



# Planning for Climate Change

Symposium of American Academy of Environmental  
Engineers and Scientists  
October 13, 2016

*Sarah Bartlett, Resource Specialist, Metropolitan  
Water Resource Management Group*

# Metropolitan Water District



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



MWD Service Area



# Colorado River Aqueduct Supply



# State Water Project Supply



Extremely low rainfall



2009-2015

Banks Pumping Plant





# Current Drought – Sneak Preview?

THE FOLLOWING PREVIEW HAS BEEN APPROVED FOR  
**APPROPRIATE AUDIENCES**

THE FILM ADVERTISED HAS BEEN RATED



# Potential Climate Change Impacts

- Increased intrusion of salts
- Increased Delta levee failure risk

- Increased water temperature
- Increased drought/flood variability

- Reduced river flows and summer reservoir levels

- Reduced snowpack
- Earlier snowmelt

# Record low snow last year



OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP

WATER YEAR



# Upstream storage releases help meet



SWP Pumps

CVP Pumps



# Insufficient storage last summer

Percent of historical average, June 1, 2015:





# More storage this year...

Percent of historical average, June 1, 2016:

With Spring flood control releases





# ...but CVP runs out of water in San Luis



**10%**  
capacity end  
of July



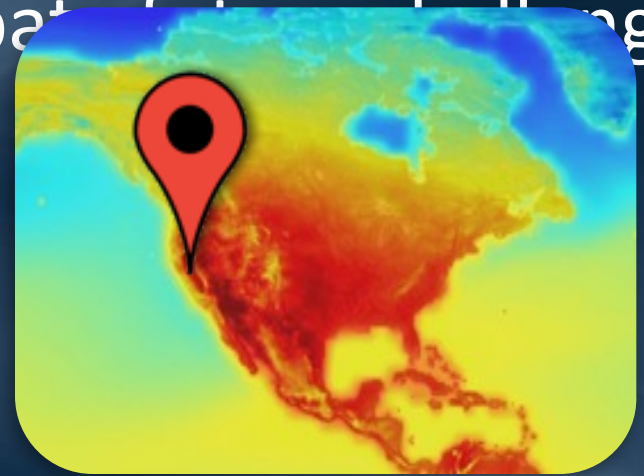
# Constrained exports



CVP Peak Demands

# 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

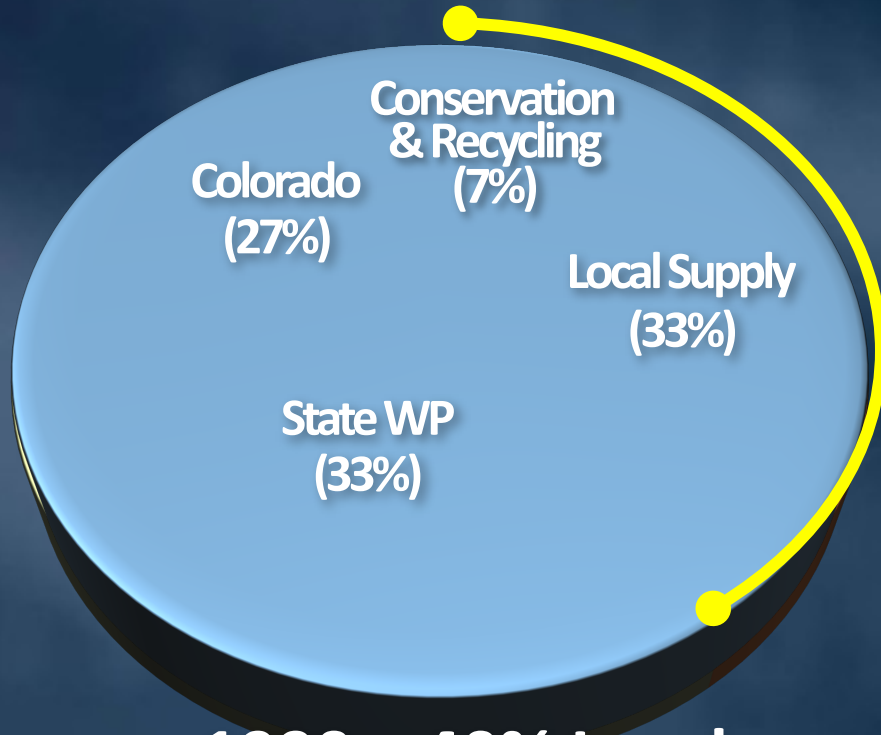
# Integrated Water Resources Plan (IRP)

