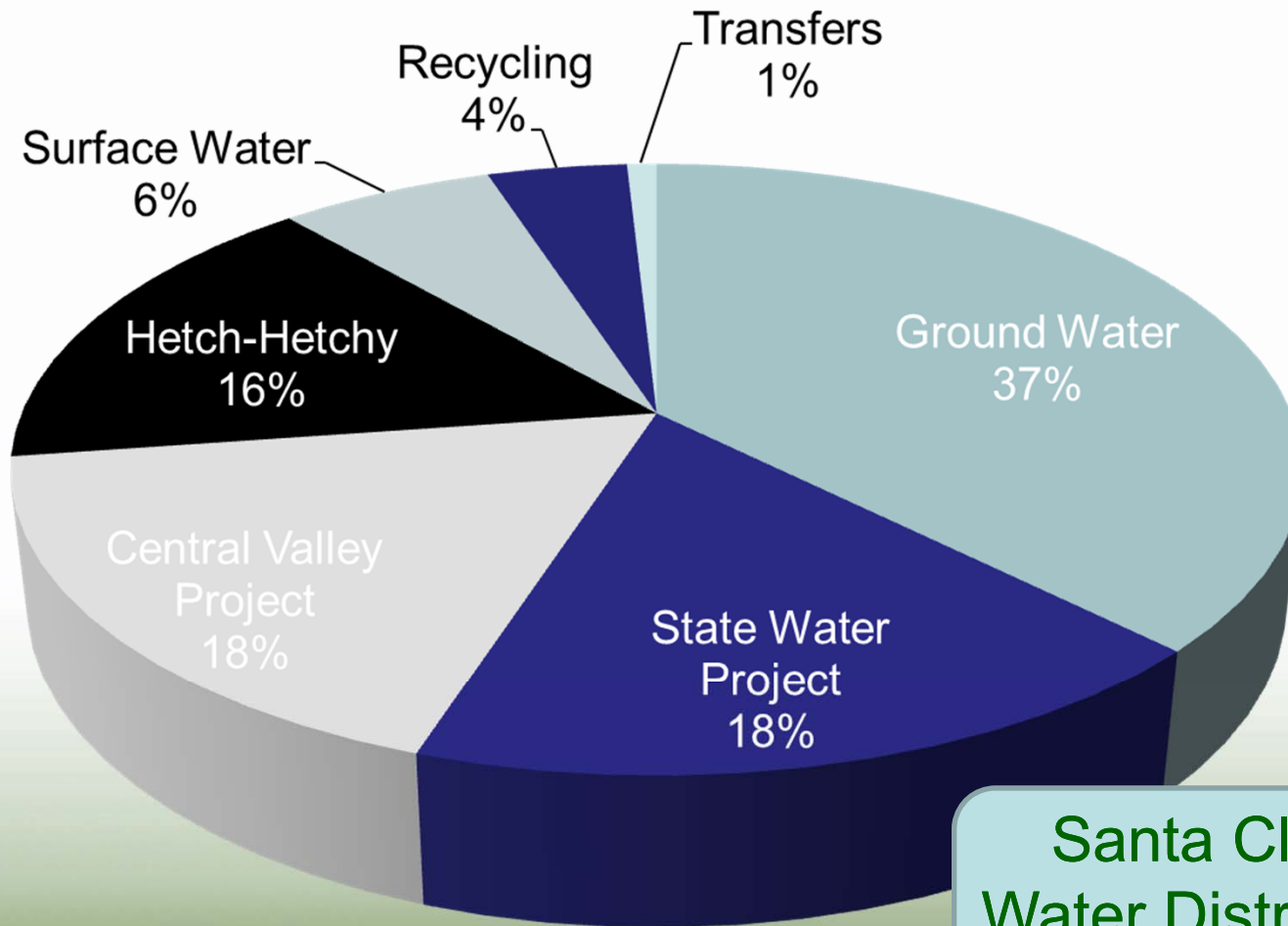


Acquire New Supplies

May be needed to replace lost supplies or diversify portfolios.

