




# Overview of the Water Authority's Draft 2010 Urban Water Management Plan

Water Planning Committee Workshop  
February 10, 2011

# Workshop Agenda

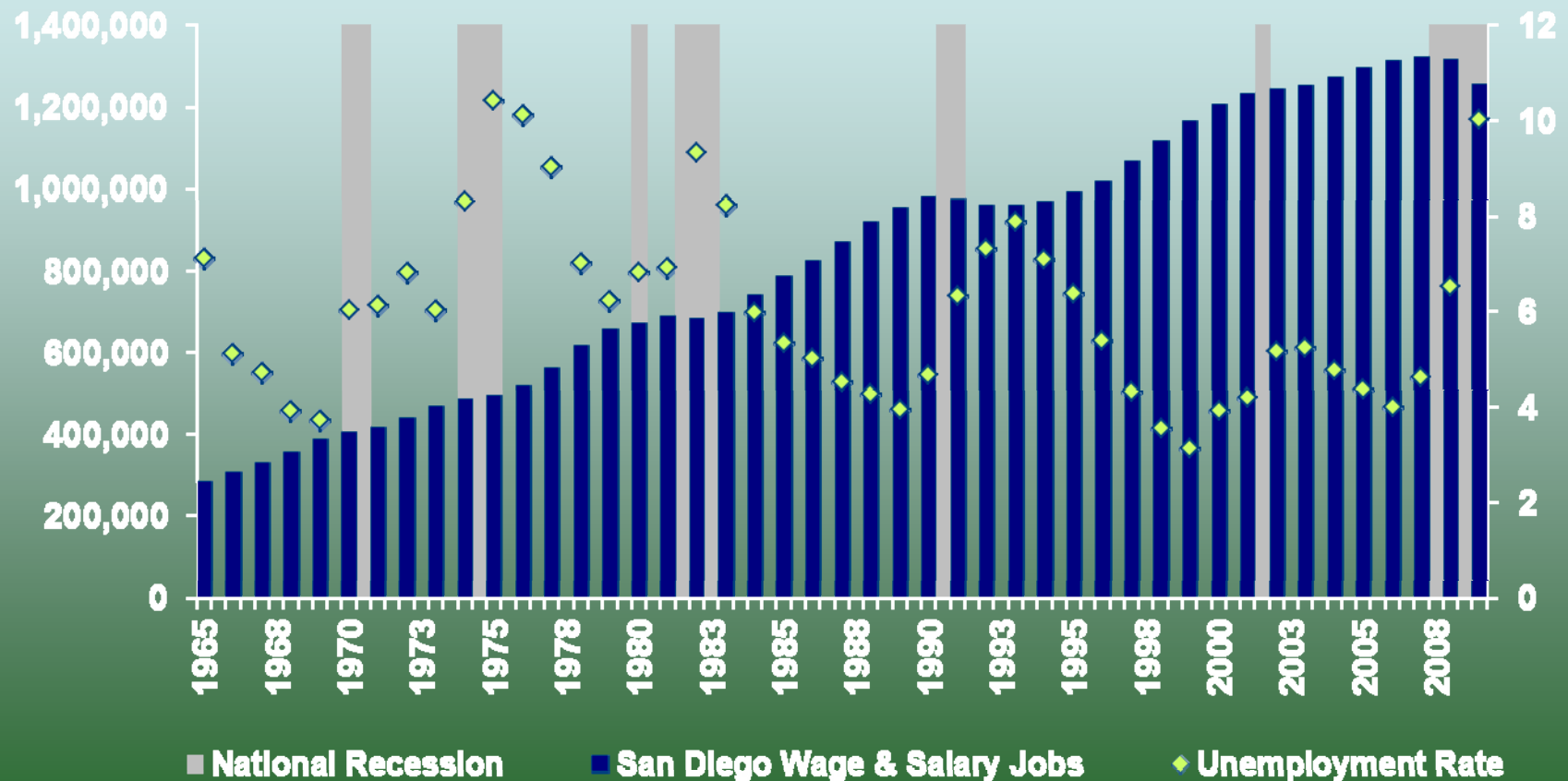
1. Introduction/Background
2. Overview of Plan Content and Coordination
3. 2035 Draft Water Demand Forecast
4. Water Use Efficiency Target (Compliance with SBX7-7)
5. Preliminary Projected Water Resources Mix
6. Scenario Planning Process to Manage Uncertainties



“And it never failed that during the dry years the people forgot about the rich years, and during the wet years they lost all memory of the dry years. It was always that way.”

*“East of Eden,” John Steinbeck*

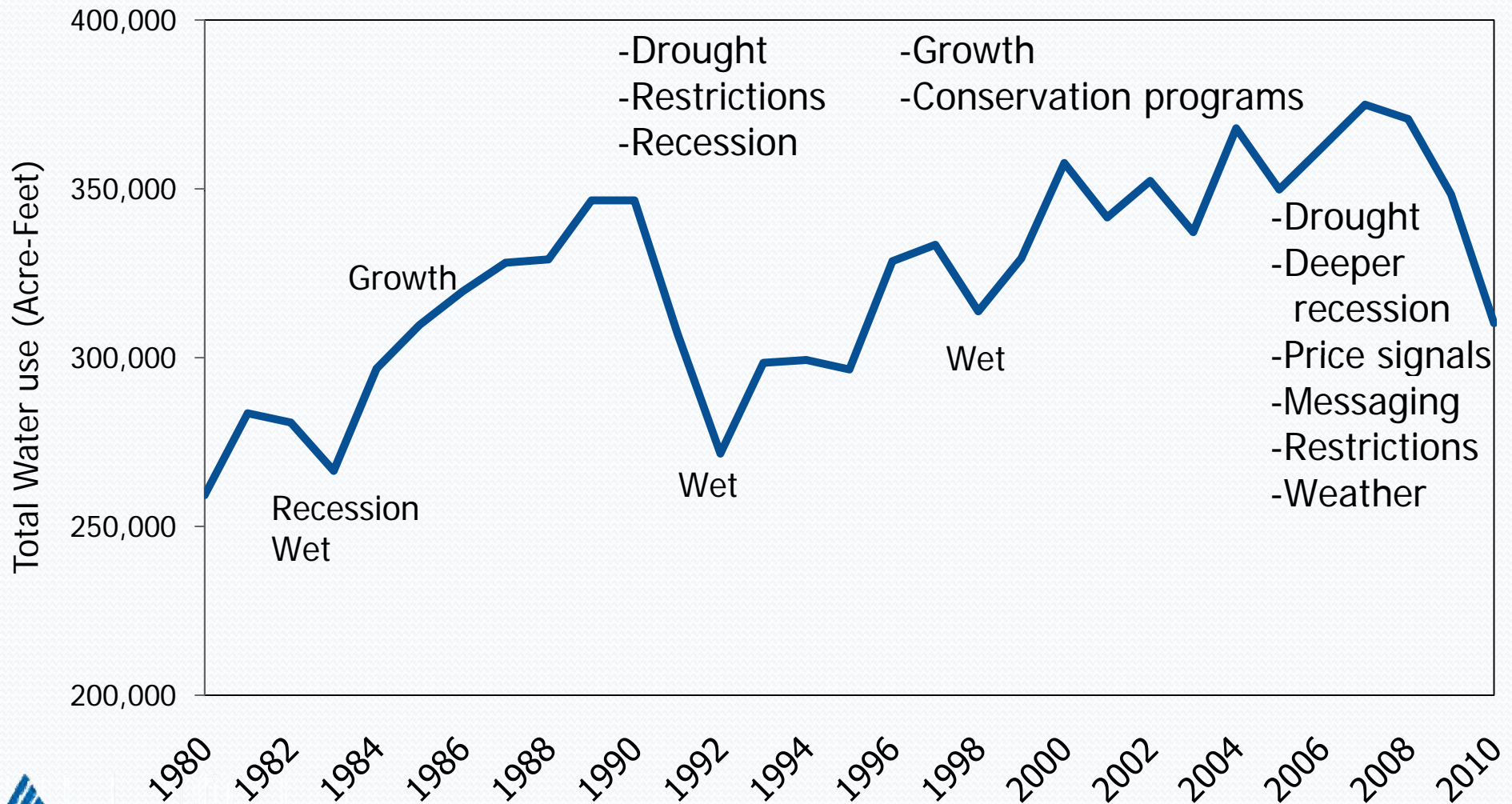
# San Diego region weathered past booms and busts



