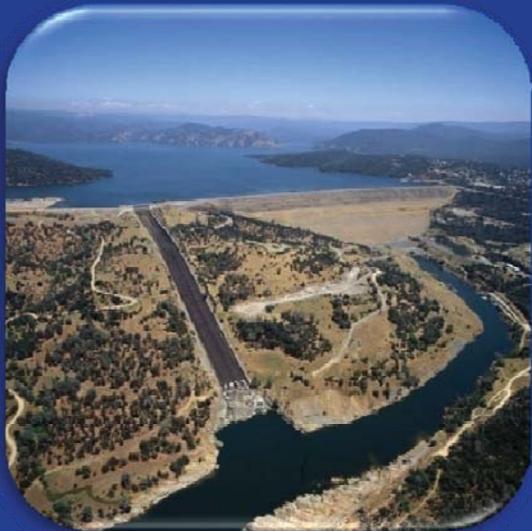




Improving and Sustaining
California's Water Resources

CALIFORNIA
DEPARTMENT OF WATER RESOURCES
STATE WATER PROJECT



STATE OF THE STATE WATER PROJECT
CALIFORNIA WATER COMMISSION – JUNE 20, 2012



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STATE WATER PROJECT



- Serves **25 million people** and **660,000 acres** of farmland
- 34 storage facilities
- 20 pumping plants
- 4 pumping-generating plants
- 5 hydroelectric power plants
- 189 pumping and generating units
- 1 coal-fired power plant
- About 700 miles of canals and pipelines



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OVERVIEW

- SWP Supply
- SWP Planning
- Challenges





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SWP SUPPLY





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WATER SUPPLY CONDITIONS

- Water Year 2011 was classified as a Wet year
 - Near record snowpack remained early Jul 2011
 - DWR able to meet 80% (3.3 MAF) of SWP contractor requests
 - Delta pumping restrictions prevented full delivery
 - Excellent Lake Oroville storage at the end of 2011
- Water Year 2012 began extremely dry
 - Half normal precipitation in the northern Sierra through Feb
 - Feb year type designations:
 - Dry year for Sacramento Valley
 - Critically Dry in the San Joaquin Valley
- Water supply conditions improved significantly in the late spring
 - Twice normal precipitation in northern Sierra during Apr/May period
 - Final 2012 year type designations:
 - Below Normal for Sacramento Valley
 - Dry for San Joaquin Valley



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CHRONOLOGY OF 2012 SWP ALLOCATION

- Nov – Initial Allocation – 60% (2.5 million acre-feet)
 - Relatively high initial allocation due to excellent carryover storage in Lake Oroville from a wet 2011
- Feb – Allocation decreased from 60% to 50%
 - Due to extremely dry winter conditions (half normal)
 - Allocation decreases are extremely rare
- Apr – Allocation increased back to 60%
 - Due to over twice average Mar precipitation
- May – Allocation increased further to 65% (2.7 maf)
 - Due to continued wet conditions in April
 - Final Allocation typically announced in May
- Current Allocation remains at 65%



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SWP PLANNING





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SWP INFRASTRUCTURE SUSTAINABILITY

- **Goal:** Refine existing processes to establish a consistent, systematic methodology for the strategic planning and prioritizing of the capital investment in SWP electrical, mechanical, and civil infrastructure for the next 50 years



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CURRENT ELEMENTS

- **Plant Condition Assessment Program (pCAP)**
 - Testing-based program for pumping and generating units
 - Redundancy allows units to be taken out of service for testing
- **Civil Condition Assessment Program (cCAP)**
 - Visual inspection program for above ground/water civil works
 - Lack of redundancy does not allow major civil features such as canal pools to be taken out of service for visual inspection below the waterline
- **CAP – basis for 1yr & 5yr Maintenance Plans**
 - Maintenance, major refurbishments, and replacements



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FUTURE ELEMENTS

- Enhance CAP w/ new testing & analysis tools
- Vulnerability Studies (VS)
 - Evaluate natural & manmade hazards that pose short/long-term risks to public safety & SWP Ops
 - Seismic, subsidence, drainage/seepage, etc
- Comprehensive Asset Management Program
 - Utilize CAP, VS, and other special studies to:
 - Better characterize condition of SWP infrastructure
 - Prioritize annual O&M plans and capital improvements
 - Reduce risks to public safety
 - Improve reliability of SWP operations



