Inland Empire Utilities Agency (IEUA) Recycled Water Program

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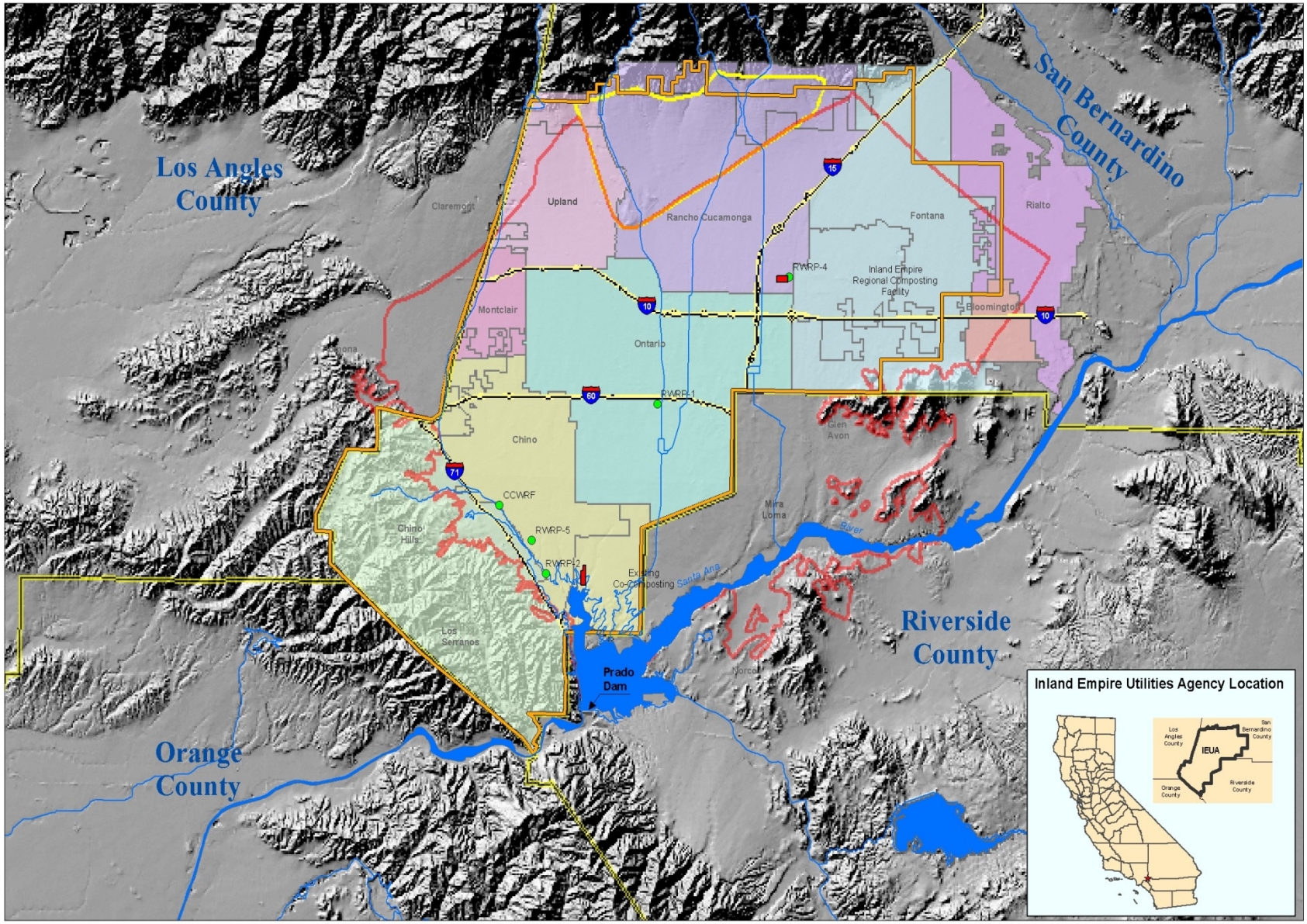
State Water Board, California Public Utilities Commission and the Water Energy Climate Action Team

Climate Change Scoping Plan Implementation Workshop

Measure W-2 Water Recycling

Inland Empire Utilities Agency (IEUA)