Represents Metropolitan's long-term strategy to assure adequate water supplies for Southern California

- Diversification of water portfolio
- Establishment of regional targets
- Adaptive management

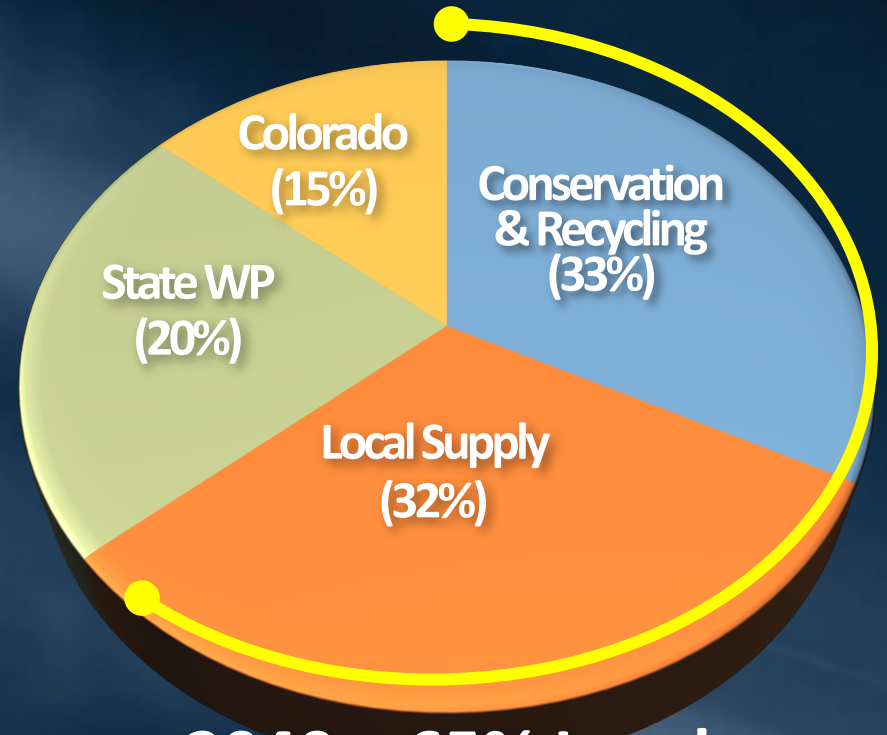


# Diversification of water portfolio (average year)



**1990 – 40% Local**

*Heavy dependence on imported supply  
