Planning for Climate Change

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Metropolitan Water District

- Water Wholesaler
- 26 Member Agencies
- 19 Million People
- 5,200 Square Miles
- 4 MAF Annual Demand

MWD Service Area
State Water Project Supply

Extremely Drought

CRA

SWP

2004-2015

Sacramento River
Lake Oroville
Feather River
Bay Delta
San Joaquin River
San Luis Reservoir
California Aqueduct

Banks Pumping Plant
Current Drought – Sneak Preview?

THE FOLLOWING PREVIEW HAS BEEN APPROVED FOR APPROPRIATE AUDIENCES

THE FILM ADVERTISED HAS BEEN RATED NN NEW NORMAL?
Potential Climate Change Impacts

- Increased intrusion of salts
- Increased Delta levee failure risk
- Reduced river flows and summer reservoir levels
- Increased water temperature
- Increased drought/flood variability
- Reduced snowpack
- Earlier snowmelt
Record low snow last year in Northern Sierra.
Upstream storage releases help meet salinity and flow standards.
Insufficient storage last summer

Percent of historical average, June 1, 2015:

- Lake Shasta: 62%
- Lake Oroville: 52%
- Folsom Lake: 65%

2015 Emergency Drought Barrier
More storage this year...
Percent of historical average, June 1, 2016:

- **Lake Shasta**: 107%
- **Lake Oroville**: 111%
- **Folsom Lake**: 101%

With Spring flood control releases
...but CVP runs out of water in San Luis...
Constrained exports

- 53,000 cfs
- ↑ 145,000 cfs
- Daily outflow to the Pacific
- 990 TAF SWP/CVP Water Losses due to Fishery Restrictions
- Exports constrained to protect smelt and salmon
- Summer Export Window of Opportunity

SWP Exports
CVP Exports

Bay Delta
Oroville
Shasta

CVP Peak Demands

Fishery Restrictions

10,000 cfs

OCT  NOV  DEC  JAN  FEB  MAR  APR  MAY  JUN  JUL  AUG  SEP
Are we there yet?

Even under near-average hydrologic conditions, warmer temperatures present water management challenges.

Climate change can exacerbate future challenges associated with:

- Low snowpack
- Increased water temps
- Mismatch between water availability and ability to capture
- Increased Delta failure risk with sea level rise
Metropolitan has a plan for maintaining water supply reliability
 Represents Metropolitan’s long-term strategy to assure adequate water supplies for Southern California

- Diversification of water portfolio
- Establishment of regional targets
- Adaptive management
Diversification of water portfolio (average year)

Heavy dependence on imported supply and SWP Diversions

1990 – 40% Local

- State WP (33%)
- Local Supply (33%)
- Conservation & Recycling (7%)
- Colorado (27%)

Emphasis on Conservation, Local Supplies, and Storage & Transfers

2040 – 65% Local

- Local Supply (32%)
- State WP (20%)
- Conservation & Recycling (15%)
- Colorado (33%)
Metropolitan’s plan has led to action
Significant increase in regional storage capacity

13x Increase in Capacity
Substantial conservation and local supply increases since the 1990s
Allowing the region to grow while holding demands flat

Metropolitan Service Area Population

Retail Demands
2015 IRP Update targets

**Conservation**
- Pursue savings in outdoor water use (MWELO equivalent)
- Continue device-based approaches in support of target
- Ensure consistency with 20x2020 goals

**Local Resources**
- Ensure that total local supply production target of 2.43 MAF in 2040 is reached
- Recognize risks and potentially develop additional supplies

**State Water Project**
- Manage flow and export regulations through collaborative science-based approaches
- Pursue a long-term Delta solution through WaterFix/EcoRestore

**Colorado River Aqueduct**
- Develop sufficient programs to ensure 900 TAF of diversions
- Maintain flexible programs to ensure access to 1.2 MAF of diversions in dry-years
Unprecedented investment in conservation

- Largest conservation program in the country
- $450M in FY 14/15-15/16
- Removal of equiv. 3,000 football fields of turf
2015 IRP Update targets

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Increased financial incentives for local supplies in 2014

- Incentives increased from $250 per acre-foot to $340 per acre-foot to encourage new projects
- Also looking at direct investment in projects
- Board interested in new policy implications

  - When to invest directly vs. provide incentives?
  - Will agencies do projects on their own?
Partnership with LACSD

Joint Water Pollution Control Plant

Components

• Demonstration plant (1 MGD)
• Feasibility & environmental studies
• Financing plan
Potential Regional Recycled Water Supply Program (up to 150 MGD)

- 0-4 MGD
- 0-11 MGD
- 0-15 MGD
- 18-58 MGD
- 62-77 MGD
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California WaterFix improves reliability in a way that helps species.

North Delta
- Modern intake screens allow fish to bypass without diversion.
- Flexibility to divert excess flood flows & reduce fish impacts during low flow periods.

South Delta
- Reduces reverse flows in river.
- Less fish diversion at pumps.

SWP/CVP Water Losses due to Fishery Restrictions:
- 990 TAF

Additional Intakes:
- Tunnels

SWP Pumps
- CVP Pumps
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New pilot falling program

California
Colorado River Service Areas

CALIFORNIA

ARIZONA

Lake Havasu
Colorado River Aqueduct
Palo Verde Irrigation District

Imperial Dam

Yuma Project

Coachella Canal

Imperial Irrigation District

All-American Canal

Coachella Valley Water District

Metropolitan Water District

Colorado River

MEXICO
Metropolitan Now Largest Landowner in PVID

- Developing land management strategy with Board in 2016
- Key objectives include:
  - Water supply benefits
  - Lease revenues
  - Sustainable agriculture
  - Community acceptance
  - Innovative farming

22,000+ acres in valley
IRP adaptive management

Planned Approach

Sign

Sign Post

Reliability