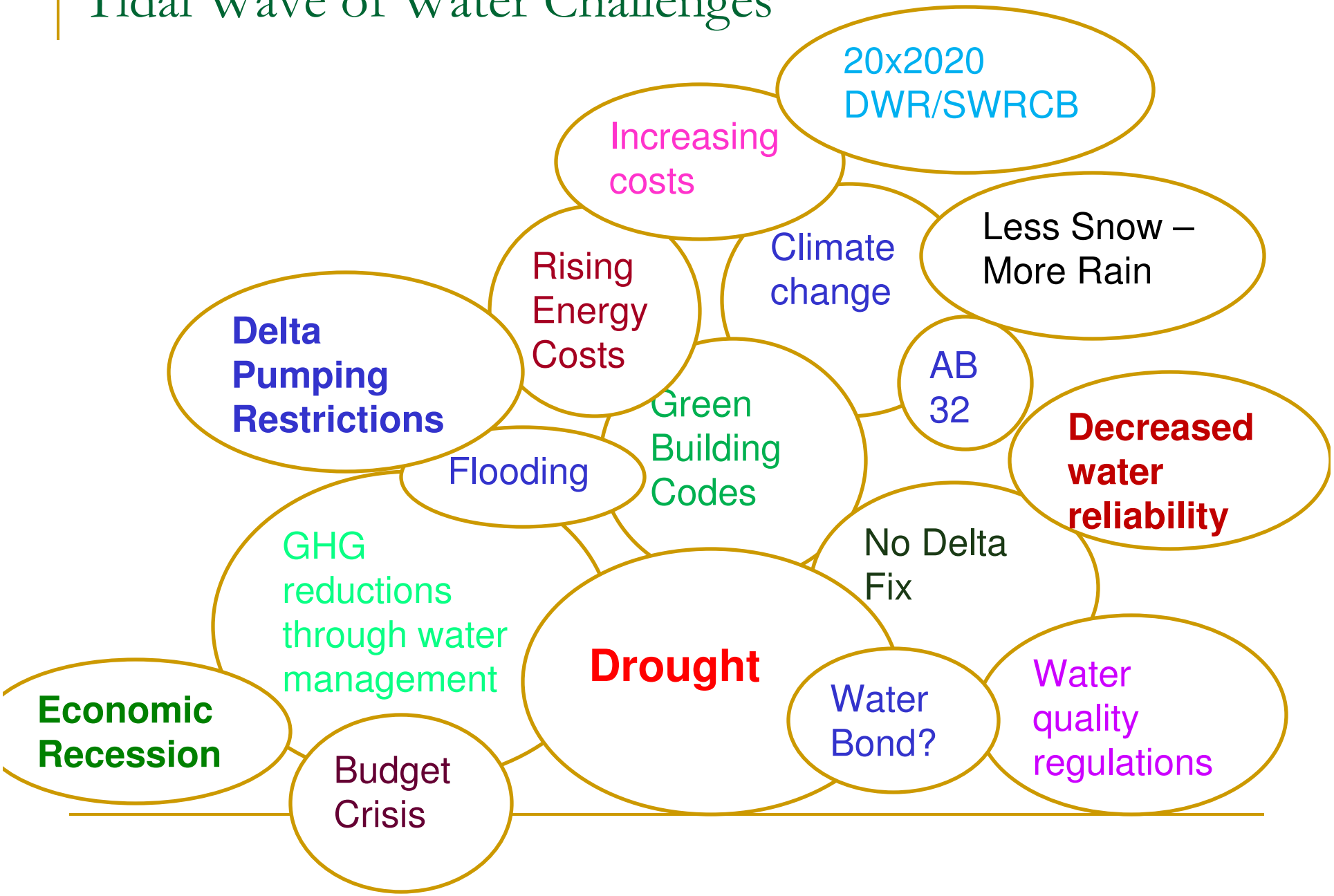
IEUA Profile

- *"Wholesale" Water and Wastewater Utility in Southern California serving 242 square miles of the Chino Basin in the western portion of San Bernardino County (308 employees)*

  - Regional wastewater service provider and distributor of wholesale water and recycled water
    - Chino Groundwater Basin (one of the largest in So. Calif.)
    - 3 Products: Recycled Water, Compost and Renewable Energy
    - Member of Metropolitan Water District of Southern California