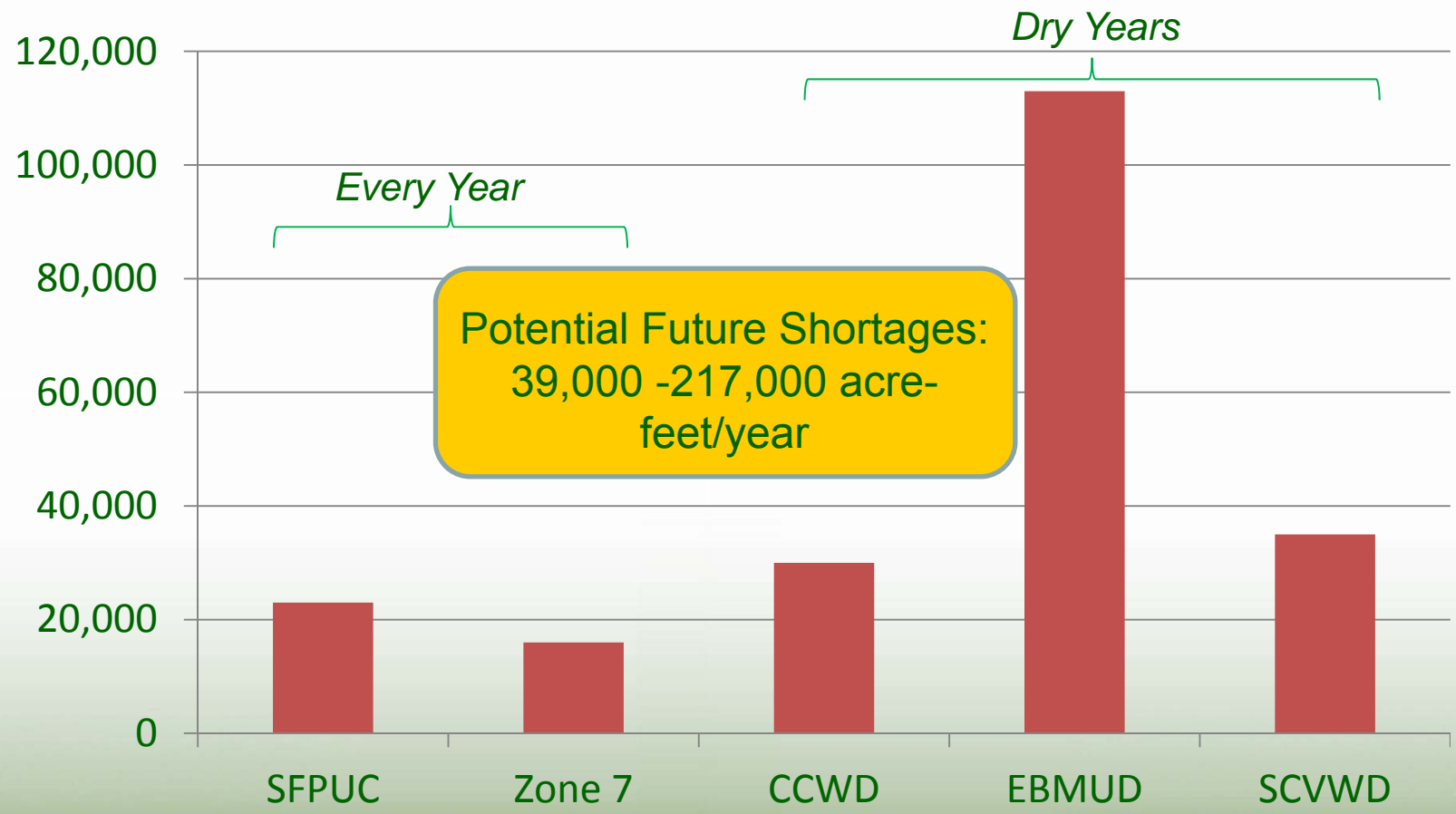
- Purchase imported water from other parties.
 - can be short-term or long-term agreements.
 - water conserved by agriculture is one potential source of water supply for growing urban populations.
- Pump more groundwater.
- Develop groundwater banking or conjunctive use programs.
- Obtain/increase water rights for local streams .
- Desalinate surface water or groundwater normally impaired for potable use.

