

Graphics Workshop August 16th

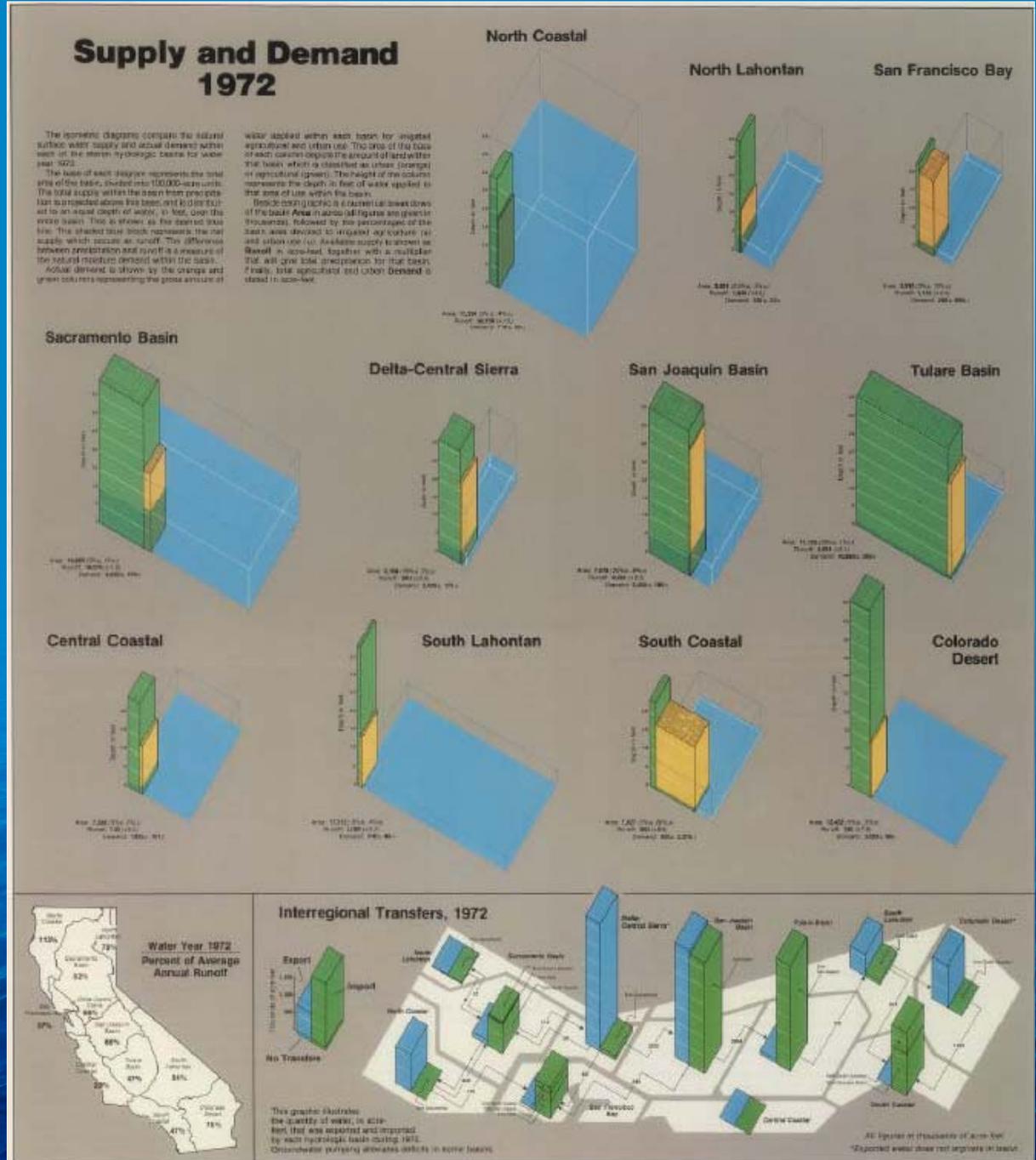
- Water Supply and Balance

- Environmental Water

How the Water Plan has shown the Water Supply and Balance before

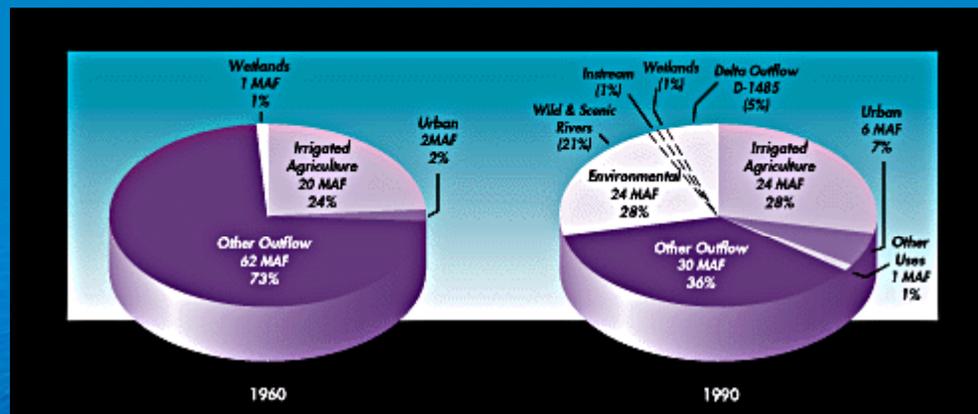
California Water Atlas