and SWP Diversions*



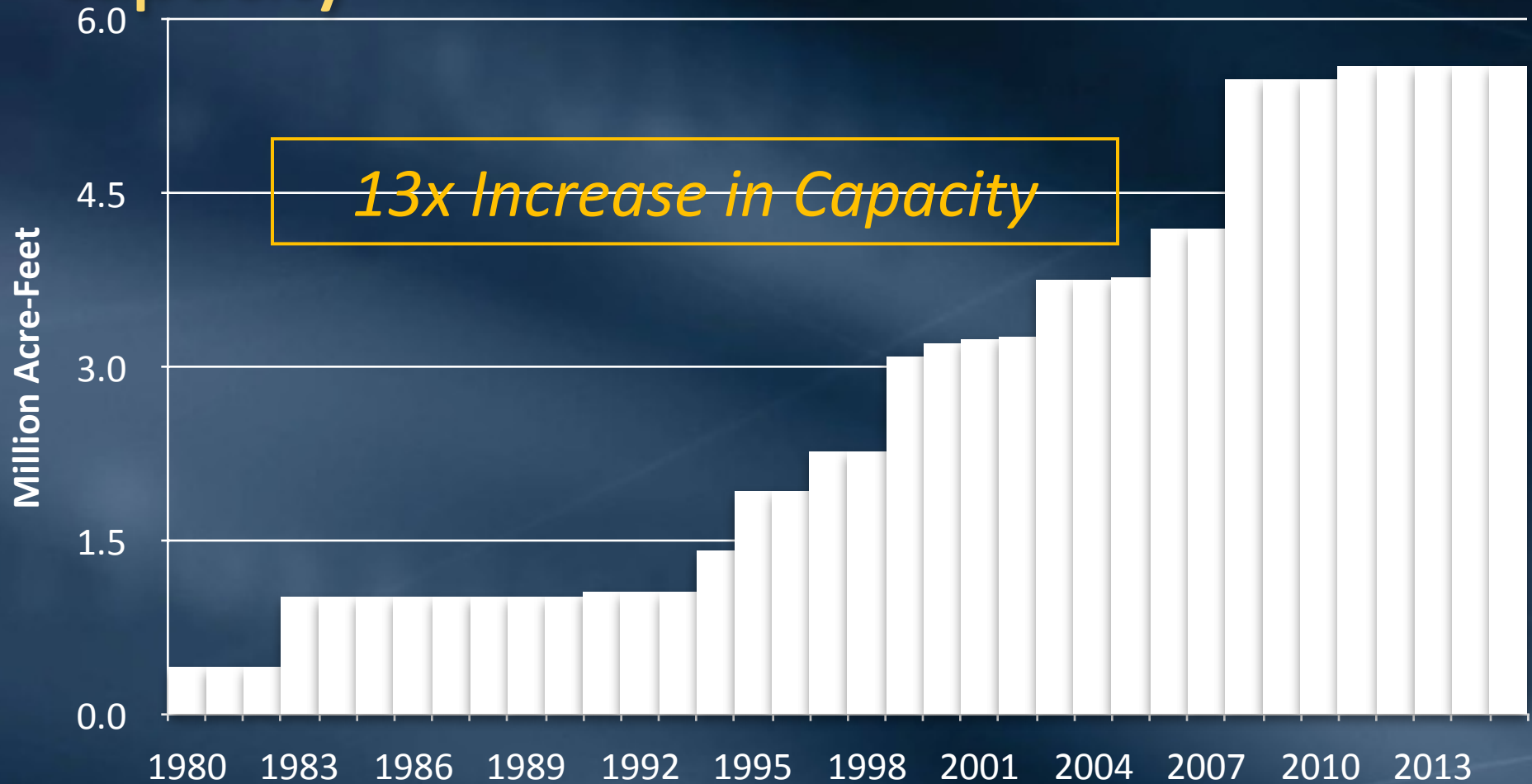
**2040 – 65% Local**

*Emphasis on Conservation, Local Supplies,  
and Storage & Transfers*



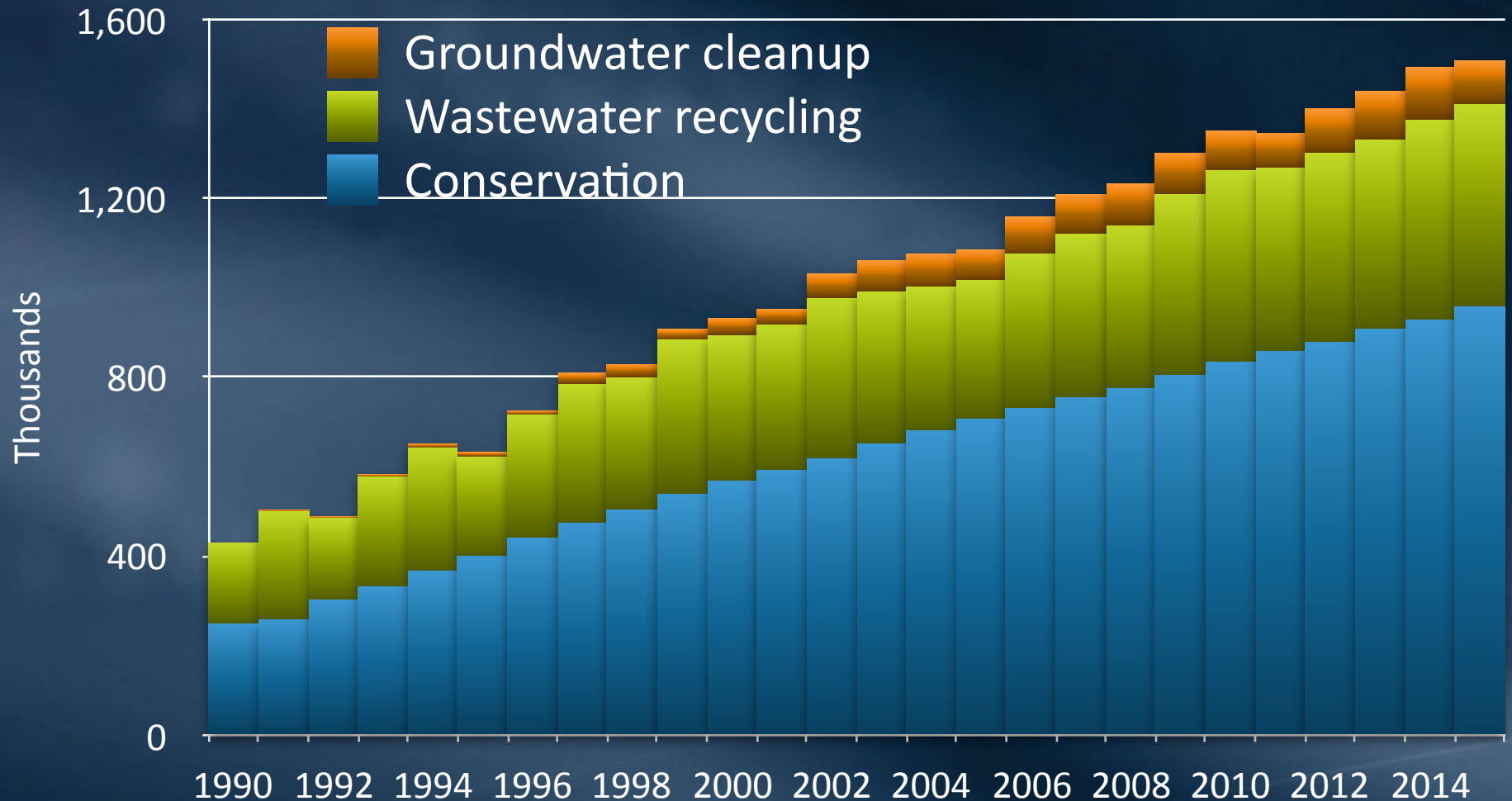
Metropolitan's plan  
has led to action

# Significant increase in regional storage capacity





# Substantial conservation and local supply increases since the 1990s



# Allowing the region to grow while holding demands flat





# 2015 IRP Update targets



**Take your turn.**  
Every drop we save counts.

## Conservation

- Pursue savings in outdoor water use (MWEL0 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



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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