Source: California Employment Development Department; National Bureau of Economic Research

# Events Cause Fluctuations in Water Use

## Five Large Urban Agencies from FYs 1980 - 2010



# 2010 UWMP Update: Planning in a Changing Environment

## Water Demand

- Significant reductions in demand since FY 2007
  - -20% Municipal and industrial
  - -56% certified agriculture
- Concerted effort by water agencies to reduce demand
  - Concurrent with other external factors (eg: economic recession, cooler weather)
- 20% reduction urban water use by 2020
  - Will act to suppress resurgence of water demand
  - Will it be successful? – What effect on economic growth?
  - Demand hardening will intensify effect of future shortages

# Planning In a Changing Environment

## Water Rates

- Between 1993 – 2007 retail water rates increased at or below the rate of inflation
- Between 2007-2010 most residential customers experienced >60% increase
- Future retail rate increases will affect demand
  - 2035 demand forecast assumes continued retail rate increases above inflation
  - How will consumer rate fatigue factor into sustained increases?

# Planning In a Changing Environment

## Water Supply

- Bay-Delta
  - Will there be a fix?, How much water?
- Colorado River
  - QSA Litigation
- Economics of local supply
  - Cost of imported water -MWD rate litigation
- Climate change
  - Does it make a difficult situation worse?

# What's New for the 2010 UWMP

- Scenario planning to deal with uncertainties
  - Climate change
  - Regulatory/Legislative actions
  - Water supply development & conservation costs
- SBX 7-7 compliance: wholesale supplier compliance and water use efficiency target
- IRWM section

# Important Definitions

- Local supply categories
  - *verifiable*
  - *planned*
  - *conceptual*
- *Water Use Efficiency* = Conservation and Recycling
  - *Passive or code based conservation*= savings are permanent
  - *Active or program conservation*= savings decay over time
- *Water Use Efficiency Target: 20% by 2020 GPCD*

# Important Definitions

- *Near Term Annexations*
  - Probable annexations identified by member agencies
- *Accelerated Forecasted Growth*
  - Future residential development identified in SANDAG forecast but not included in current Land Use general Plans
- *SB 221 and SB 610*
  - Legislation linking land use approvals to planning for available water supply



2010 UWMP

Overview of Plan Requirements  
and Coordination

Kelley Gage

# Preparation of the Water Authority's 2010 UWMP

- Update required by law every 5 years
- Purpose and importance has grown since first required 25 years ago
- Includes detailed information (actions, steps, schedule) on future supply development
- Includes elements of drought management planning
- Coordination with member agencies critical element

# Benefits of Preparing an UWMP



Document existing and future supplies available to reliably meet demands



Utilize as supporting document in preparation of water supply assessments/verifications under SB 610 & 221



Required to be eligible to receive funding or drought assistance from state

# Contents of the Water Authority's 2010 UWMP



# Contents of the Water Authority's 2010 UWMP (cont.)



# Contents of the Water Authority's 2010 UWMP (cont.)



# UWMP Coordination

## Member Agencies

- Staff workgroup and MAM meetings
- Data collection to date: local supplies, annexations, billing information
- Coordination on draft UWMP & demands

## Internal

- Staff coordination meetings
- Scenario Planning process

## DWR

- Webinars: Draft Guidebook & SBX7-7
- Workshop scheduled March 7, 2011



# 2010 UWMP Draft 2035 Water Demand Forecast

Tim Bombardier



# SANDAG 2050 Regional Growth Forecast

- 1992 Memorandum of Agreement between SANDAG and Water Authority
- Series 12 Forecast approved by SANDAG Board in Feb-2010
- New forecast includes:
  - Updated economic outlook based on current recession
  - General/Specific plan updates approved since last forecast
  - Compliant with SB-375 requirement for sufficient housing to meet projected housing demand

# SANDAG Series 12 Projected Demographic & Economic Growth between 2015 and 2035

Forecast Variable	Growth - Water Authority Service Area	
Population	+634,945	19%
Single-Family Housing Units	+34,960	5%
Multi-Family Housing Units	+175,315	40%
Employment Counts	+277,648	19%
Median Household Income	+\$14,417	26%

# Comparison of SANDAG Series 10 and Series 12 Forecasts for the Year 2030

## Water Authority Service Area

Forecast Variable	Series 10	Series 12	Variance
Population	3,703,243	3,758,933	-55,690 -1.5%
Single-Family Housing Units	737,059	713,416	-23,643 -3.2%
Multi-Family Housing Units	513,444	570,863	57,419 +11.2%
Employment Counts	1,812,779	1,682,102	-130,677 -7.2%



# CWA-MAIN Modeling Approach

- Models use a "*rate of use x driver variable*" approach
- Rate of use factors
  - Income
  - Price
  - Weather
- Predictive drivers of demand
  - Housing units
  - Employment counts
  - Agricultural acres