Supply and Demand 1972



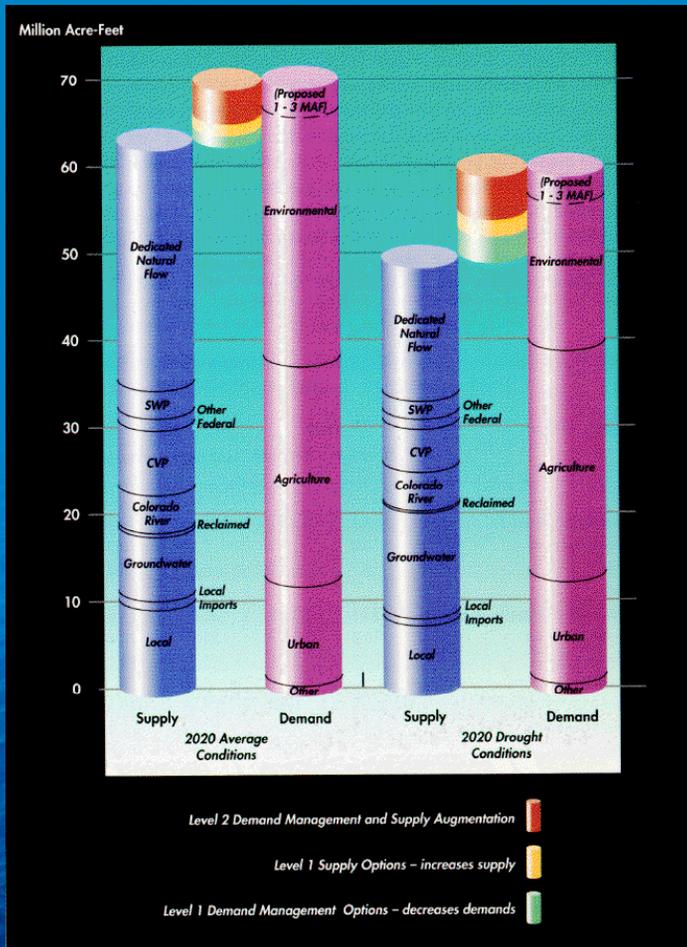
Bulletin 160-93, The California Water Plan Update, October 1994

- Disposition of Average Annual Water Supply (normalized data)



- (two years, supply only, 3-D pie chart)