Demonstration  
Plant

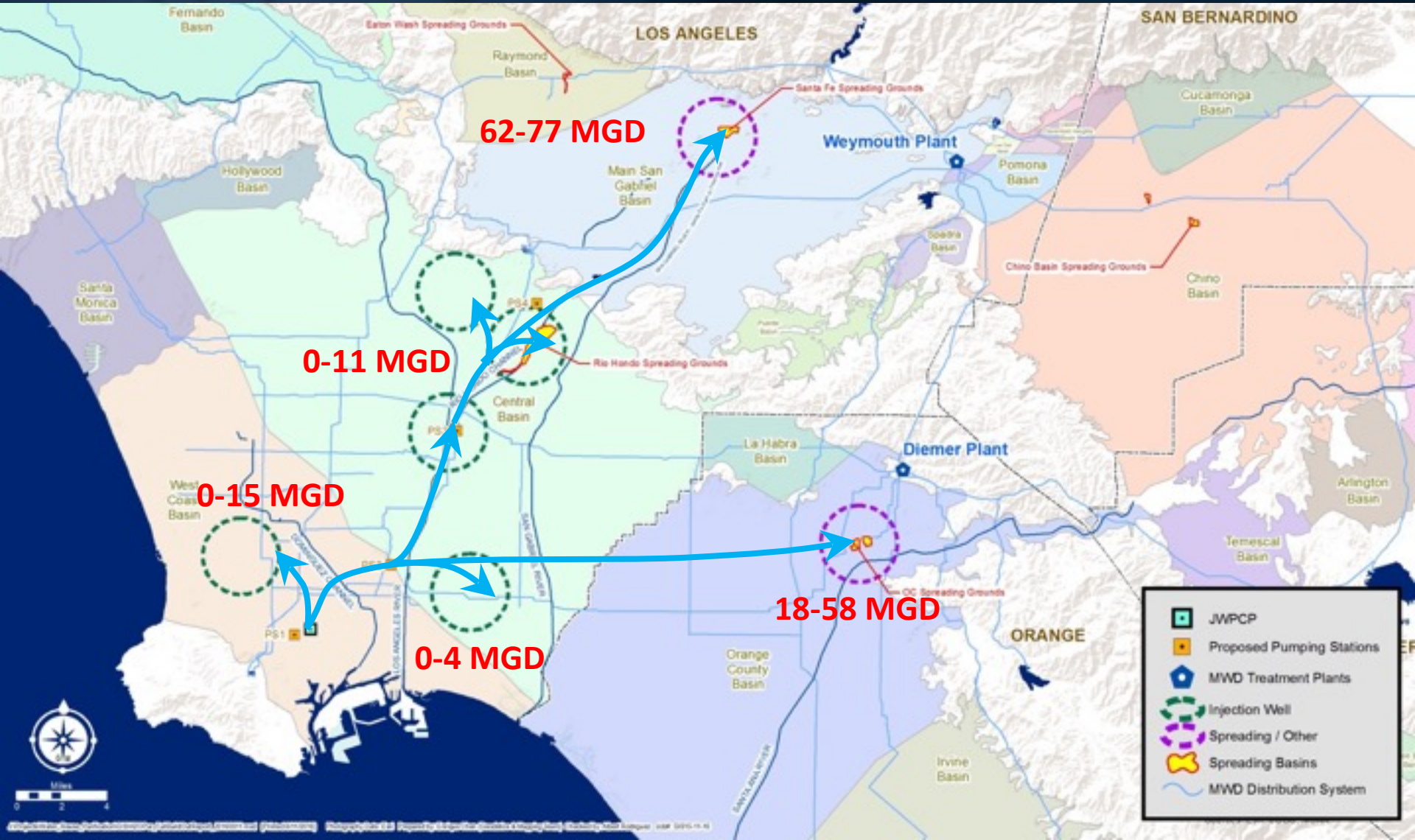
Potential  
Full Scale  
Plant Site



Service Layer Credits: Image courtesy of USGS Image courtesy of JAH/IAS Harbatar geographics © 2016 Microsoft Corporation  
© Project Wast. Water Pollution Control Plant (WPCP) Project 1.0110229.mxd (Printed 07/20/16) Photography Data: Bing Prepared by: George Chen (Geospatial & Mapping Team) Checked by: Kimberly Hales 2016 05/10/2016