Example of a Diversified Portfolio



Santa Clara Valley
Water District's Existing
Supply Mix

Potential Maximum Future Shortages (2030-2040)

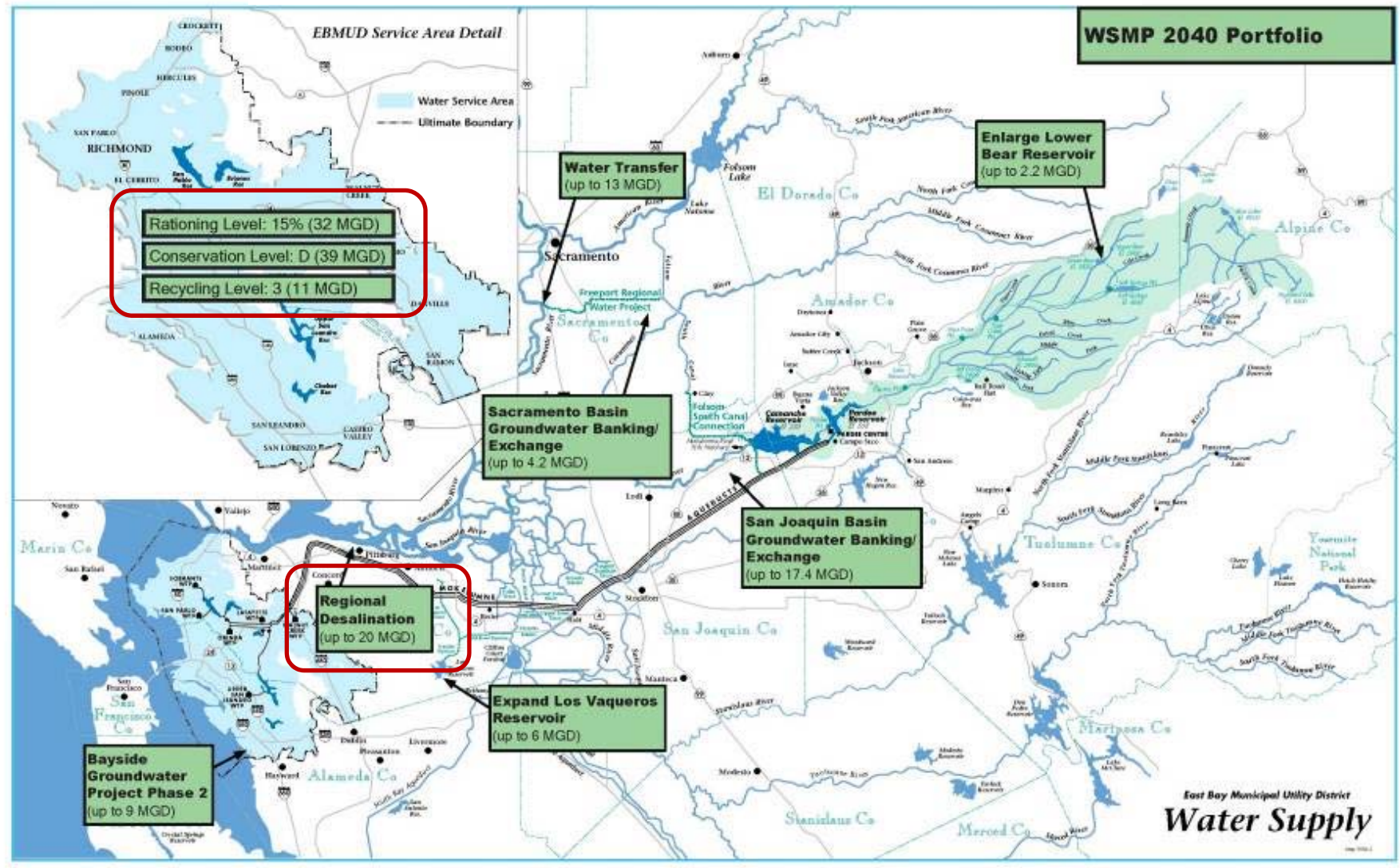




Potential Agency Demands from Desalination

Agency	Demand (Acre-Feet Per Year)	Demand (mgd)	Demand Frequency after 2020
SFPUC	10,000	9	Every year
Zone 7	5,600	5	Every year, or wet/ normal years only
CCWD	Up to 14,400	Up to 13	1 in 10 years (2030+)
SCVWD	Potential Future Shortages: 39,000-217,000	10	1 in 5 years
EBMUD		9+	1 in 5 years
Total	15,600-51,100	14 - 46	

EBMUD's Water Supply Portfolio in 2040





Regional Benefits

- Diversification of Water Supplies
- Reliability of Water Supplies
- Minimization of New Facilities
- Cost-Effectiveness
- Operational Flexibility

Diversification of Water Supplies

- Need different supplies that can handle different challenges.
- Desalination offers unique benefits for responding to some of these challenges.

What factors can affect our ability to reliably provide you with water?