$$Q_{SDCWA} = \sum_j Q_{MA}$$

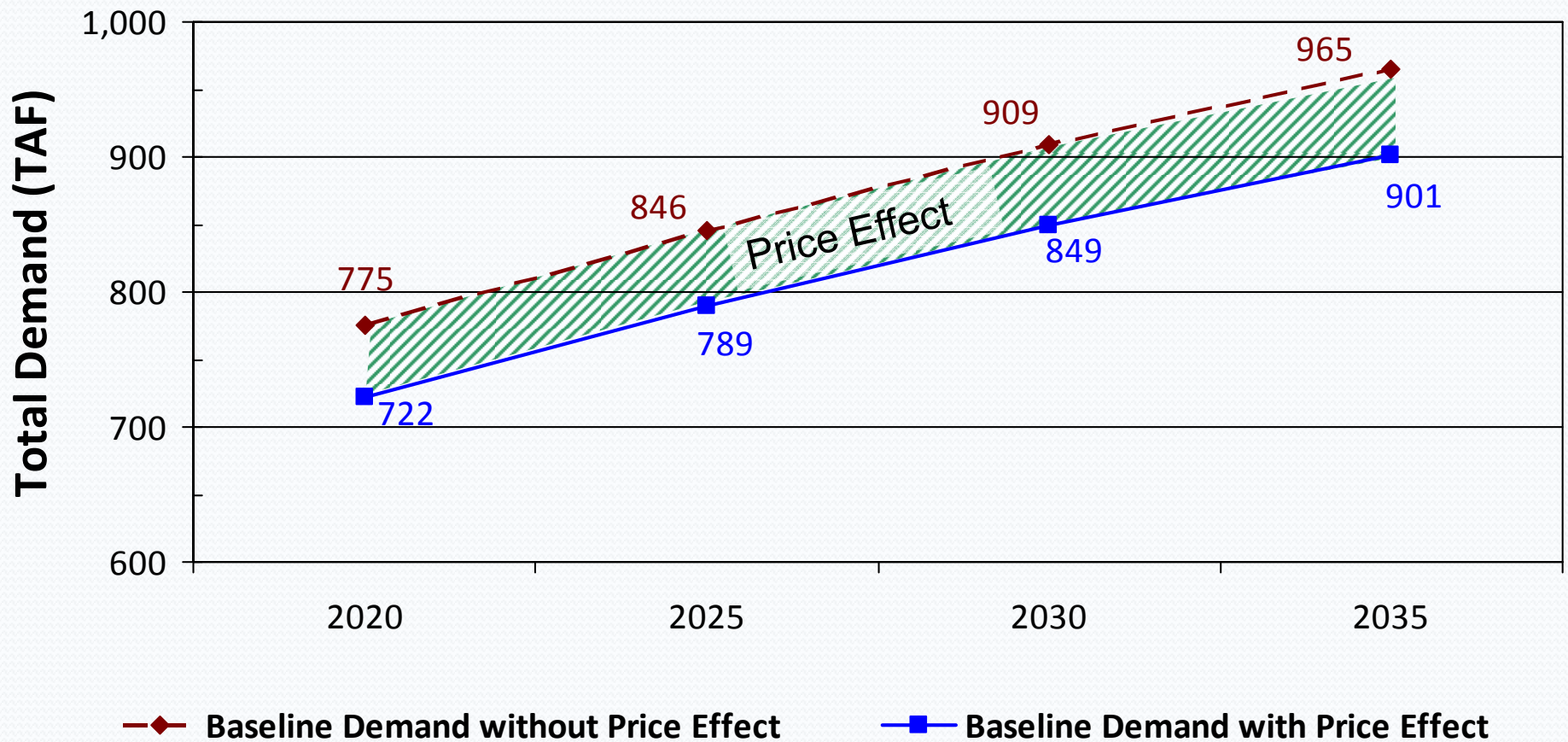


$$Q_{MA} = \sum_i N_i \cdot q_i$$



$$q_i = f(x)$$

# Draft Normal Year Baseline Total Demand Forecast (TAF)



# Draft Projected Normal Year Baseline Demand Excluding Future Conservation (AF)

	2015	2020	2025	2030	2035
Baseline M&I Forecast	582,000	662,000	728,000	787,000	838,000
Agricultural Forecast	55,000	50,000	48,000	47,000	46,000
<i>SAWR Program Agricultural</i>	<i>30,000</i>	<i>27,000</i>	<i>26,000</i>	<i>26,000</i>	<i>25,000</i>
<i>Full Service (M&amp;I) and Local Agricultural</i>	<i>25,000</i>	<i>23,000</i>	<i>22,000</i>	<i>21,000</i>	<i>21,000</i>
Known Future Annexations	6,000	6,000	6,000	6,000	6,000
Accelerated Forecasted Growth	2,000	4,000	7,000	9,000	11,000
<b>Total Baseline Demand</b>	<b>645,000</b>	<b>722,000</b>	<b>789,000</b>	<b>849,000</b>	<b>901,000</b>



# 2010 UWMP SBX7-7 Retail Compliance

Toby Roy

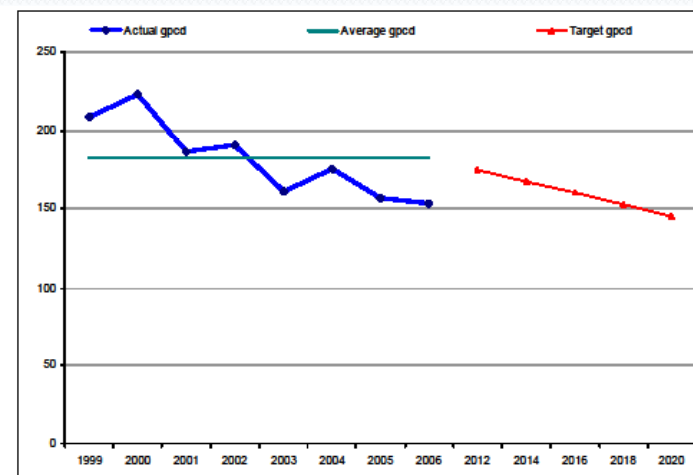
# Conservation Goals: Past and Current

- Past:
  - Implement BMPs, estimate widget/activity based savings
- Current:
  - Urban retail water supplier sets targets using one of four methods



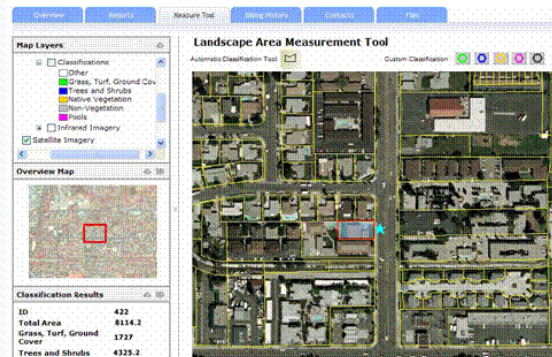
# Target: Approach No. 1

- 10-15 year baseline
- 80 % of baseline
- Excludes all recycled water
- May exclude Ag or process water
- Minimum 5% from 5 year baseline



# Target: Approach No. 2

- Water Budget Approach
  - Indoor: 55 gpcd
  - Outdoor: Per Landscape ordinance
  - CII: 10% reduction from baseline
- Minimum 5% reduction from 5 year baseline
- Consider if no room for savings



# Target: Approach No. 3

- 95% of 2020 Hydrologic Region Target:  
(Region 4:  $0.95 \times 149 = 142$ )
- Minimum 5% reduction from 5 year baseline



# Target: Approach No. 4

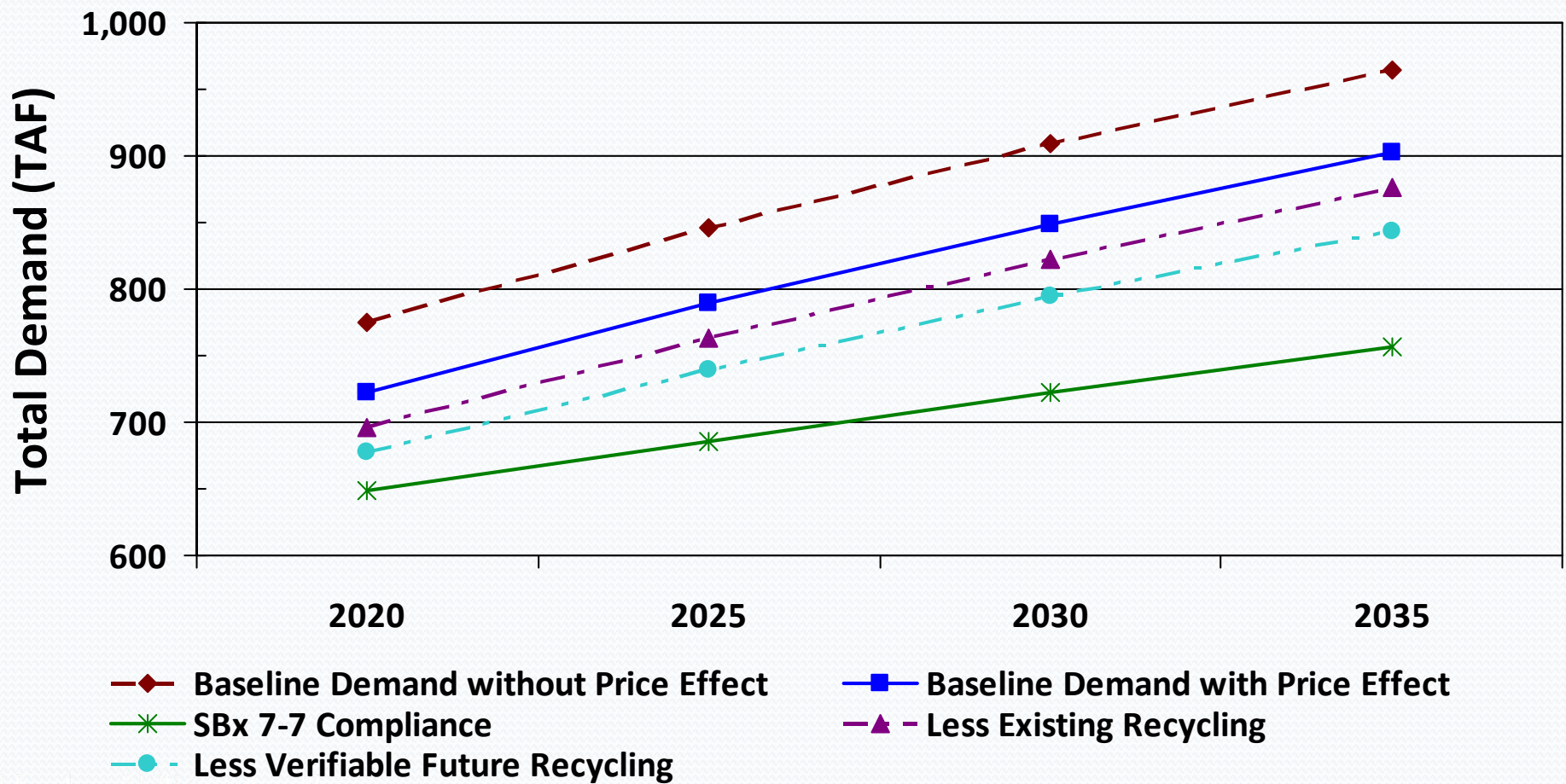
- DWR Provisional Proposal
  - Indoor: Reduce to 85% saturation of devices
  - CII: 10% reduction
  - Landscape and water loss: 21.6% reduction
- May be revised in 2014