Bulletin 160-93, The California Water Plan Update, October 1994

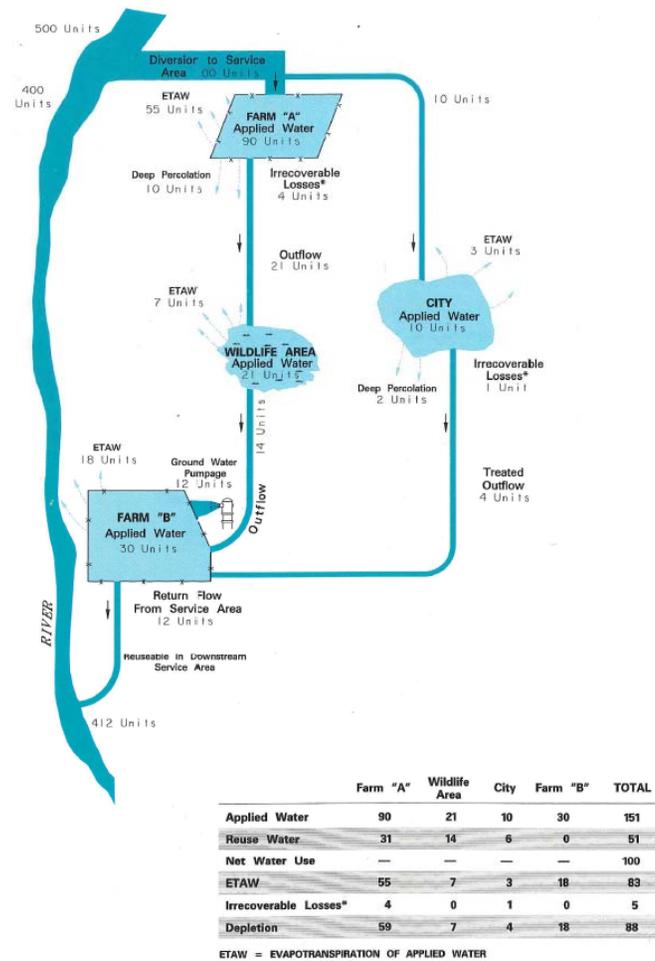


- Supply and demands
- Two years (average, drought)
- Three-D bar chart

B160-93 Schematic

Figure III-A. Derivation of Applied Water, Net Water Use, and Depletion

Example of Water Use in Inland Areas

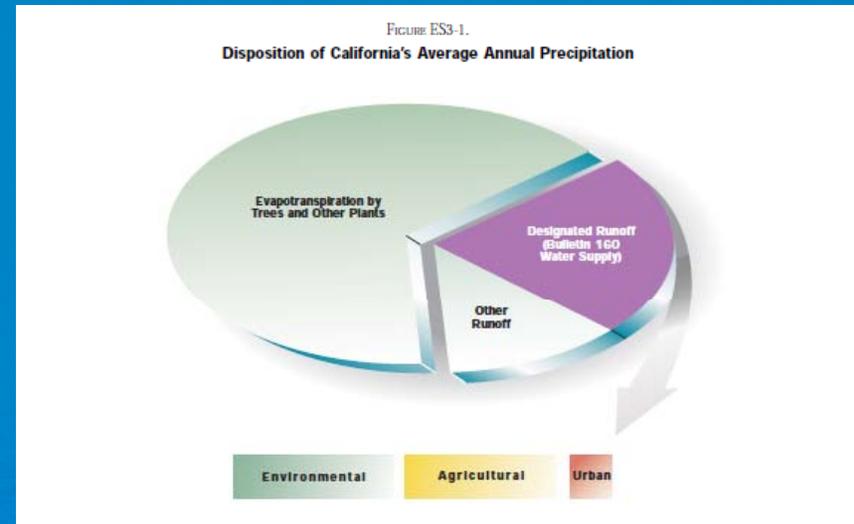


- Generic inland example
- Generic salt sink example
- Uses simple units to explain applied, net, and depletion concept

The California Water Plan Update

BULLETIN 160-98

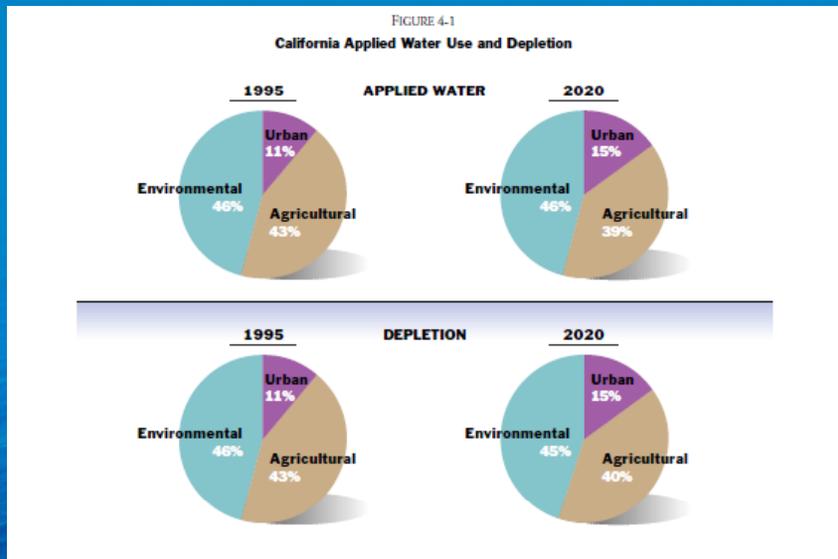
- Disposition of California's Average Annual Precipitation
- Shows one year (average) and three uses.