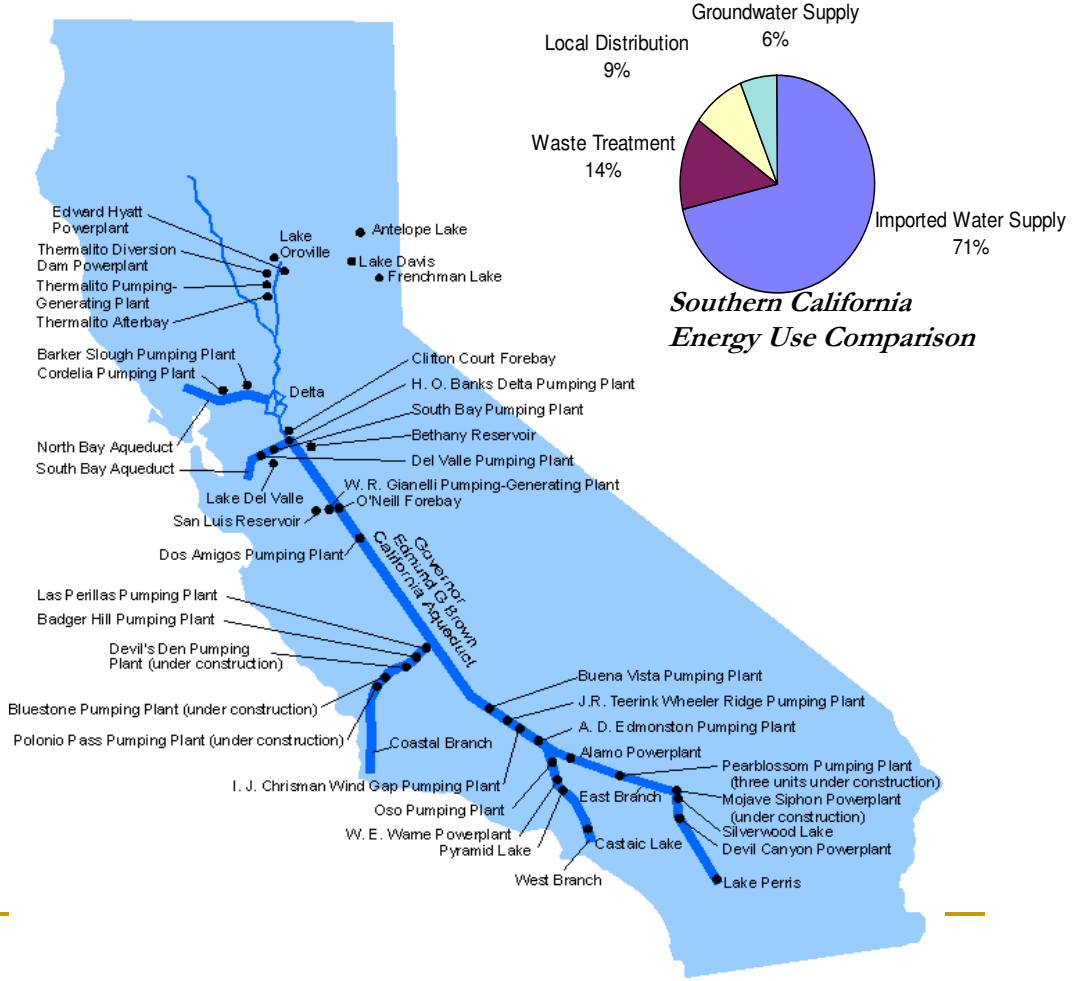
  - High urban growth – Inland Empire one of the most rapidly growing regions in the U.S.
    - Conversion of agricultural lands to urban use will increase municipal and industrial demands for water