# Member Agency Targets

- Initial assumption:
  - Member agency target calculated based on Method 1
  - Equated to an estimated 167 GPCD in 2020
  - GPCD target fixed after 2020
- Will update based on member agency calculations



# Baseline Total Demand Forecast



# Meeting Retail Compliance SBX7-7

## Preliminary Target for Planning Purposes (AF)

Selected Target	2015	2020	2025	2030	2035
Water-Use Efficiency Target (Includes Existing Recycled)	---	47,000	77,000	100,000	119,000
Meeting the WUE Target:					
Additional Verifiable Recycled <sup>1</sup>	15,000	19,000	25,000	28,000	32,000
<b>Additional Conservation Requirement</b>	---	<b>28,000</b>	<b>52,000</b>	<b>72,000</b>	<b>87,000</b>
Additional Planned Recycled <sup>2</sup>	800	18,000	22,000	22,000	22,000
Potential Additional Conservation Requirement	---	10,000	30,000	50,000	64,000

1. Verifiable projects are those that at a minimum have completed CEQA compliance, obtained permits, and funding is identified in agency's CIP for construction.
2. Additional Planned Project are those projects which the agency is expended funds to develop.



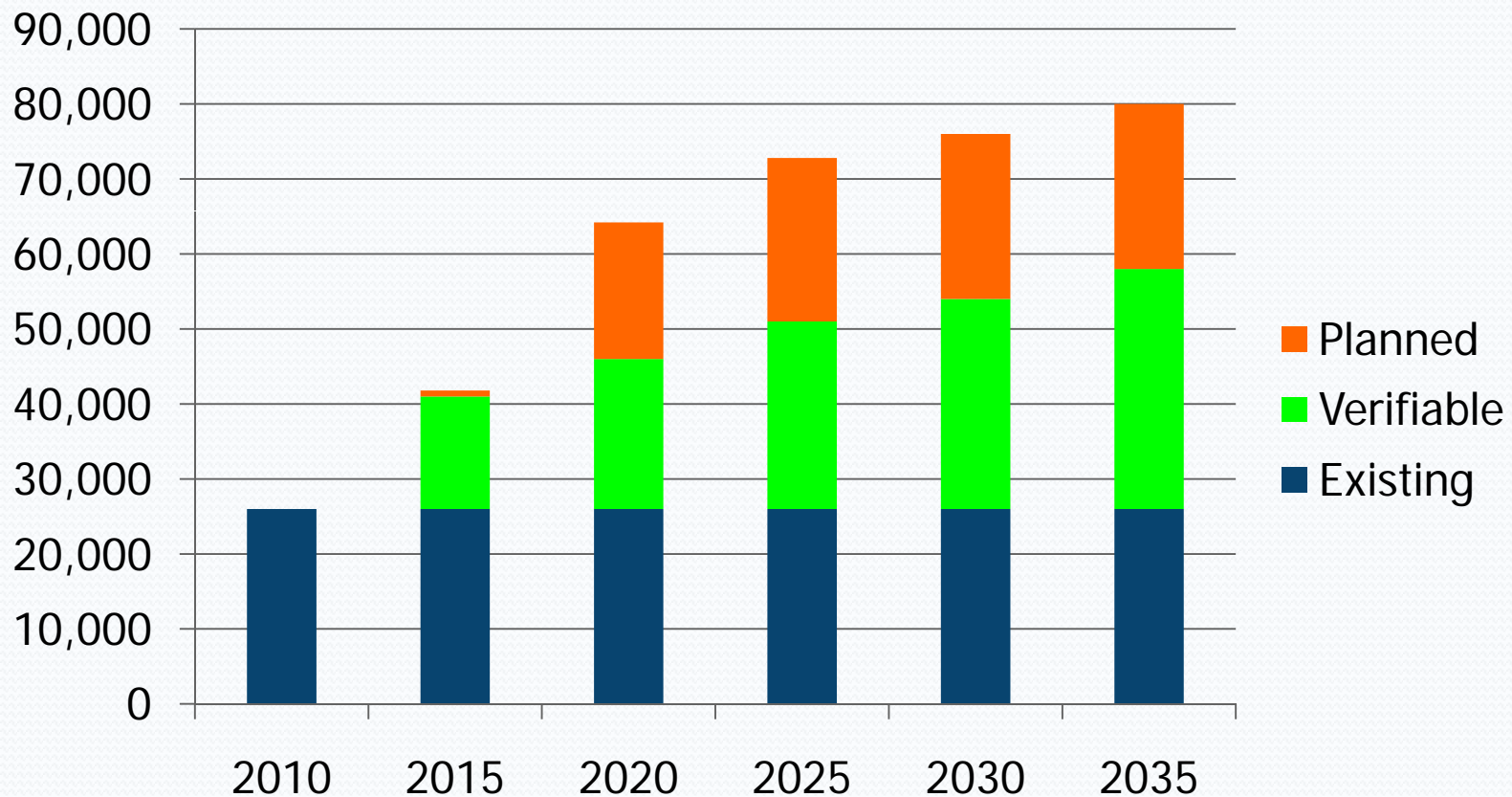
# 2010 UWMP Projected Resources Mix and Scenario Planning Process

Dana Friehauf

# 2010 UWMP - Preliminary Projected Resource Mix

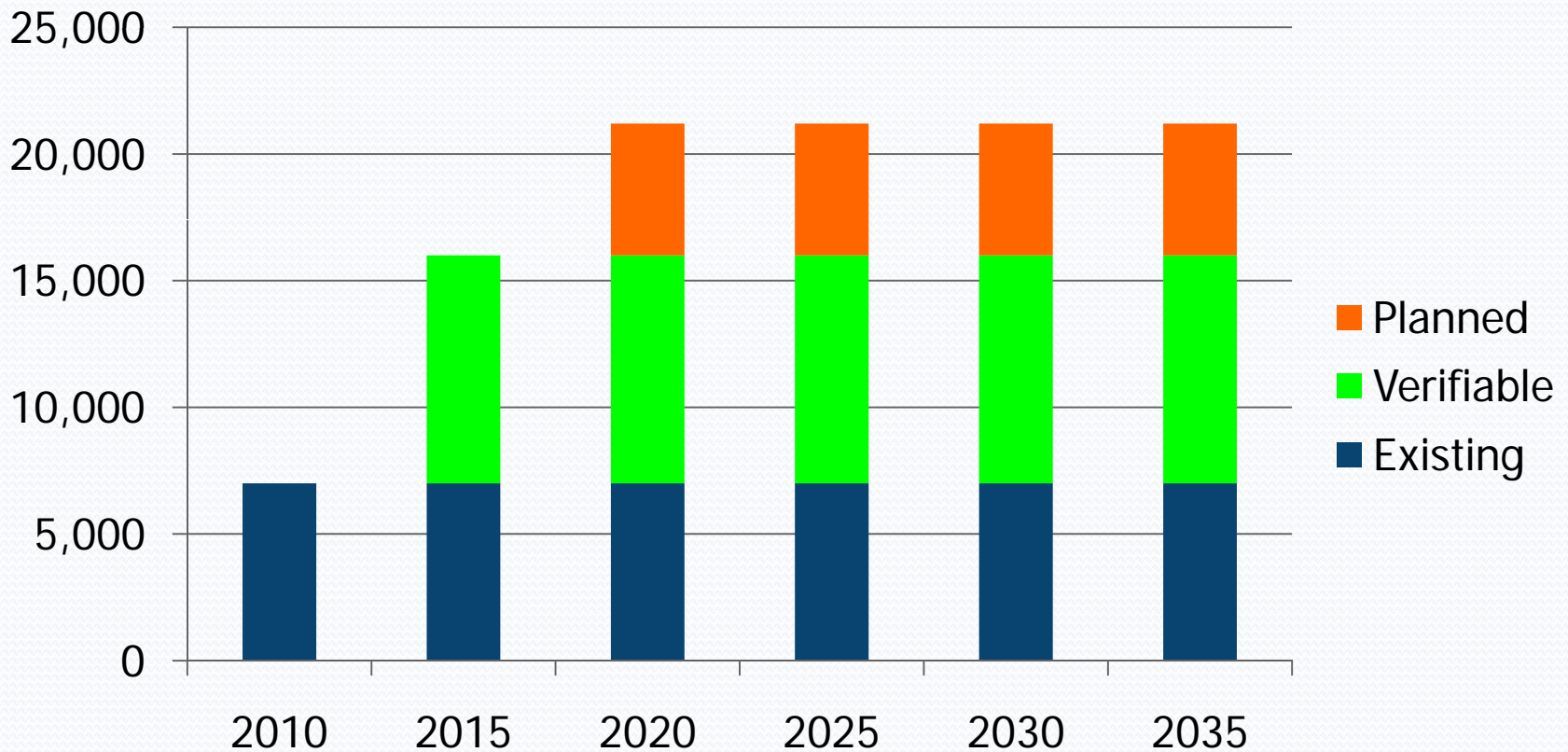
- Developed in coordination with member agencies
- Generated based on following factors:
  - SBx7-7 conservation targets
  - “Verifiable” member agency information on projected local supplies
  - Water Authority QSA supplies
  - Completion of proposed regional seawater desalination facility in Carlsbad
  - MWD supplies
    - Supplemental in normal weather years
    - Allocation based on preferential right in dry years