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FUTURE CAPITOL IMPROVEMENTS

Protective Relay Systems

2014

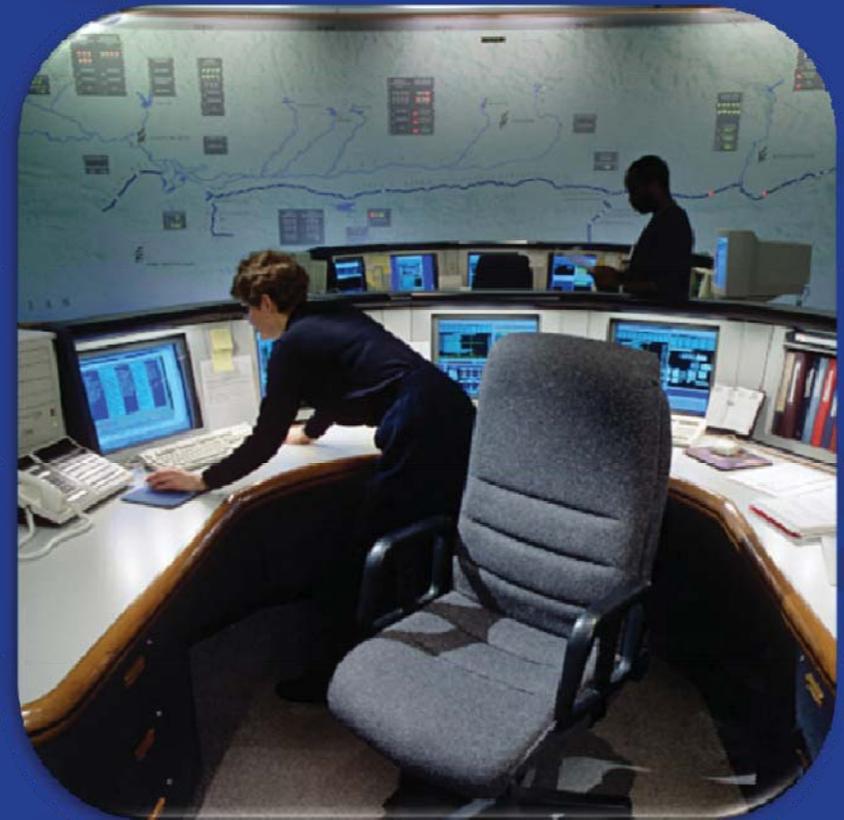
\$23M



Communication Systems Upgrade

2016

\$36M





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FUTURE CAPITOL IMPROVEMENTS

**Gianelli Valves
Replacement**

2021

\$50M



**Gianelli Motor-
Generator Refurb**

2026

\$100M





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CAPITOL IMPROVEMENTS





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CAPITOL IMPROVEMENTS

South Bay Aqueduct

2012

\$220M



Edmonston Pumps

2012

\$42M





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CAPITOL IMPROVEMENTS

East Branch Extension (P-I)

2013

\$20M

East Branch Extension (P-II)