Tidal Wave of Water Challenges

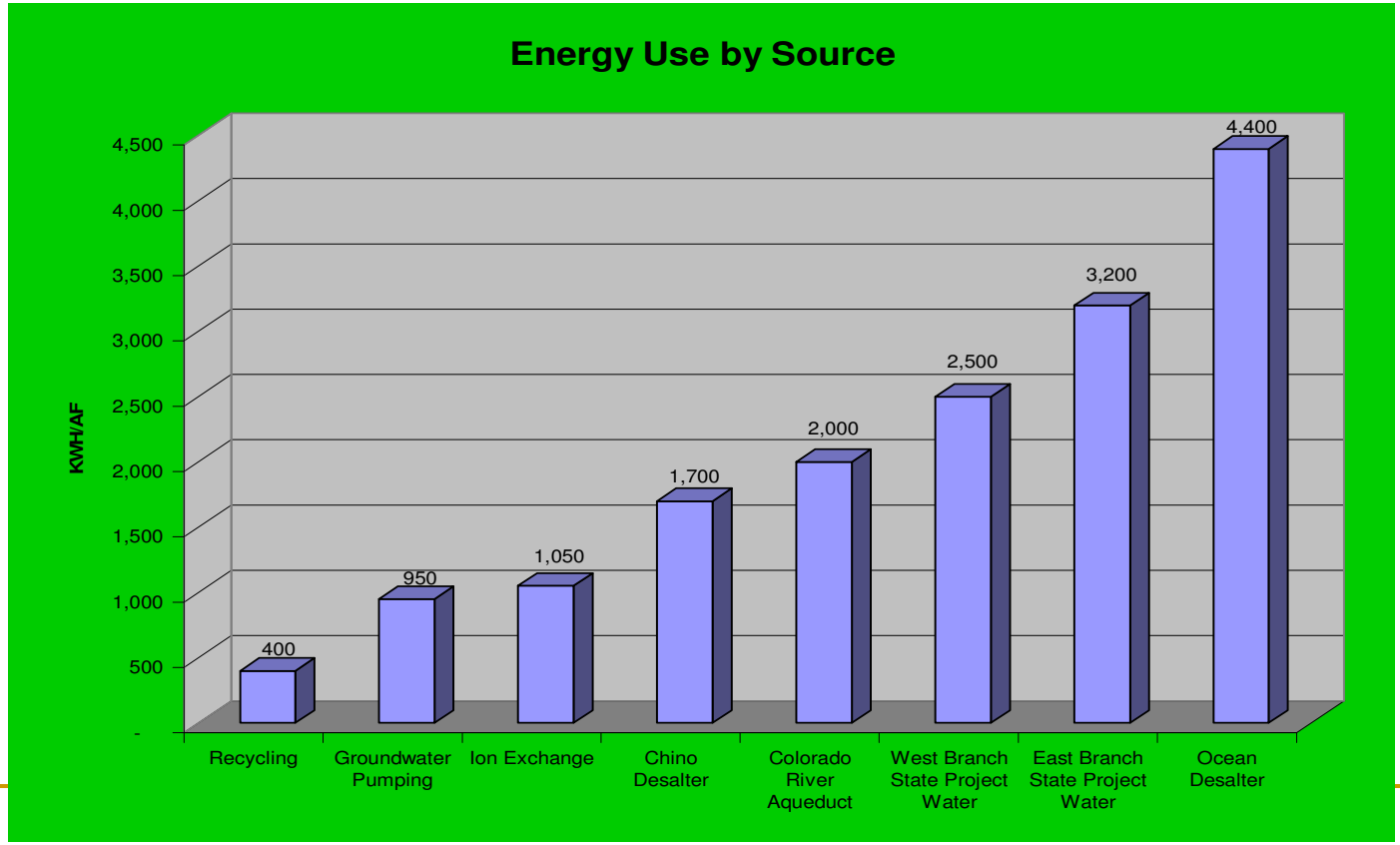


Water Agencies Are in a Pivotal Position to Implement GHG Mitigation Strategies

- At 19% of California's total electricity demand and 32% of natural gas usage, provision of water and wastewater services is energy intensive!!!
- A large amount of energy is embedded in water supplies (amount varies by location of water source and end use)



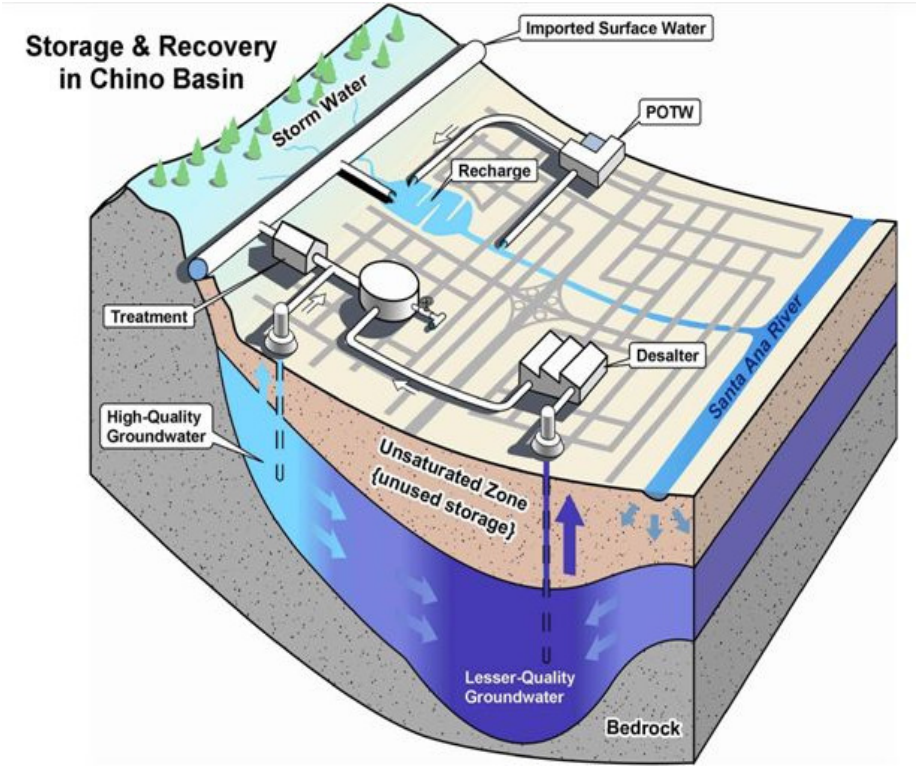
Based on the "energy intensity" of the water supplies used within IEUA's service area, the amount of energy needed to provide water to meet our area's needs today is about 347,000 MWh