The California Water Plan Update

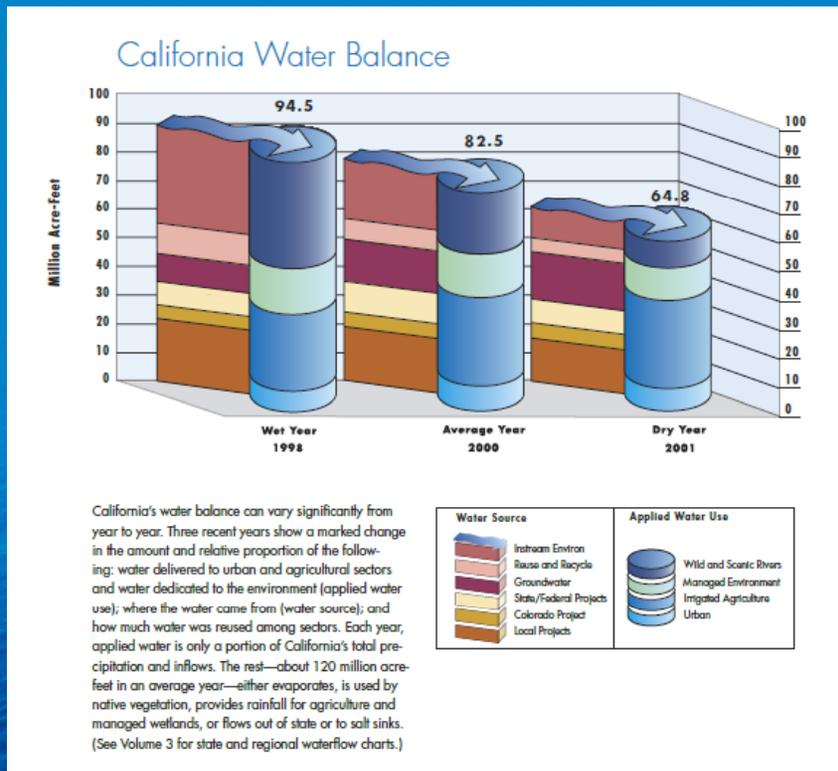
BULLETIN 160-98

- California Applied Water Use and Depletion
- Shows two years, three uses



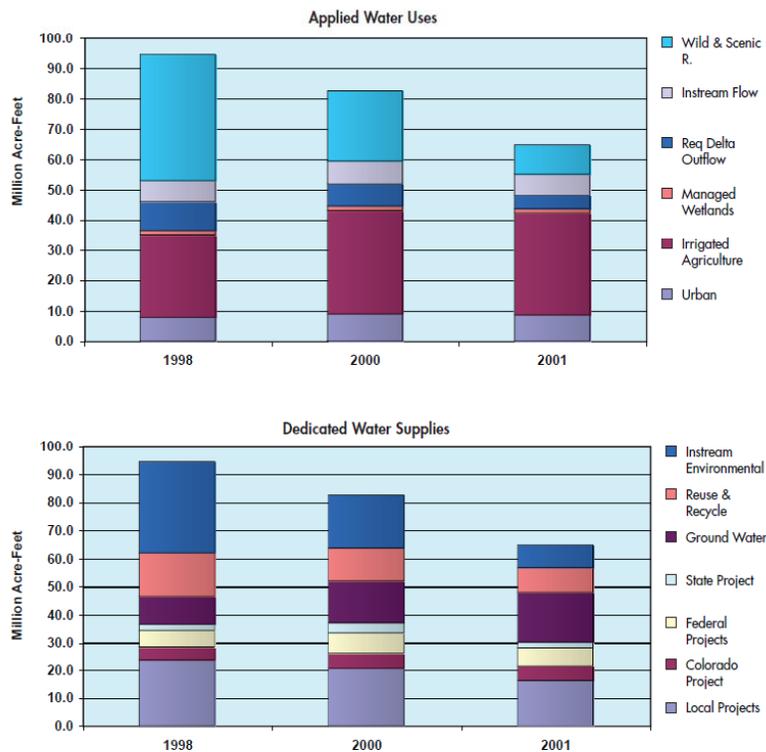
California Water Plan Update 2005

- Highlights graphic
- California Water Balance
- Shows Sources and Uses
- Three sample years
- First time using actual data.



More Update 2005

Figure 1-10 California water balance for water years 1998, 2000, 2001

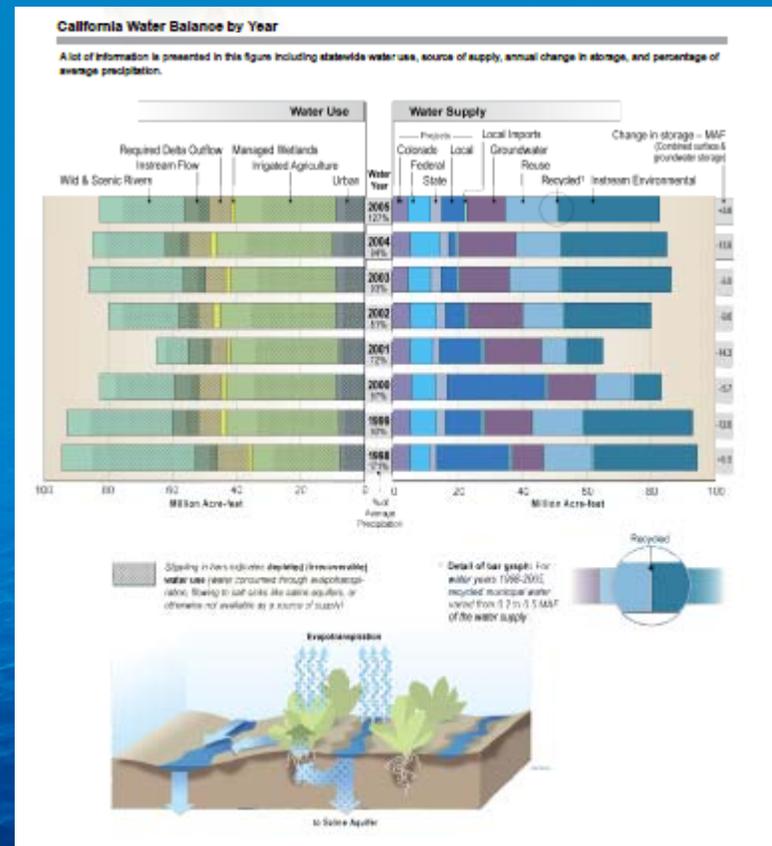


Three years show a marked change in amount and relative proportions of water delivered to urban and agricultural sectors and water dedicated to the environment (applied water, top chart), where the water came from, and how much was reused among sectors (dedicated water supplies, bottom chart).

- Volume 3 - Regional and Statewide report graphics
- Water Balance bar charts

California Water Plan Update 2009

- Eight years (1998-2006)
- 6 water uses
- 10 water sources
- Change in storage
- Type of water year



What we might display

- 13 years (1998 – 2010)
- 6 water uses (Wild and Scenic Rivers, Instream Flow, Required Delta Outflow, Managed Wetlands, Irrigated Ag, Urban)
- 10 water sources (Colorado, Federal, State, local, local imports, groundwater, reuse, recycle, instream environmental)
- Change in storage, type of water year

Environmental Water

- What environmental water is displayed?
- History and the debate.
- How else can it be displayed?
 - Pull out Wild and Scenic water only from North Coast only or all regions.
 - Use paired graphics with and without flow-based environmental water
 - Display graphics at a smaller spacial scale (56 Planning Areas).