2014

\$172M





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POWER PLANNING

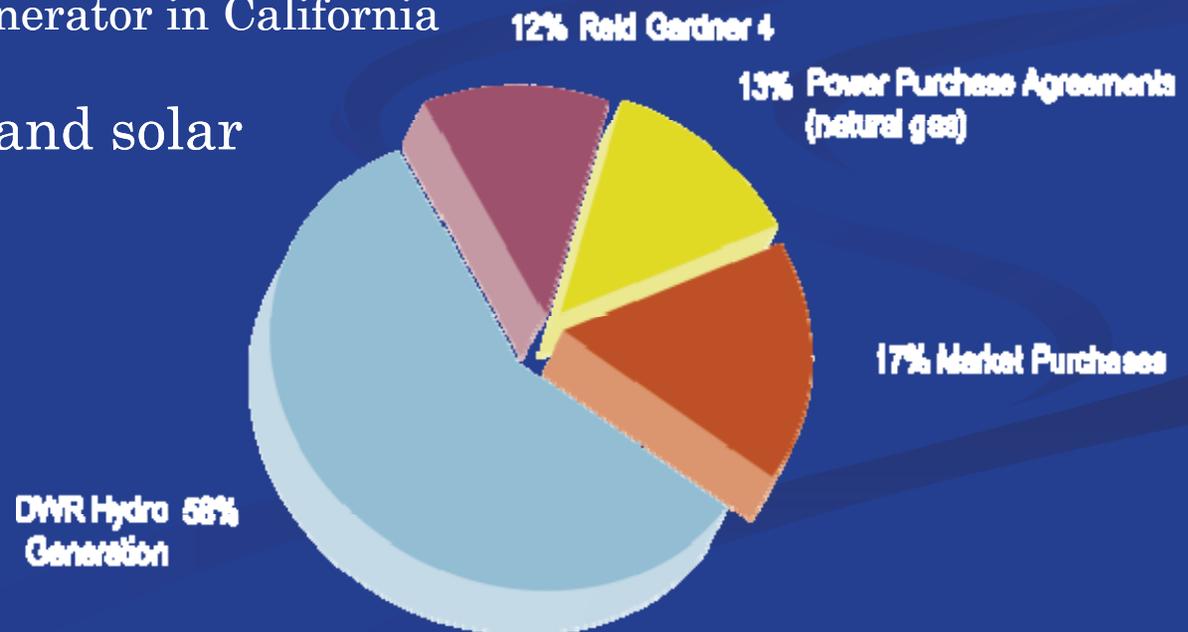




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SWP POWER PORTFOLIO

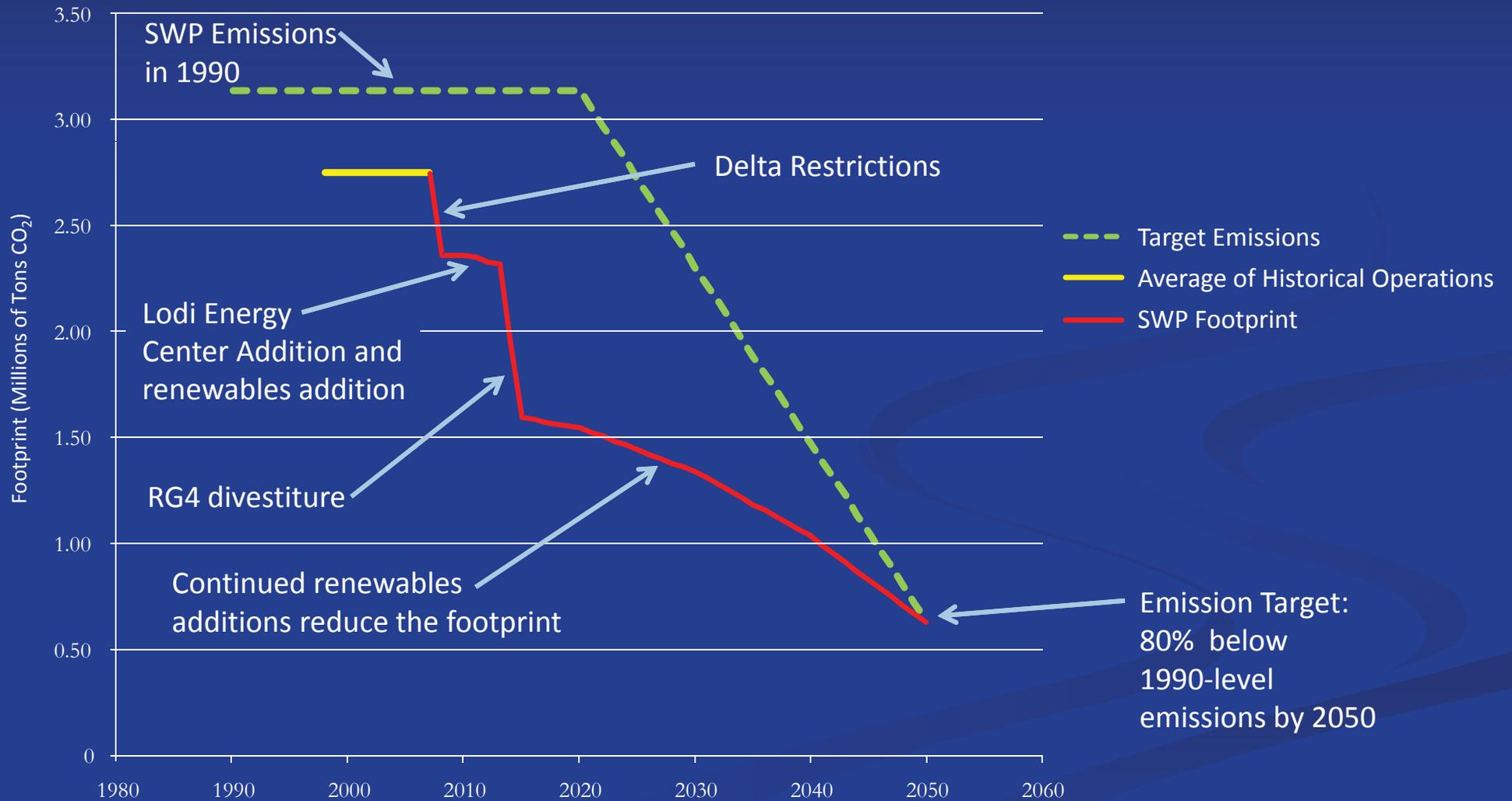
- Energy Use & Generation are based on hydrology
- LOAD: 9-10 million MWh annually
 - Largest energy consumer in California
 - SWP utilizes about 3% of all energy used by CA electric utilities
- GENERATION: 5-6 million MWh hydropower annually
 - 4th largest hydropower generator in California
- Future addition of wind and solar