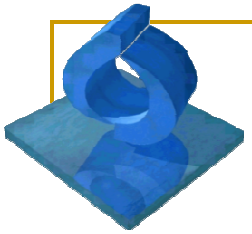


2000 Profound Shift in Chino Basin Water Supply Strategy

Meet future water needs through increased local water development, minimize need for imported water

- Recycled Water
- Enhanced Groundwater Recharge
- Desalters
- Dry Year Yield/Conjunctive Management
- Water Efficiency





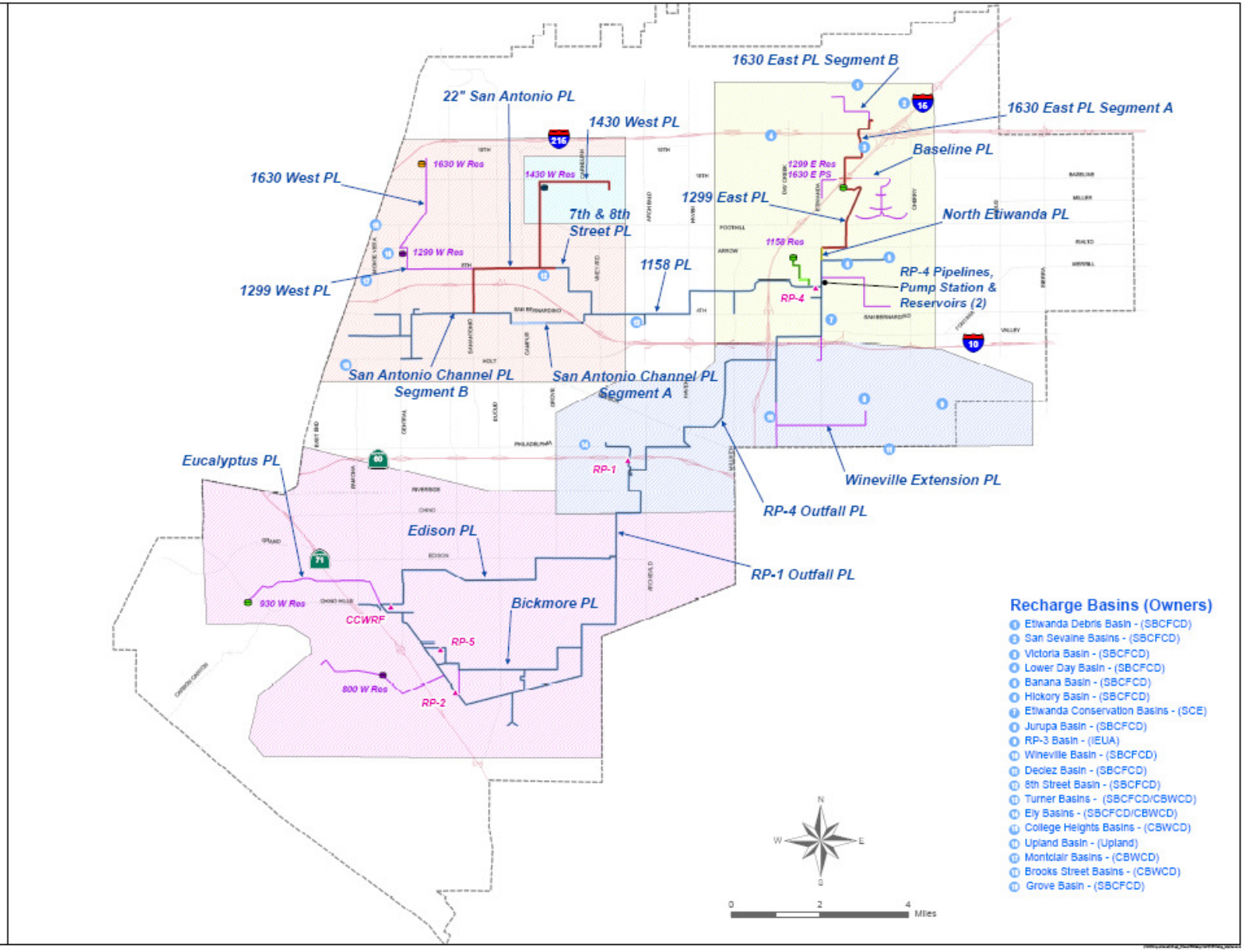
Recycle Water Program Background

- First pipeline constructed in 1995, with deliveries to El Prado Park and Golf Course in Chino and Ontario
- In the late 1990's, IEUA began to implement groundwater recharge with recycled water at Ely Basin
- In 2002, IEUA completed the Recycled Water Feasibility Study
- In 2005, IEUA completed the Recycled Water Implementation Plan to prioritize the installation process of the regional recycle water distribution system
- In December 2007, IEUA adopted the aggressive Three Year Business Plan to increase the use of recycled water within the Agency's service area