What environmental water is displayed?

- Land-based
 - Managed Wetlands
- Flow-based
 - Wild & Scenic Rivers
 - Instream Requirements
 - Required Delta Outflow

The History

- Environmental Water Use added in B160-93
 - Water Balance compares 1990-2020 net demand with supply, showing a gap for average and drought years.
 - Net demand is usually much less than applied water because of the extensive reuse within a basin.
- B160-98 - applied water use and depletions
 - This was in response to comments that net demand was more difficult to understand.
 - Water Budgets displayed in tabular format only, no water balance graphic.

More history, CWPU 2005...

- Changed terminology
 - “developed and dedicated”
 - removed “use” from “environmental water”
- Lumped “Managed environmental” in graphic
 - Wetlands, Instream Reqts, Req’d Delta Outflow
- Actual year and scenario analysis
- Added Water Portfolio with Flow diagram
 - People liked the water atlas
 - transparency
 - consumptive vs. non-consumptive water
- Used net envr. water in flow diagram and water portfolio; applied, net and depletion in water balance tables; and applied water in water balance graphic.

Even more history...

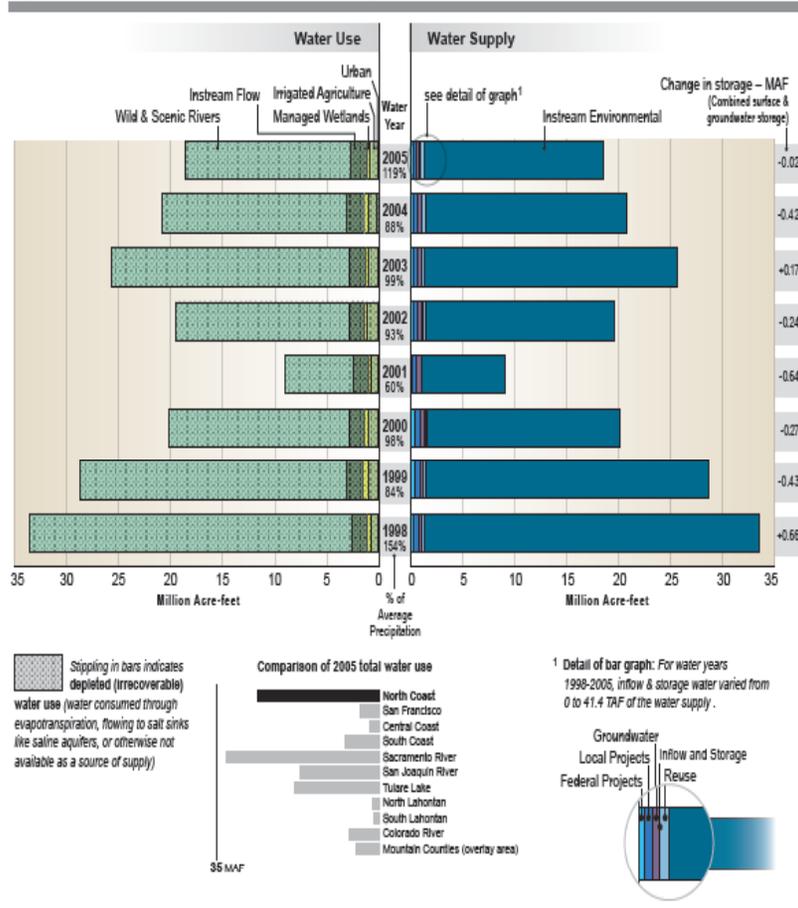
- Update 2009
 - Continued to explain and show consumptive use vs. non-consumptive use in different ways, recoverable flow vs. non-recoverable flow.
 - Expanded flow diagram concept into an inflow-outflow water balance to better represent the path of water in the state from source to destination.
 - Water Balance graphics still appear skewed for North Coast and State graphics.
 - The fact is more water in the North Coast is dedicated to W&S rivers than anything else.

The debate and the difficulty

- Who uses more water? Who should use more water? NOTE: People argue about water. 😊
- Graphically, transparently, and objectively showing the very complex state of water in California without upsetting someone.
- Definitions continue to be an issue (e.g. Wild and Scenic Rivers water is not actually applied).