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SWP PROGRESSIVE PROCUREMENT PLAN





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ON-GOING ACTIONS

- Renewable Energy
 - SWP: ~80 MW of small hydroelectric generation
 - Actively analyzing additional SWP sites
 - DWR uses small-scale solar where feasible
 - DWR will facilitate projects between solar industry and SWP
- Divesting interest in coal-fired power plant
- Monitoring GHG emissions from Lake Oroville
- Refurbishment of generating and pumping units
 - Increase pump efficiency, reduce power consumption and emissions



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CHALLENGES





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IN-HOUSE CHALLENGES

- Ensuring safety for SWP employees and the public
- Maintaining a well-qualified workforce
- Maintaining SWP infrastructure at necessary operating levels
- Complying with new energy reliability standards
 - North American Electric Reliability Corporation (NERC)
 - Western Electricity Coordinating Council (WECC)



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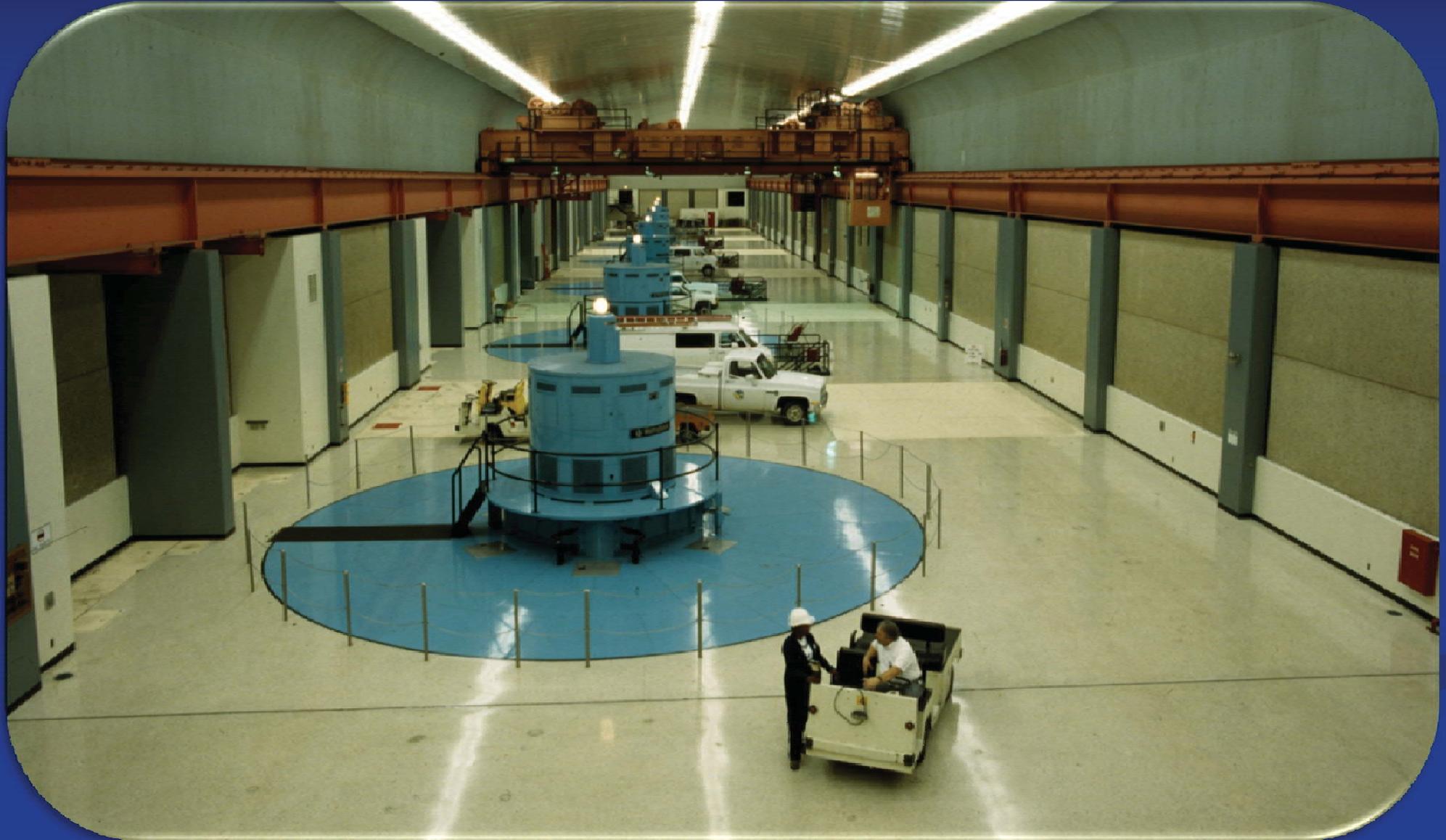
SAFETY

- Created SWP Safety Committee
 - Developed Code of Safe Practices
 - Single repository for all safety related material
 - Comprehensively defined ownership
 - Developed SWP Safety Website
- Supporting DWR Safety Initiative
 - Ultimate goal is to develop “world-class” safety program for all of DWR