# Local Supplies - Recycled Water Existing, Verifiable and Planned (AF)



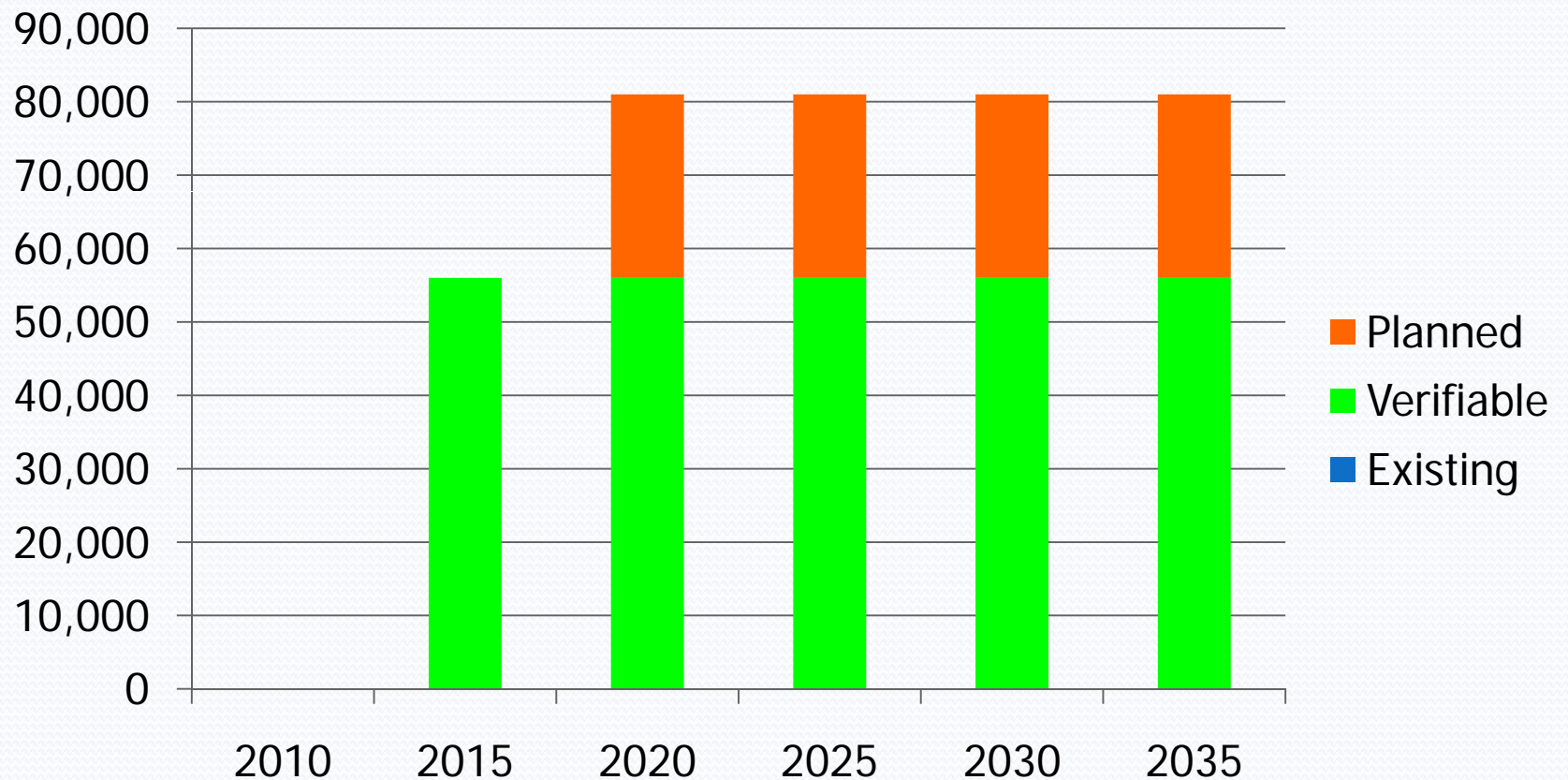
Data provided by member agencies.

# Local Supplies - Brackish Groundwater Existing, Verifiable and Planned (AF)



Data provided by member agencies.

# Local Supplies – Seawater Desalination Existing, Verifiable and Planned (AF)



Data provided by member agencies.

# Projected Mix of Resources (AF, Normal Year)

## Verifiable Local Supplies

	2015	2020	2025	2030	2035
Baseline Demand	645,000	722,000	789,000	849,000	901,000
SBX7-7 Additional Conservation	---	28,000	52,000	72,000	87,000
Total Demands w/ Conservation	645,000	694,000	737,000	777,000	814,000
<b>Supplies to Meet Demands</b>					
<b>Member Agency Supplies</b>	<b>128,000</b>	<b>132,000</b>	<b>137,000</b>	<b>141,000</b>	<b>145,000</b>
<i>Surface Water</i>	<i>59,000</i>	<i>59,000</i>	<i>59,000</i>	<i>59,000</i>	<i>59,000</i>
<i>Groundwater</i>	<i>12,000</i>	<i>12,000</i>	<i>12,000</i>	<i>12,000</i>	<i>12,000</i>
<i>Brackish Groundwater</i>	<i>16,000</i>	<i>16,000</i>	<i>16,000</i>	<i>16,000</i>	<i>16,000</i>
<i>Recycled (WUE Target)</i>	<i>41,000</i>	<i>45,000</i>	<i>50,000</i>	<i>54,000</i>	<i>58,000</i>
<b>Water Authority Supplies</b>	<b>517,000</b>	<b>562,000</b>	<b>600,000</b>	<b>636,000</b>	<b>670,000</b>
<i>QSA Transfer Supplies</i>	<i>180,000</i>	<i>270,000</i>	<i>280,000</i>	<i>280,000</i>	<i>280,000</i>
<i>Proposed Regional Seawater Desalination</i>	<i>56,000</i>	<i>56,000</i>	<i>56,000</i>	<i>56,000</i>	<i>56,000</i>
<i>MWD</i>	<i>281,000</i>	<i>236,000</i>	<i>264,000</i>	<i>300,000</i>	<i>333,000</i>
<b>Total Supplies:</b>	<b>645,000</b>	<b>694,000</b>	<b>737,000</b>	<b>777,000</b>	<b>814,000</b>