# Potential Regional Recycled Water Supply Program (up to 150 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

Additional Intakes

990 TAF

SWP/CVP Water Losses due to Fishery Restrictions

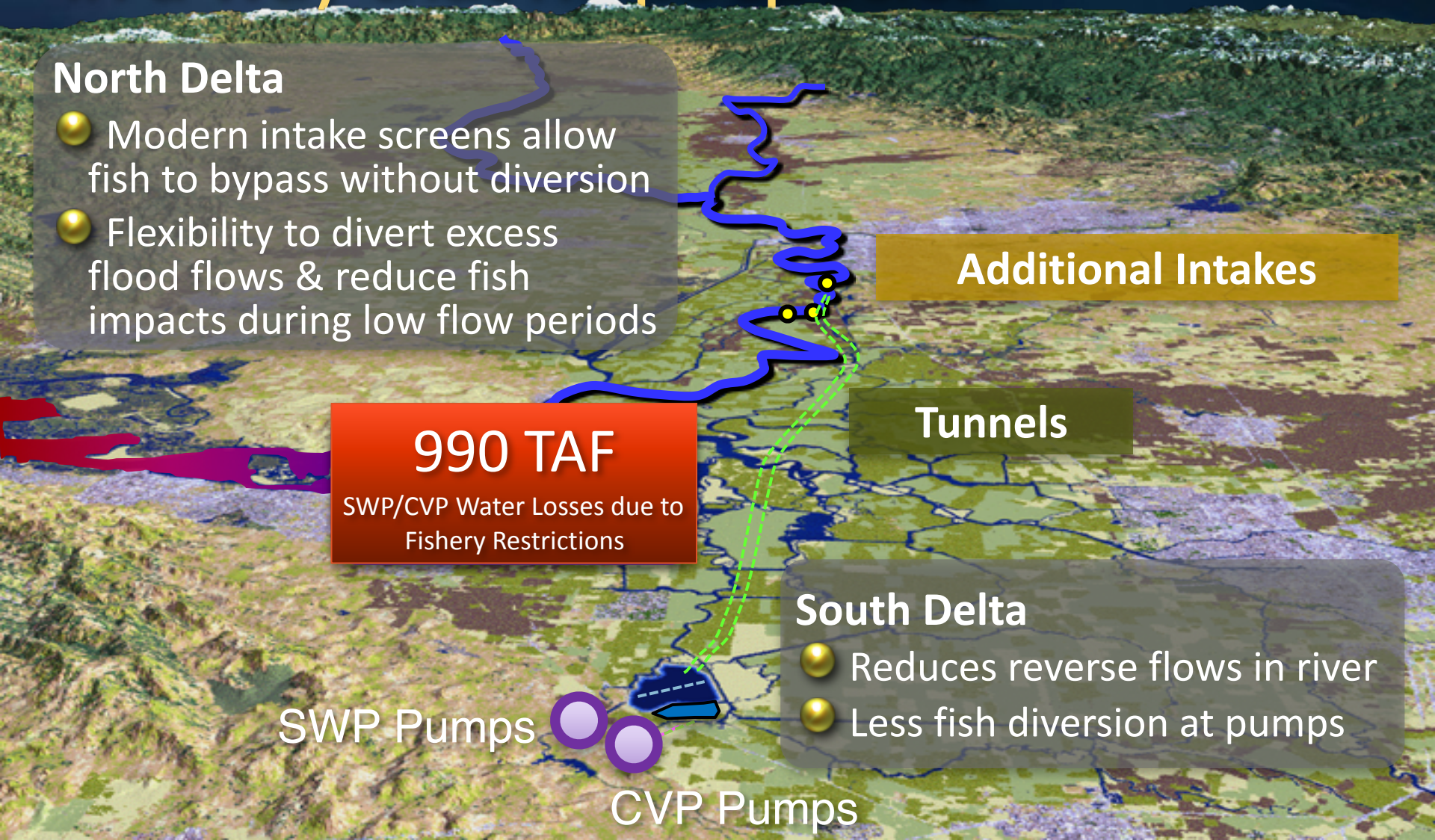
Tunnels

## South Delta

- Reduces reverse flows in river
- Less fish diversion at pumps

SWP Pumps

CVP Pumps