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OPERATIONS RELIABILITY

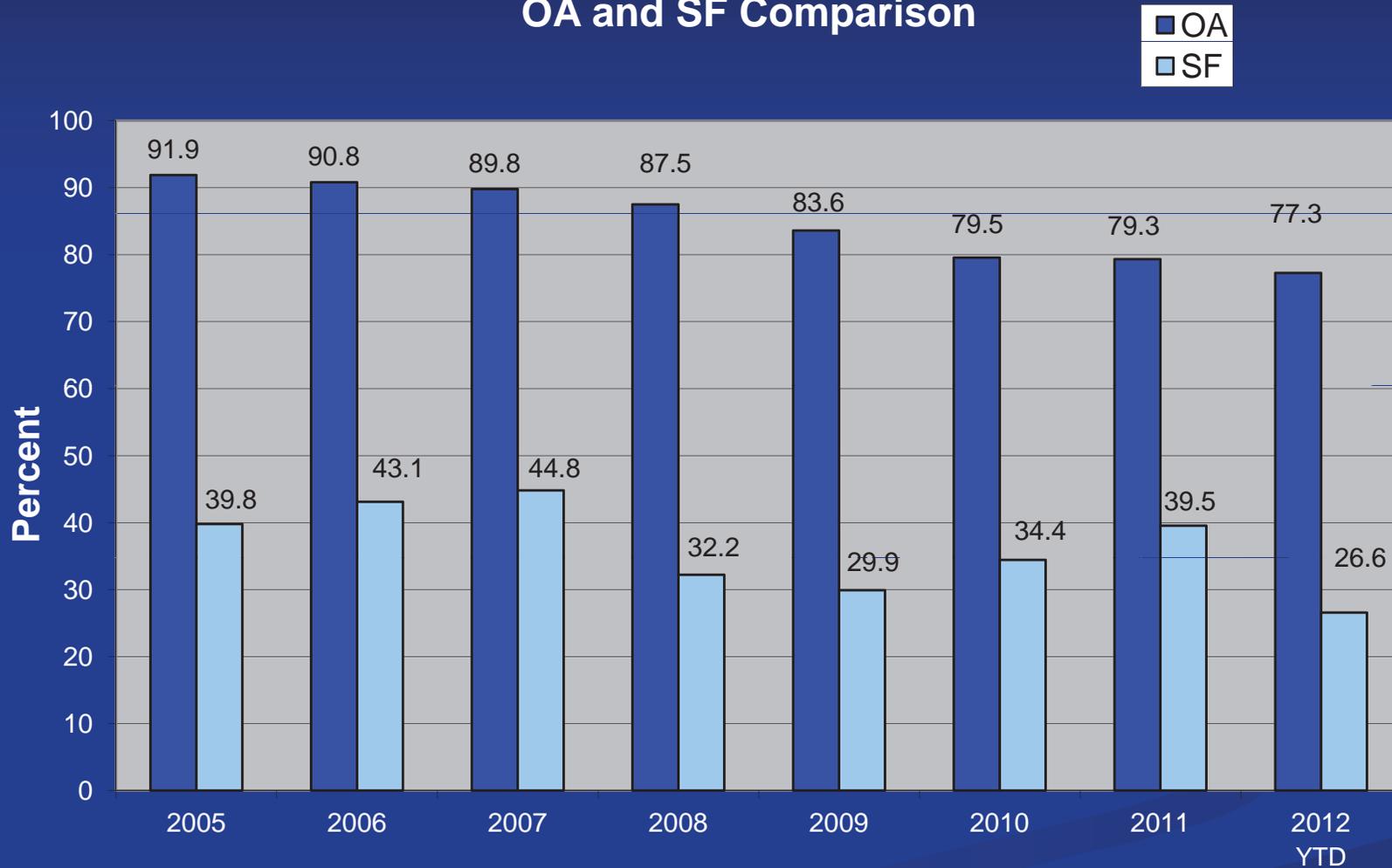




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OPERATIONAL AVAILABILITY

OA and SF Comparison



All SWP Pumping and Generating Units



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WORKFORCE CHALLENGES



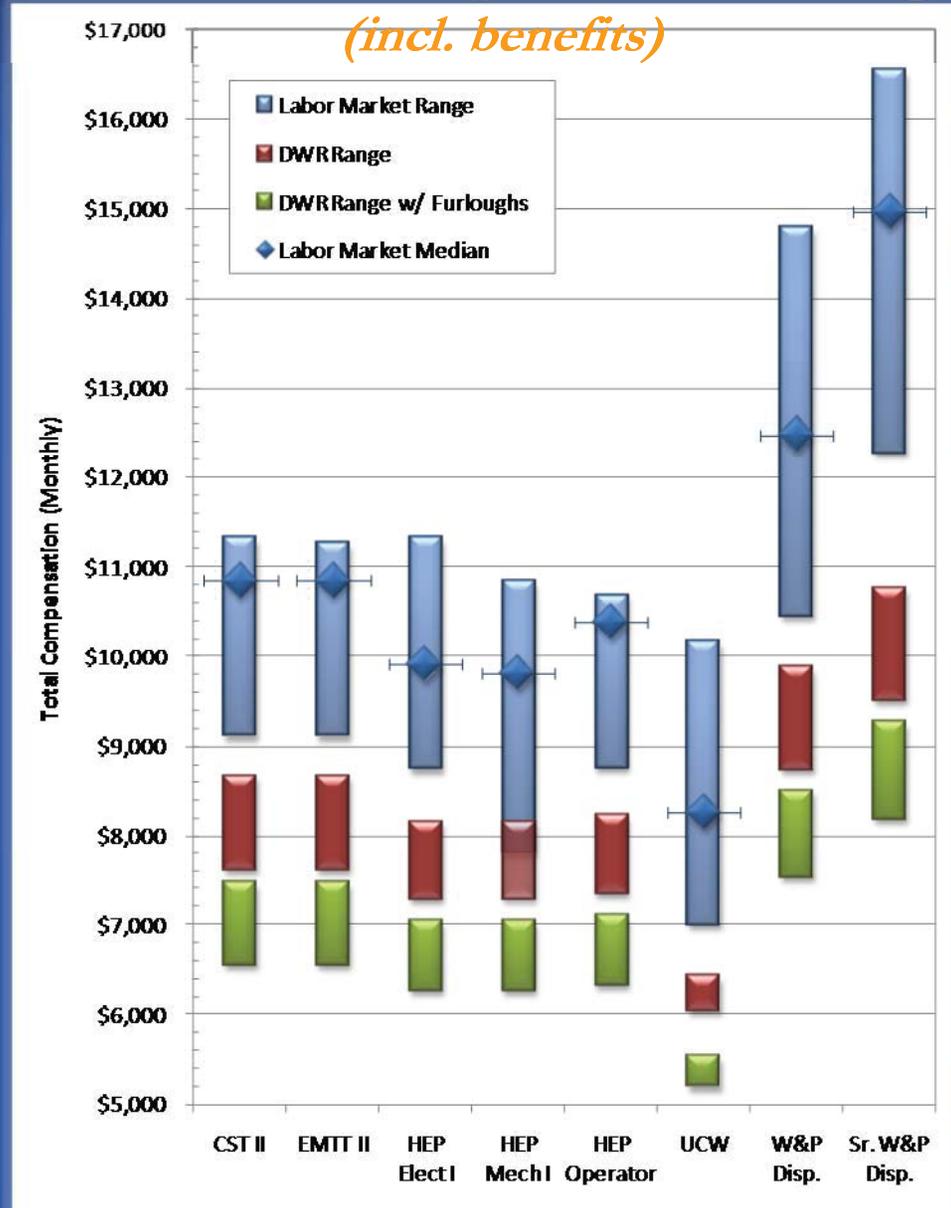


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UNIT 1 2 PAY DISPARITY

2009 Total Compensation Ranges

Industry Compensation Range Compared to DWR



- DWR is the bottom of the pay range for Hydroelectric Industry in California

- 2010 Total Compensation Survey

- Salary lag continues to grow

- 22% below median in 2006

- 24% below median in 2009

- 32% below median in 2010



- 93 BCP positions approved for SWP (FY 11/12)
 - 45 Trades and Crafts (U12)
 - 15 Journey-level exams given (3 in ea Field Division)
 - 1 successful candidate
 - Unable to fill 31 positions
- 35 additional positions pending budget approval for 12/13 & 13/14 – most likely unable to fill



- Significant backlog of deferred maintenance & testing
- Increased forced outages
- Missed water deliveries
 - 80 TAF in December 2010
 - *Significant risk to meet requirements d/s of Oroville*
 - *Currently spilling at Oroville*
- Increased risk of regulatory violations & fines
- Increased energy costs (due to less peaking)
 - More than \$50 million in 2011
- Reduced equipment service life
- Increased risk to personnel, equipment, & public



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NERC/WECC COMPLIANCE ISSUES

- **NERC/WECC Compliance**
 - 159 Cyber-Infrastructure Protection (CIP) compliance standards
 - Relay Testing
 - ~3,000 relays throughout SWP plants
 - Testing, documentation, reporting every 2-5 years
 - Large fines and sanctions for violations
 - Up to \$1M/day/violation
 - Disconnection from electric energy grid



- Working with the administration to find solutions
- Focusing resources on “hotspots”
 - Downside is increased backlog of proactive maintenance
- Independent consultant engaged to identify long-term options
 - Phase 1 report completed
 - Identified and documented issues
 - Phase 2 to identify options