Recycle Water Status Map

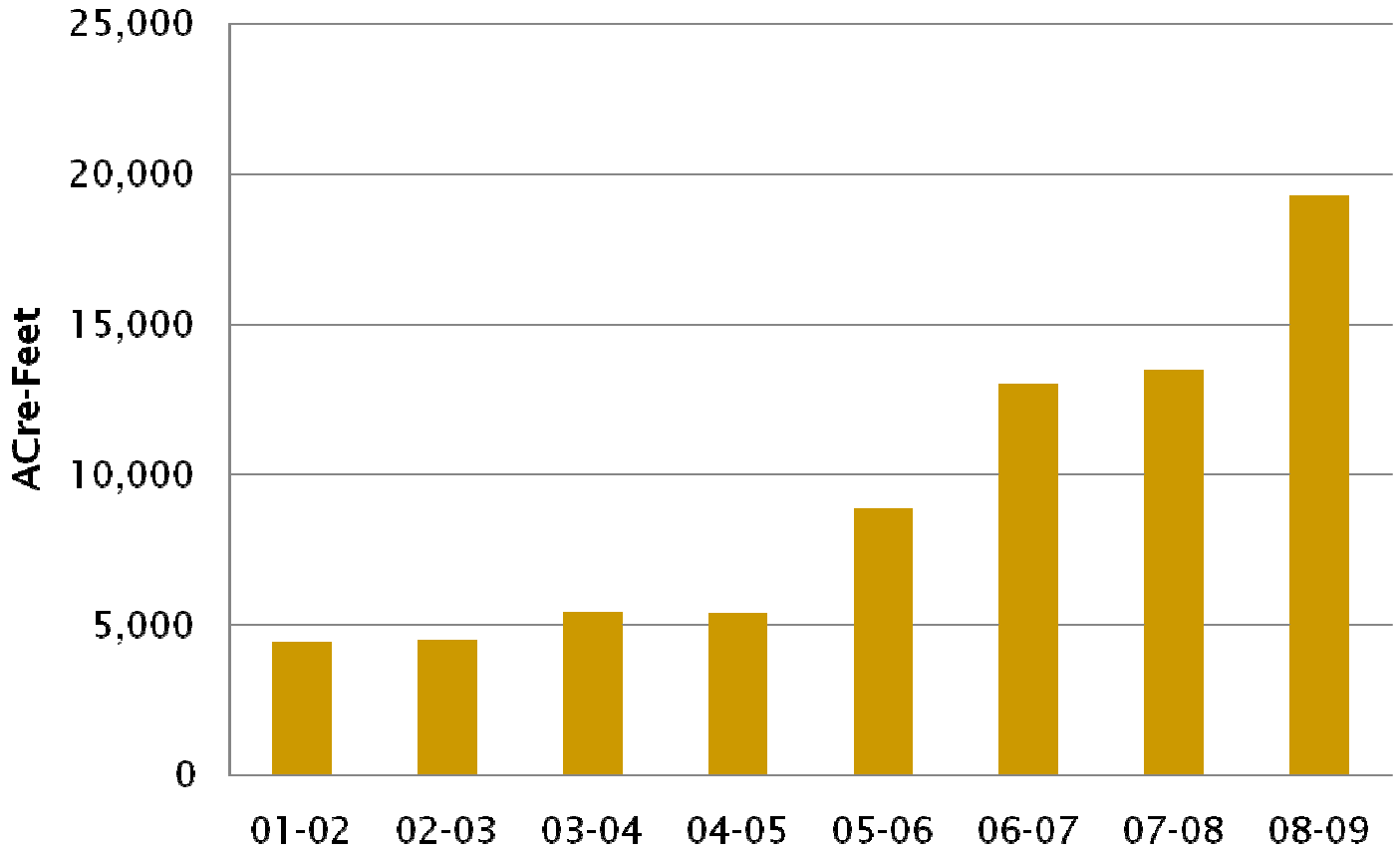
Recycled Water Capital Projects Business Plan