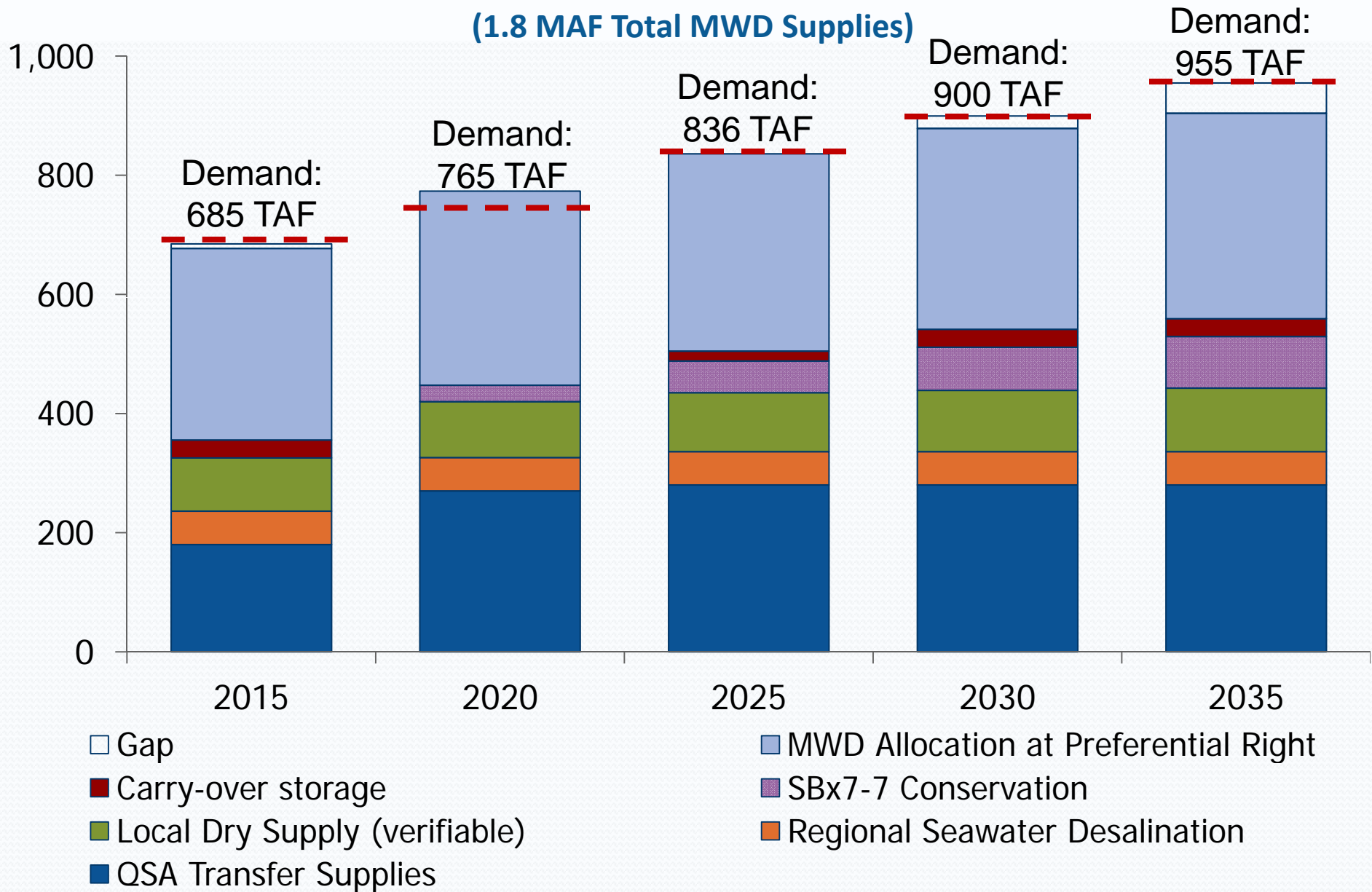
# Alternative Projected Resources Mix (AF, Normal Year)

	2015	2020	2025	2030	2035
Baseline Demand	645,000	722,000	789,000	849,000	901,000
<i>SBX7-7 Additional Conservation</i>	---	> 10,000	> 30,000	> 50,000	> 64,000
Total Demands w/ Conservation	645,000	712,000	759,000	799,000	837,000
<b>Supplies to Meet Demands</b>					
<b>Member Agency Supplies</b>	<b>129,000</b>	<b>180,000</b>	<b>189,000</b>	<b>193,000</b>	<b>197,000</b>
Verifiable Projects	128,000	132,000	137,000	141,000	145,000
Additional Planned Projects	800	48,000	52,000	52,000	52,000
<i>Additional Groundwater</i>	0	5,000	5,000	5,000	5,000
<i>Additional Recycled (Including IPR)</i>	800	18,000	22,000	22,000	22,000
<i>Otay WD Seawater Desalination</i>	0	25,000	25,000	25,000	25,000
<b>Water Authority Supplies</b>	<b>516,000</b>	<b>532,000</b>	<b>570,000</b>	<b>606,000</b>	<b>640,000</b>
<i>QSA Transfer Supplies</i>	180,000	270,000	280,000	280,000	280,000
<i>Proposed Regional Seawater Desalination</i>	56,000	56,000	56,000	56,000	56,000
<i>MWD</i>	280,000	206,000	234,000	270,000	304,000
Total Supplies:	645,000	712,000	759,000	799,000	837,000

# Preliminary Dry-Year Projected Resources Mix

## MWD Allocation at Preferential Right

(1.8 MAF Total MWD Supplies)



# Why Scenario Planning?

- Standard planning method to deal with uncertainty
  - Develops small but wide range of scenarios to test and make planning decisions more comprehensive
  - Highly transparent, easily implemented
  - Avoids “black box” issue
- Selected from 2010 Water Utility Climate Alliance White Paper on decision support planning methods
- Utilized by other state and local water agencies
- Assist in compliance with UWMP Act Reliability Assessment

# 2010 Urban Water Management Plan

## Major Steps in Scenario Planning Process

### Projected Resources Mix

- Develop in coordination with member agencies

### Uncertainty Scenarios

- Based on critical uncertainties
- Risk assessment of resources mix
- Identify "supply gap"

### Potential Strategies

- Qualitative and quantitative
- Manage uncertainties
- Fill potential "supply gap"

### Key Tracking Metrics

- Metrics to track implementation of resource mix and potential need for strategies
- Avoid over investment

# Critical Uncertainties that influence Key Issue (Supply Reliability)

Sources of Gradual Change and Uncertainty	Sources of Sudden or Short-term Change and Uncertainty
<b>Demographic Shift</b>	<b>Droughts</b>
Growth deviates from SANDAG Forecast	Severity, timing, and frequency
<b>Climate Change</b>	<b>SWP Regulatory Restrictions</b>
Impacts from long-term changes in temperature and rainfall	Regulatory restrictions are put in place that further limit supply availability
<b>State Water Project Reliability</b>	
Willingness to pay for Delta fix	
<b>Local supplies not developed as planned</b>	

Table format adapted from DWR California Water Plan Update 2009, Chapter 5

Table provides summary of critical uncertainties to be used for scenario planning. Doesn't include all the uncertainties water planners face, but focuses on issues that are associated with supply planning reliability.