North Coast Water Balance

Figure NC-2 North Coast water balance for water years 1998–2005



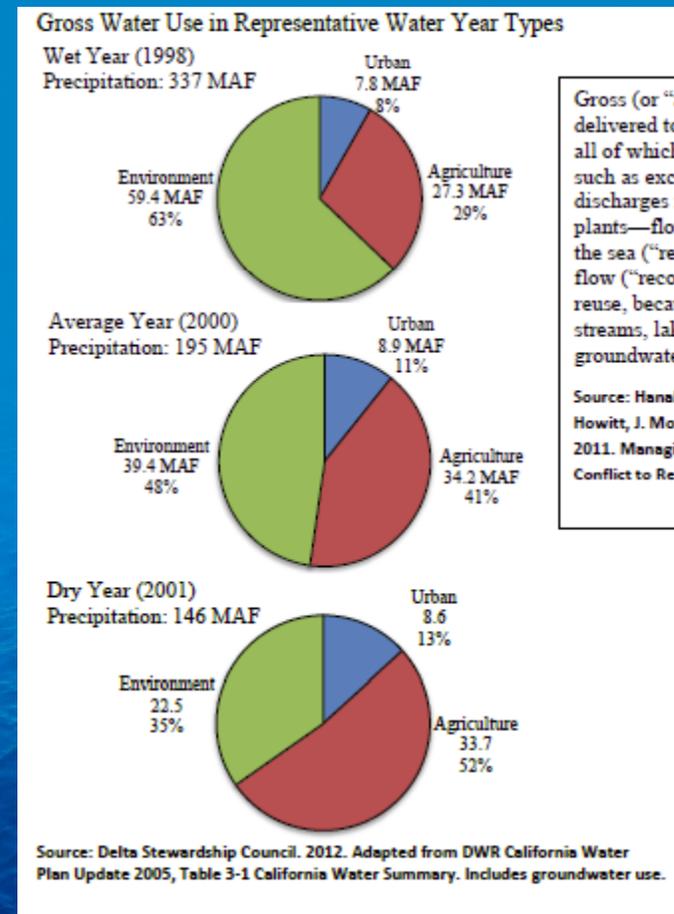
- Wild and Scenic Rivers overpower the graphic.
- These rivers deplete to the ocean.
- We can't see what is going on in other sectors in the NC Hydrologic Region.

Proposed options

- Pull out Wild and Scenic water only from North Coast only or all regions.
- Use paired graphics with and without flow-based environmental water.
- Display dedicated and developed water balance graphics at a smaller spacial scale (56 Planning Areas).
- Change terminology (gross, managed, unmanaged), use an example schematic.

Delta Stewardship Council example

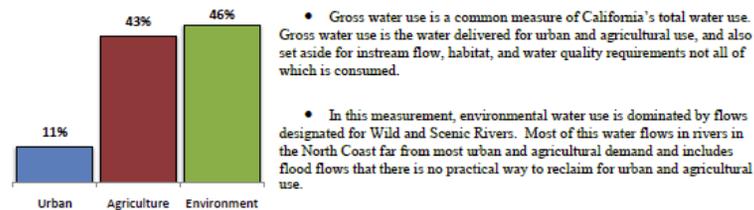
- Explains Gross Water Use (what we call applied water)
- This fixes the terminology problem.
- We can easily see variability due to year type.



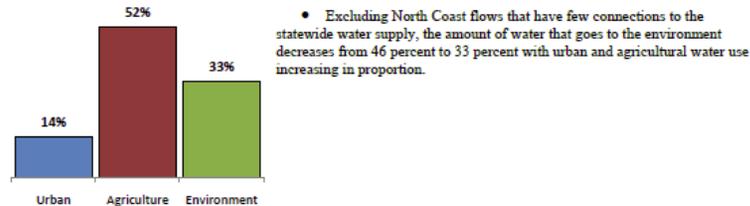
Delta Stewardship Council sample (cont.)

MOST ENVIRONMENTAL WATER HAS FEW CONNECTIONS TO OUR STATEWIDE WATER SYSTEM AND CANNOT BE RECLAIMED FOR URBAN AND AGRICULTURAL USE

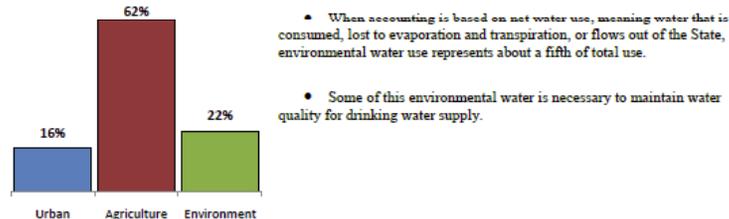
Statewide Gross Water Use 1998-2005



Gross Water Use Excluding North Coast Flows 1998-2005



Net Water Use Excluding North Coast Flows 1998-2005



Source: Delta Stewardship Council. 2012. Adapted from PPIC Myths of California Water – Implications and Reality. Figures represent the average water use for 1998-2005, adapted from California Water Plan Update 2009. Includes groundwater use.

- (Avg.) Statewide Gross Water Use w/ North Coast flows (envr. uses 3% more water).
- (Avg.) Gross w/o NC flows (envr. uses 19% less water).
- Displays Net Water Use without NC flows (envr. uses 40% less water).