January 2009



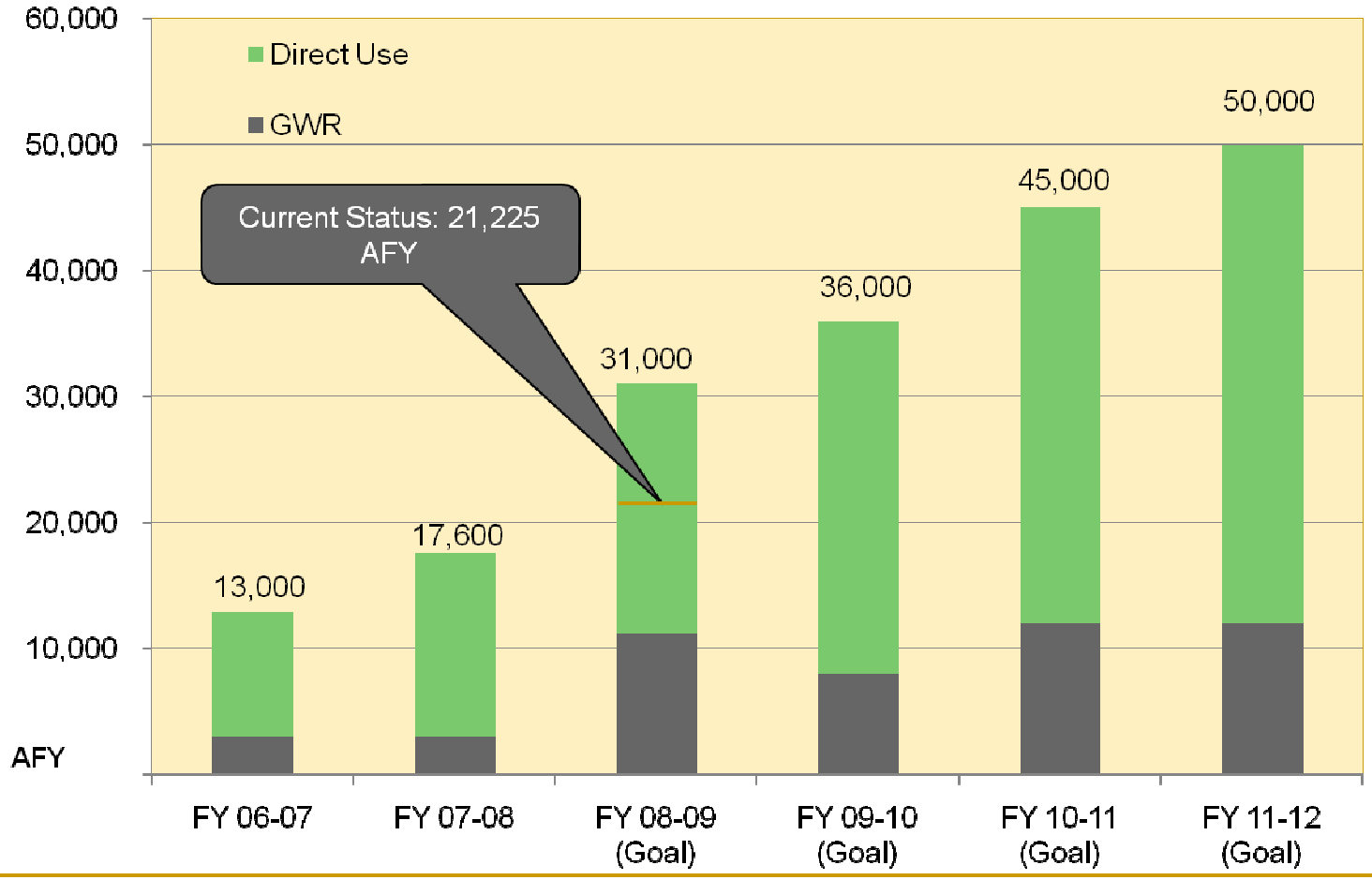
Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

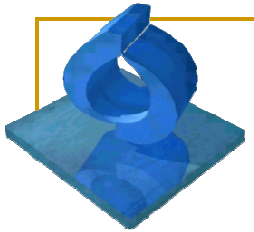
Recycle Water Deliveries



*Recycled Water Delivery Jul 08 – Dec 08: 9,648 AF

Recycled Water Connected Demand





Recycled Water Goals

Three Year Business Plan Goals:

- 50,000 AFY Connected Demand by June 2012 (originally targeted for June 2010).
- Total future recycled water: 100,000 AFY
- Recycled Water Program to be ultimately self-funded through sales and MWD local project rebates.
- Total construction estimated at $250 million

Recycled Water Funding

- **USBR Title XVI Grant Funding ($20 M Total)**
  - $1 million – 2008 (received)
  - $19 Million, to be received within the next 12 – 18 months
- **Retrofit Financing Assistance**
  - CBWCD Rebate
  - MWD Public Sector Rebate (Additional Funds allocated)
  - IEUA
  - DWR Urban Drought Assistance
- **MWD Local Resources Program Agreement (LRP)**
- **MWD Local Projects Program (LPP)**
- **SRF Loans and State Grants associated with SRF Loan**