# Selected Scenarios Based on Uncertainties (Dry-Year)

1. Limited MWD Supplies
2. Limited MWD and Member Agency Local Supplies
3. Limited MWD, Member Agency Local Supplies and Water Authority Local Supplies
4. *Climate Change (Qualitative Analysis)*
5. *Demographic Shift (Qualitative Analysis)*

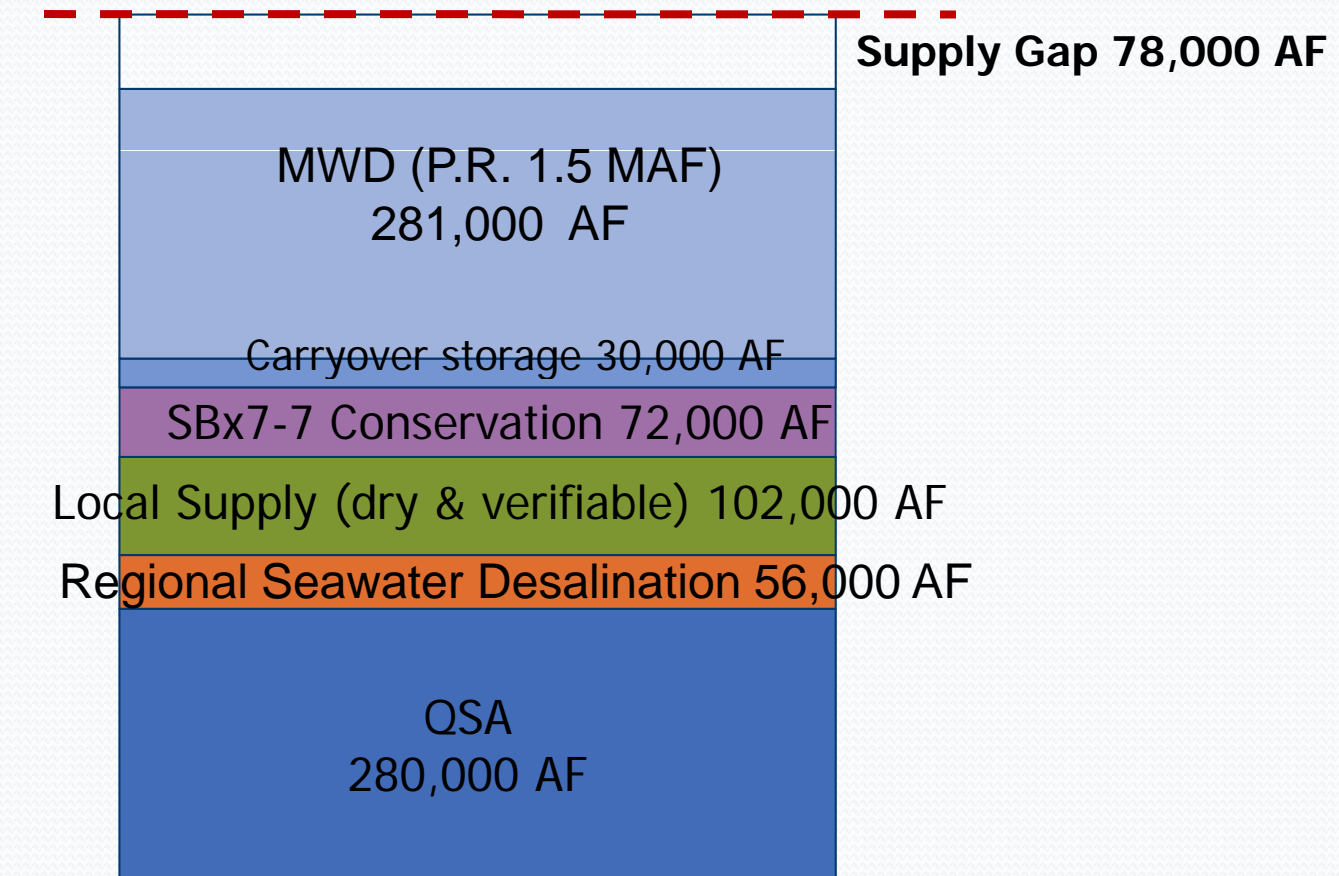
NOT PROJECTIONS: Serve as “what-if” situations for planning purposes

# Scenario 1: MWD Supplies Limited

## 2030 Projected Water Resources Mix (Single Dry Year)

Projected Dry-Year Demands:

900,000 AF



# Scenario 2: Limited MWD and Local Supplies

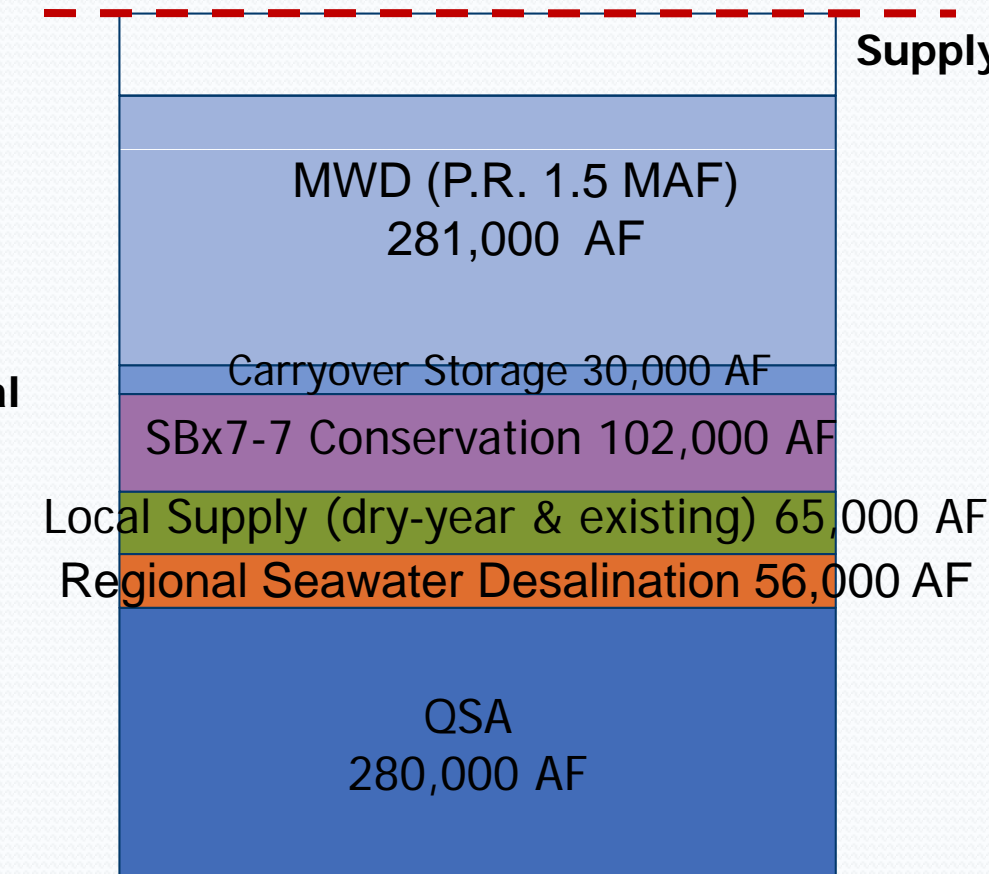
## 2030 Projected Water Resources Mix

### (Single Dry Year)

Projected Dry-Year Demands:  
900,000 AF

Supply Gap 86,000 AF

Continued SBx7-7 compliance requires additional conservation of 30,000 AF to replace recycling assumed not to occur.