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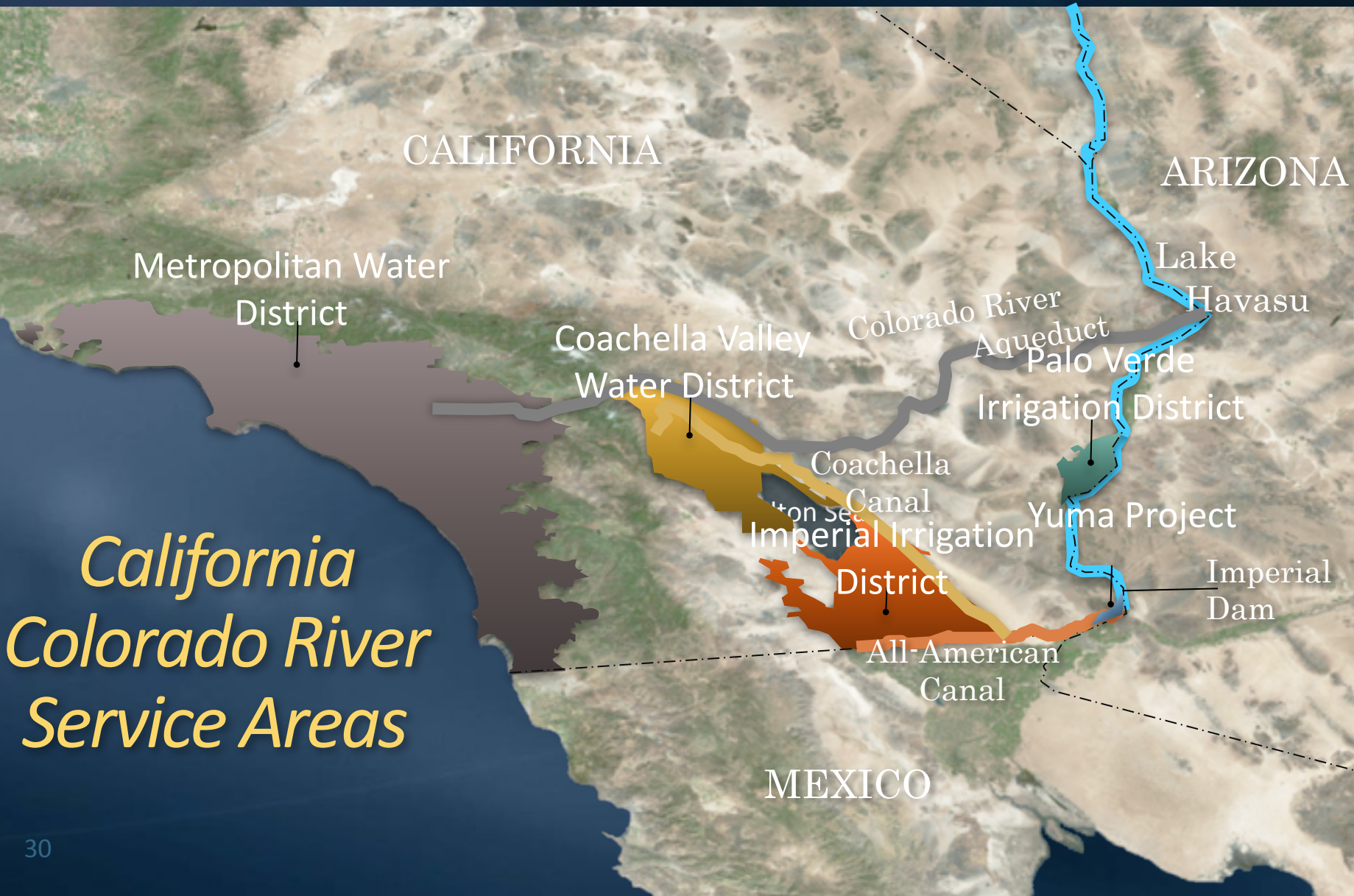


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# New pilot following program



# 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



# IRP adaptive management







Love water. Save water.  
[bewaterwise.com](http://bewaterwise.com)