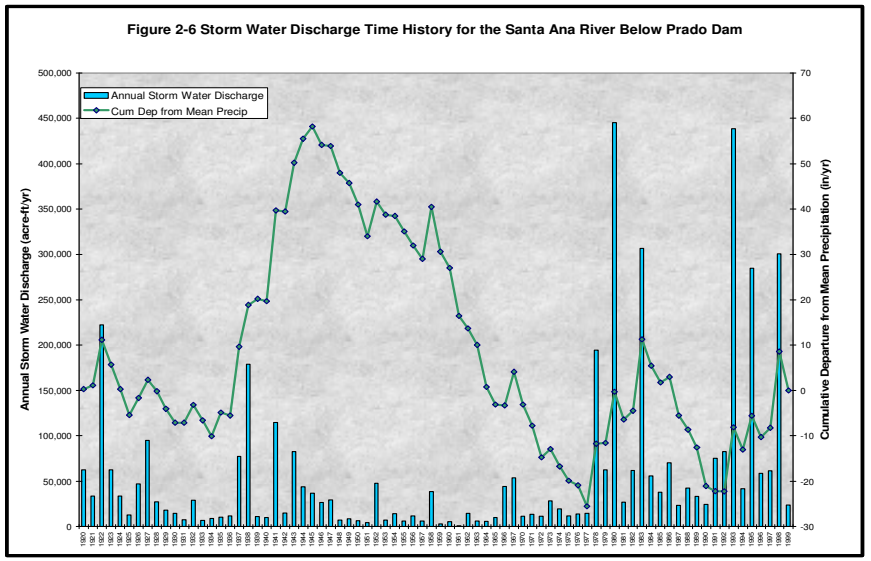
Water/Energy Assets of the Chino Basin

- Groundwater
  - Continue to expand groundwater "conjunctive use" storage with MWD
- Recycled Water
  - Over 100,000 Acre-feet of water available for reuse----25-30 percent of all water use in Chino Basin
- Storm Water Capture
  - Region now loses over 40,000 acre-feet per year on average of water that historically recharged the Chino Groundwater Basin
- Opportunities for Water/Energy Efficiency
  - Water conservation and improvements in water use efficiency

Local supplies and conservation save an equivalent of over 50 MW of generating capacity

Example Of "Lost" Water-Energy Nexus

- Hard surfacing and flood control have changed the storm water runoff pattern within the Chino Basin
- Over 40,000 acre-feet per year on average is lost that historically recharged the groundwater basin
- Imported water supplies have been purchased, in part, to replace lost stormwater



- What is the energy value of the lost storm water supply? On average: 2250 kWh per acre-foot

Key Water/Energy Strategies

- Maximize local supply development to increase locally controlled "drought proof" supplies and balance less reliable, more costly imported supplies
- Implement "green" development standards for new housing in the most rapidly growing region in California
- Develop Santa Ana River Watershed "comprehensive" water quality/supply management strategies
- Maximize integration of water supply investments to reduce CO2 "Footprint" under AB 32

IEUA Innovations to Address Energy Needs

Constructed the nation's first platinum LEED-rated headquarters by a public agency (2003). With installation of cogeneration in 2009, it will become a Zero Energy facility.

Constructed the nation's first and largest centralized anaerobic digester to convert dairy manure and food waste to methane gas (2003). With planned expansions, it will generate 3 MW.

IEUA's Expanding Energy Project Portfolio

- Of current energy needs of 11 MW, IEUA is self-generating about 7 MW – recognized in July 2006 by the U.S. Environmental Protection Agency as one of the nation's top ten local government "purchasers" of renewable energy from its own facilities

- Core Projects:
  - "Cow Power" Anaerobic Digester Program: 3 MW by 2009 (Partners include California Energy Commission, USDA Natural Resources Conservation Service and the Milk Producers Council)
  - Solar Power 3.5 MW installed in 2008
  - Renewable Energy Efficiency Project: achieve minimum 65% generation efficiency by combining innovative processes including a Stirling Engine, Organic Rankine Cycle Unit, thermal energy storage and a fuel cell (Partners included the U.S. Department of Energy)
  - Biogas Innovation Program
    - Three-Phase Thermophilic Digestion
    - Food Waste Additions
    - Flared Biogas Recovery (fuel cells)
    - Gassifier with or without production of liquefied biofuel

Conclusions

- There are significant opportunities for wastewater and water agencies to save energy, self-generate and reduce the need for additional electricity from the state's electric grid and thereby reduce significantly GHG emissions

- Key strategies include:
  - Increase on-site energy production
    - Biogas, solar, wind, hydro recovery, combined heat and power systems
  - Reduce water-related energy end-use
    - Energy efficiency design standards, partnering with electric and gas utilities to increase efficiency of operations
  - Increase drought benefits from local groundwater storage
    - RAND report on Global Climate Change
  - Save Energy by saving water
    - Reduce dependence on imported water supplies
    - Integrate water and energy conservation programs

For more information …

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