# Scenario 3: Limited MWD, Member Agency and Water Authority Local Supplies

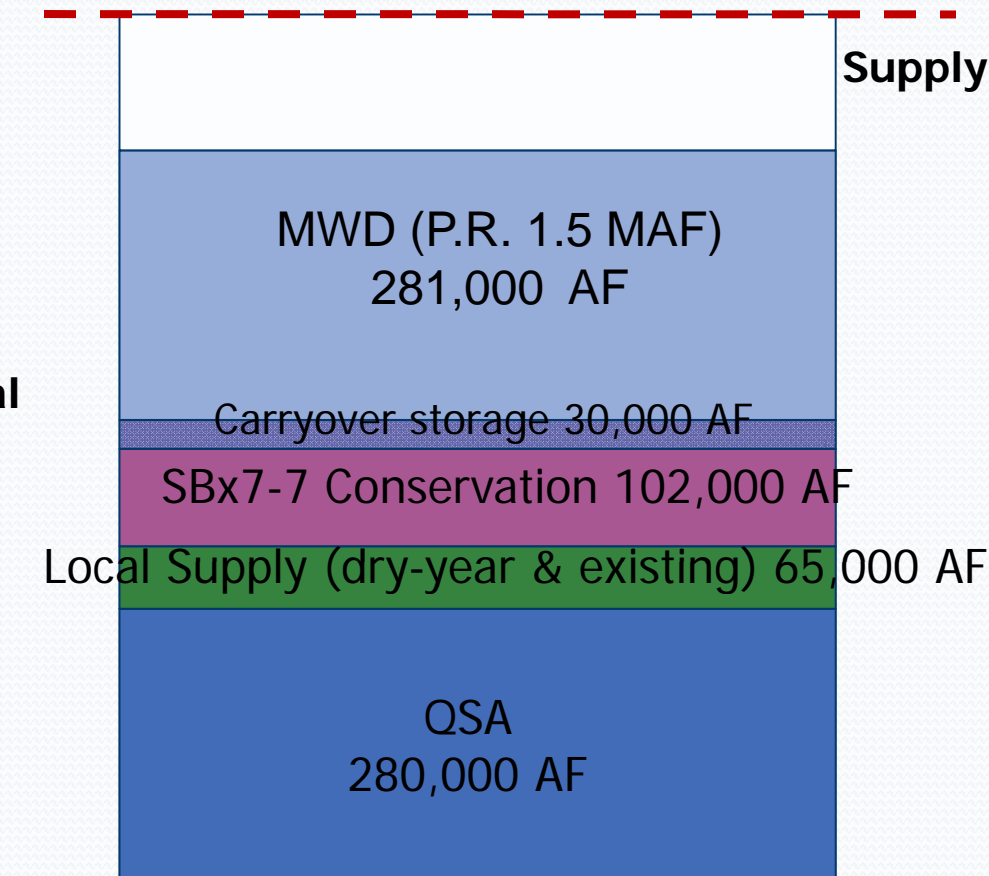
## 2030 Projected Water Resources Mix (Single Dry Year)

Projected Dry-Year Demands:

900,000 AF

Supply Gap 142,000 AF

Continued SBx7-7 compliance requires additional conservation of 30,000 AF to replace recycling assumed not to occur.



# Potential Common Strategies

## Strengthen Projected Resource Mix

### Implementation and Manage Uncertainty Scenario

#### Potential Water Authority Policy/Program Strategies

##### **State Water Project**

Advocate for near-term actions and permanent Delta Fix

##### **Colorado River – Quantification Settlement Agreement**

Defend QSA against existing and potential litigation

##### **Member Agency Local Projects**

Technical Assistance

Local Projects Development funding

Advocate federal/state agencies for funding and minimizing regulatory constraints

##### **Water Conservation**

Offer programs that encourage long-term behavior changes

##### **Climate Change**

Encourage focused scientific research to identify impacts on supplies

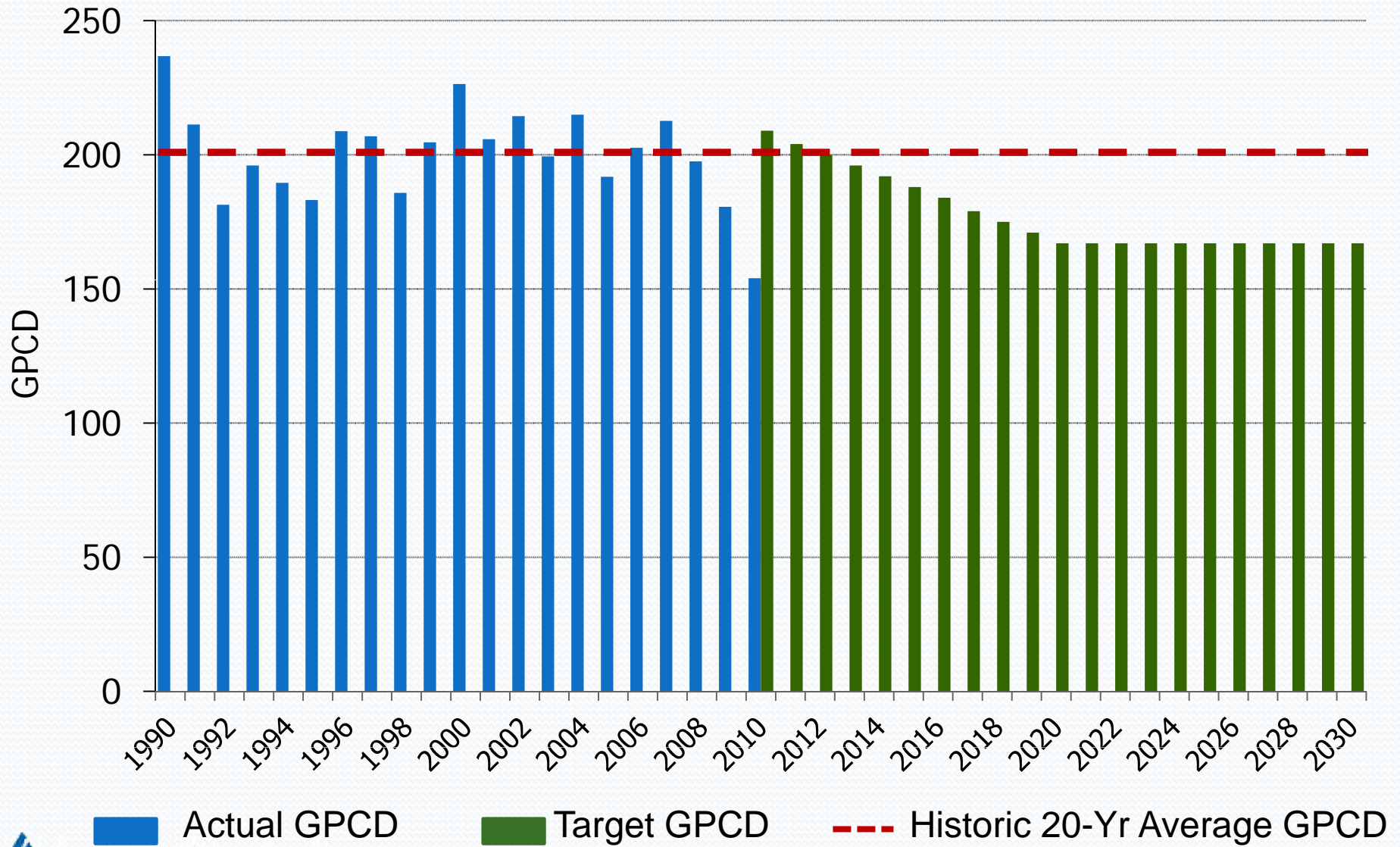
# Proposed Adaptive Strategies to Manage Uncertainty Scenarios

<b>Potential Adaptive Supply Projects (Alternative Sources to fill gap)</b>
<b>Member agency Additional Planned Projects</b>
Recycled (includes IPR projects)
Brackish groundwater
Seawater desalination (Otay WD Binational Project)
<b>Water Authority Additional Planned Projects</b>
Camp Pendleton Seawater Desalination Project
<b>Additional Water Authority Dry-Year Supplies</b>
Transfers, Additional Carry-over Storage

# Final Step: Key Tracking Metrics

- Track progress on implementation of projected resource mix and need for adaptive management strategies
- Key metrics identified in 2010 UWMP and monitored through annual water supply reports
- Example of tracking metric for 2012 annual supply report:
  - *Is recycled water development on track to assist in achieving 2020 SBX7-7 UWMP targets?*
- Complete update of resource mix would occur every 5 years through UWMP update

# Tracking Metric: SBX7-7 GPCD Target (Potable Demand: Excludes Recycling)



# Water Authority 2010 UWMP Schedule

<b>Activity</b>	<b>Date</b>
Special CWA Water Planning Committee workshop	Feb. 10, 2011
Member agency manager's meeting	Feb. 15, 2011
Member agency technical review of Water Authority draft 2010 UWMP	Late Feb. /Early Mar. 2011
DWR 2010 UWMP workshop at CWA office	Mar. 7, 2011
Draft 2010 UWMP distributed to Board & public for review and comment	Apr. 26, 2011
Public hearing on draft 2010 UWMP	May 26, 2011
CWA Board adoption of 2010 UWMP	Jun. 23, 2011
Submit adopted 2010 UWMP to DWR	Jul. 23, 2011