- drought conditions
- earthquakes
- levee failures in the Delta
- major pipeline and facility failures
- environmental restrictions
- climate change
- saltwater intrusion in the Delta
- terrorist acts
- water quality problems

Reliability of Water Supplies

- Desalination provides a reliable source of *drinking* water, unlike other alternative supplies.
- Desalination is not as dependent on hydrologic conditions.

Can supply drinking water even during droughts.



Minimization of New Facilities

- Regional approach minimizes the need for new construction and maximizes use of existing facilities.
 - Sharing of infrastructure leads to minimization of environmental footprint.
 - Environmental disruption due to plant construction would be limited to one site.

Cost-Effectiveness

- Regional approach minimizes overall costs.
- Costs (e.g., planning, design) will be shared among participating agencies.

Total Costs Through 2011	DWR Grant	Partners' Share	Agency Share
\$2,328,254	\$1,199,056	\$845,878	\$283,320

- A regional facility benefits from economies of scale.
- Allows for use of existing excess capacities.



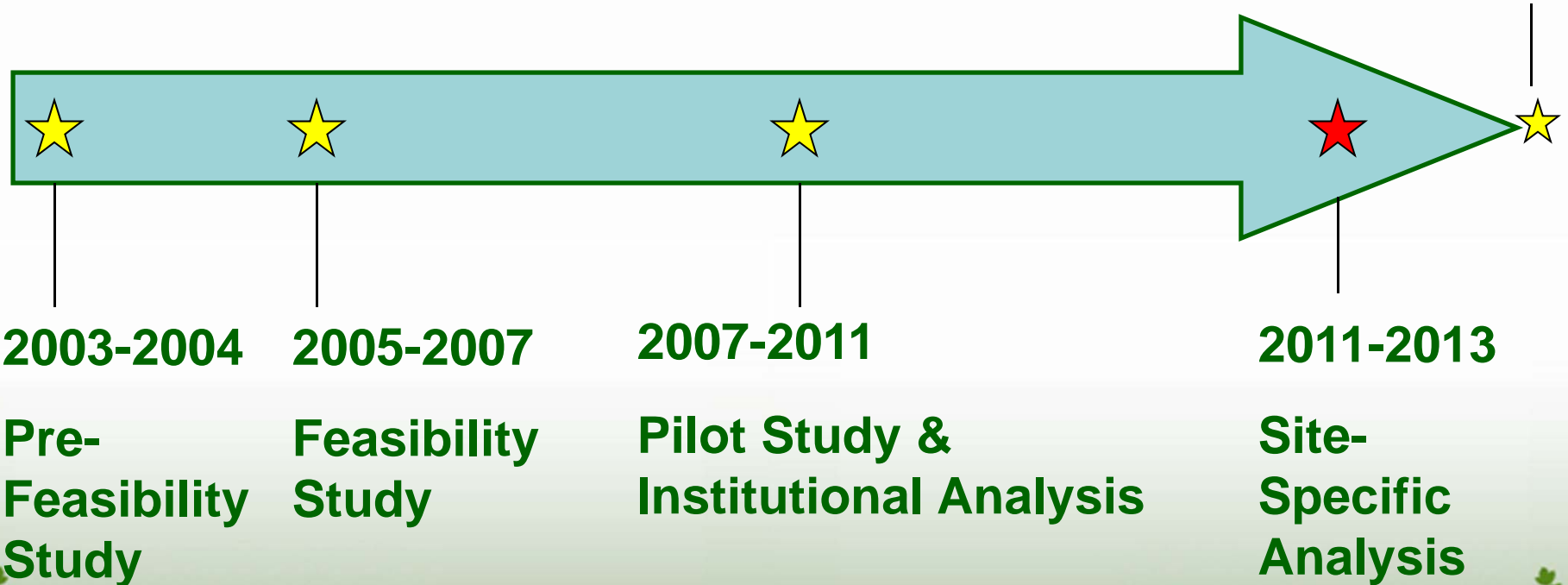
Operational Flexibility

- Optimize regional desalination facility operation and capacity to meet different needs at different times.
- Enhanced agency interconnections and agreements can provide flexibility in wheeling water across the Bay Area.