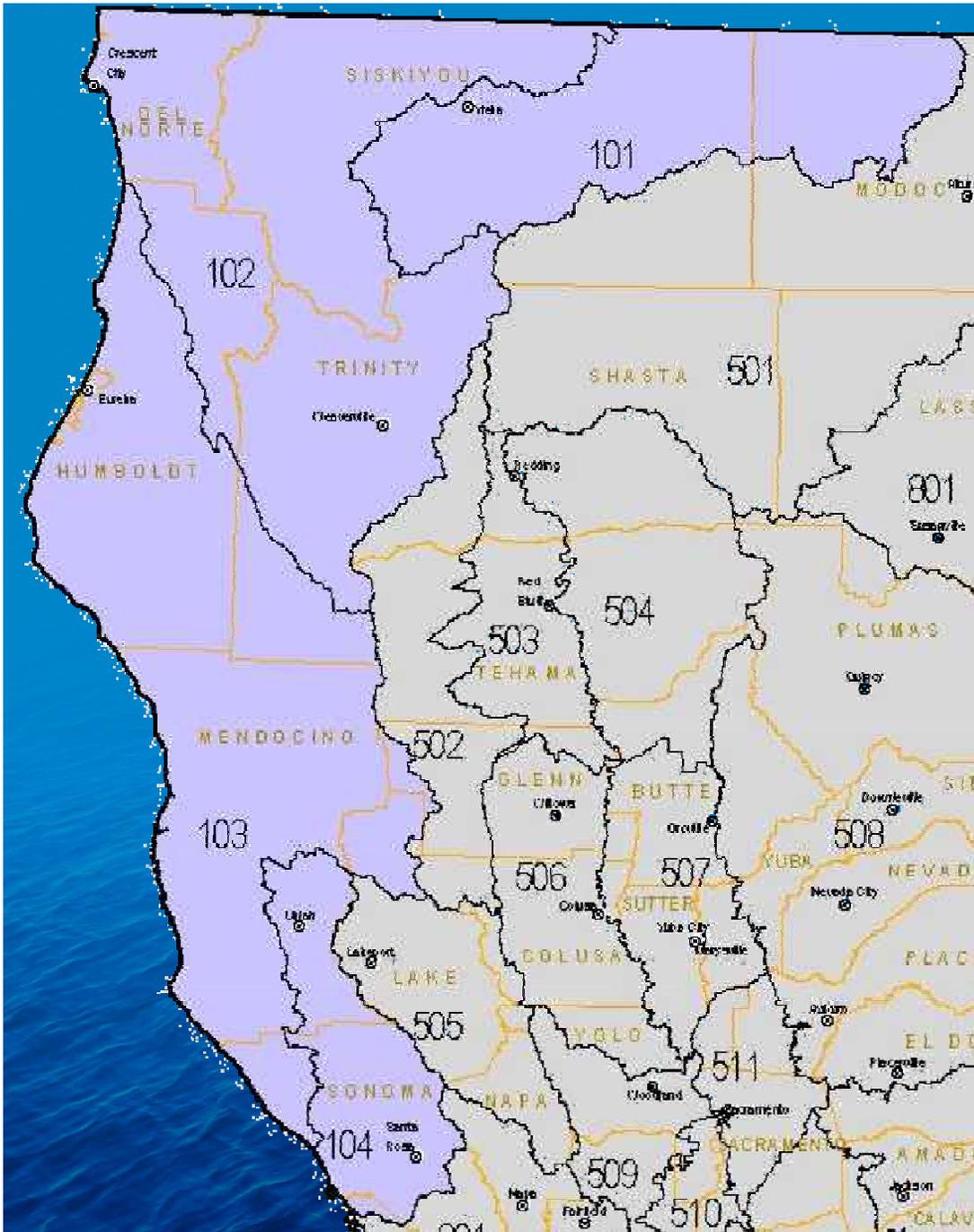
Proposed options (cont')

- We can do any combination statewide and regions.
- We can show water use, supply and/or balances with and without all flow-based or unmanaged environmental water for all regions or some.

Map of Wild and Scenic Rivers



- North Coast Wild and Scenic Rivers and a few others flow to the ocean.
- Other Wild and Scenic Rivers flow from the headwaters until they become part of the developed water system.