Timeline

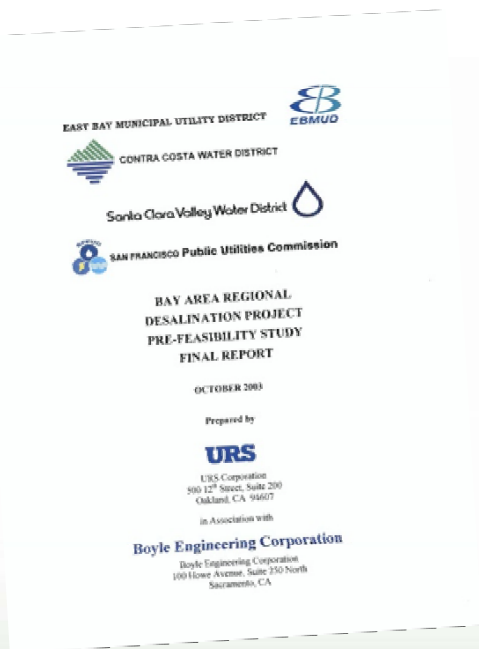
June 2013

Decision on agency participation
and initiation of CEQA process (*pending decision*)





Pre-Feasibility Study (2003-2005)

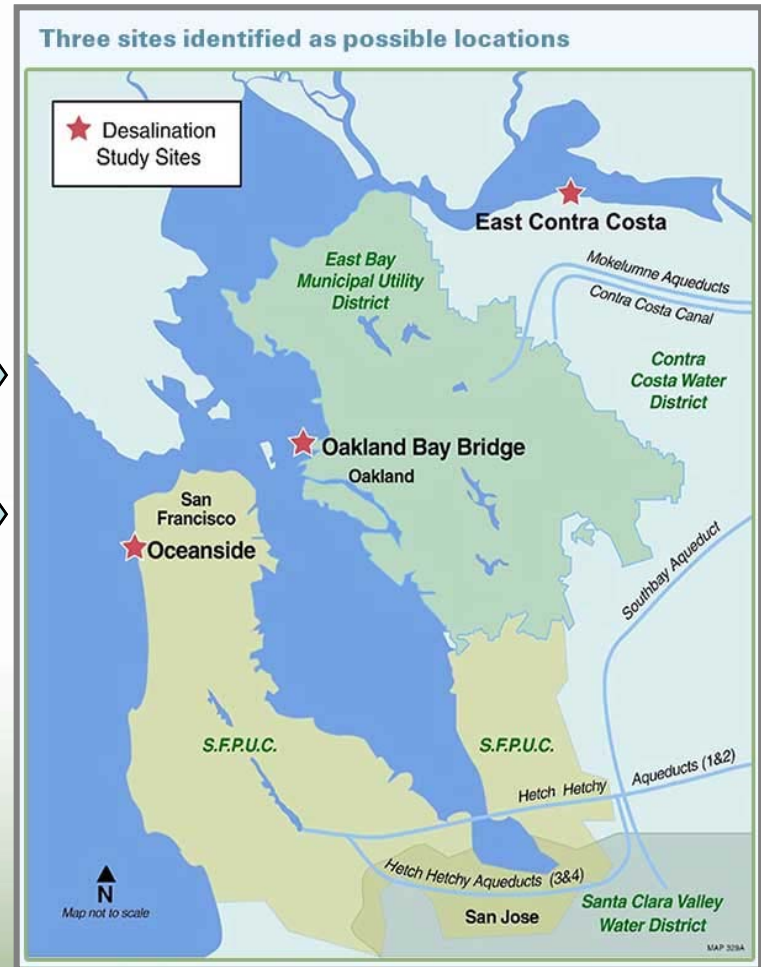
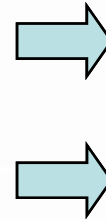


- Identified project objectives and goals for each agency
- Evaluated future demands based on historical needs, droughts
- Identified and screened 22 sites
=> 13 feasible => top 3

Evaluation of Site Alternatives (2003-2007)



Sites evaluated in 2003 feasibility study



Narrowed down to 3 potential sites



Feasibility Study Findings

- Project size could be optimized to meet most of the demand most of the time
- Conveyance capacity limits the project size
- If operated continuously, water costs could be cut by 50%
- A series of institutional agreements will be required

Site Selection for Pilot Testing



- East Contra Costa selected
- *Benefits:*
 - Opportunity to add to body of research: testing of brackish water desalination
 - Permitted CCWD water intake (Mallard Slough Pump Station)
 - Existing facilities with state-of-the-art fish screen



Concluding Thoughts

- The Bay Area Regional Desalination Project is a **unique partnership** offering **regional benefits**.
- Desalination is **one of many tools** (including recycled water, conservation, groundwater, etc.) to address water shortages.