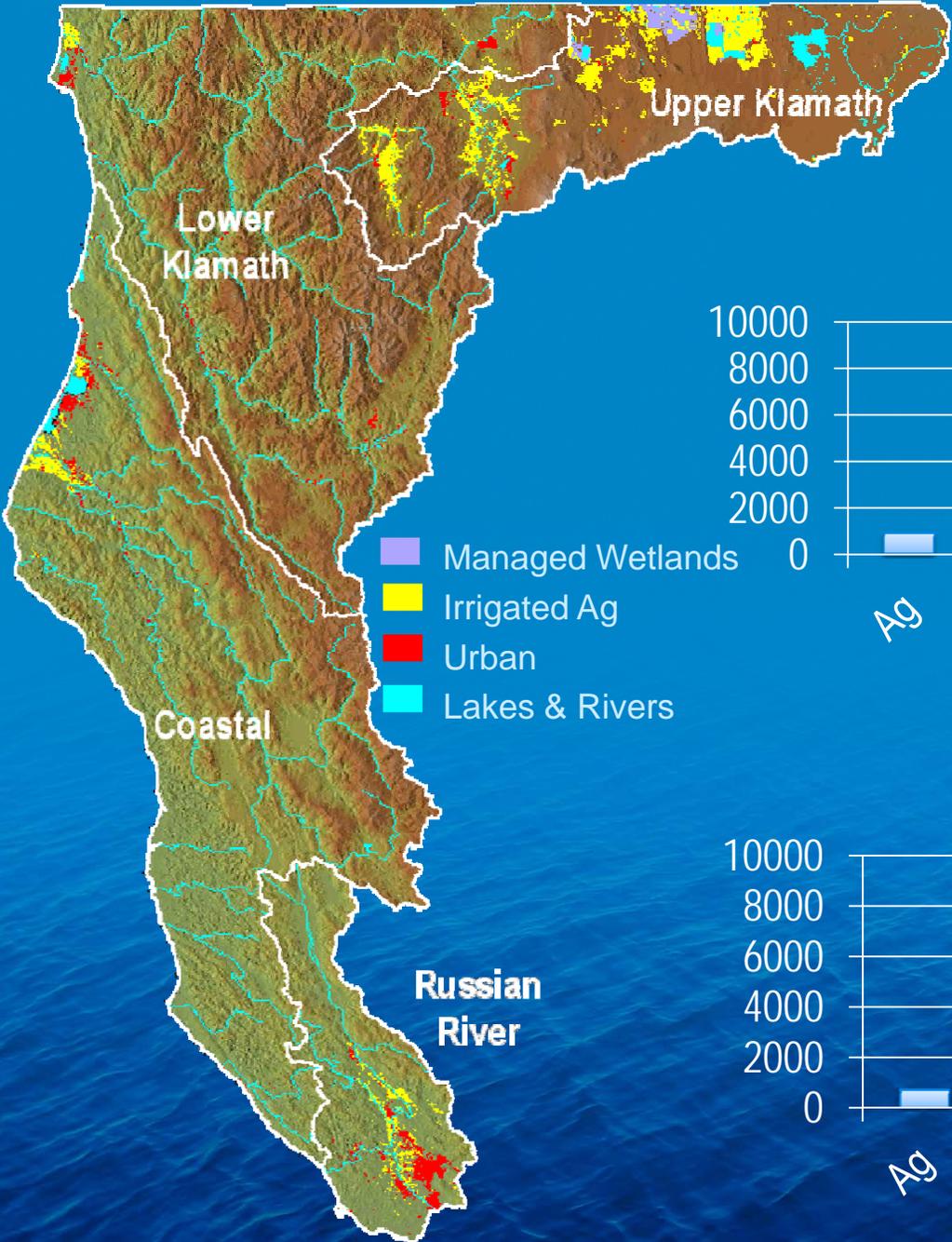


North Coast Region

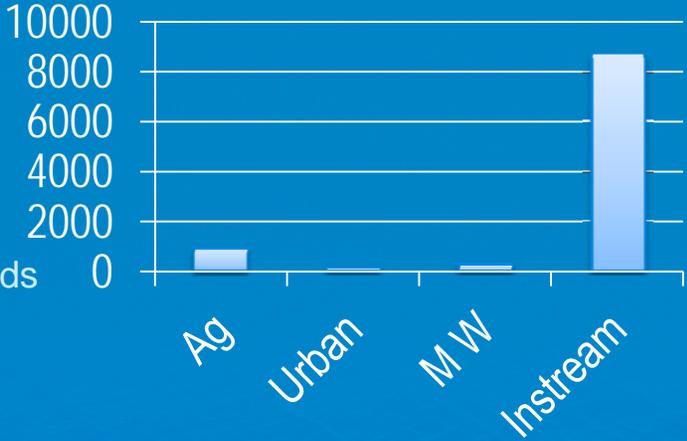
- Upper Klamath PA
- Lower Klamath PA
- Coastal PA
- Russian River PA



2007 Water Uses

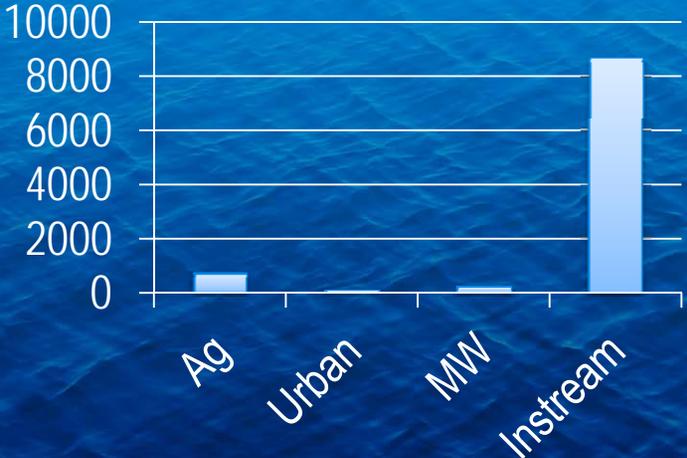


Applied Water



■ Applied Water

Depletion



■ Depletion

Ag, Urban and Managed Wetlands are *Managed Water* and Instream (Wild & Scenic, Instream and Required Delta Outflow) are *Unmanaged Water*

Environmental Water in the North Coast

- Managed Wetlands →
 - Roughly 77,000 acres
 - Includes Clear Lake & Tule Lake Sump
- Wild & Scenic Rivers
 - Smith, Klamath, Eel, Trinity, Albion, Gualala, Black Butte
- Instream Requirements
 - Klamath, Eel, Mad, Trinity, Russian
 - Some reuse on Eel River
- Clear Lake NWR
- Tule Lake NWR
- Lower Klamath NWR
- Butte Valley WA
- Butte Valley Nat. Grasslands
- Butte Valley Private
- Shasta Valley WA
- Arcata Marsh & Wildlife Sanctuary

Discussion

- What do you think of the options?
- Are there other options?

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