The State Water Project and California's Electrical System

Power Association of Northern California
September 13, 2011

DWR Mission

To manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments.

State Water Project

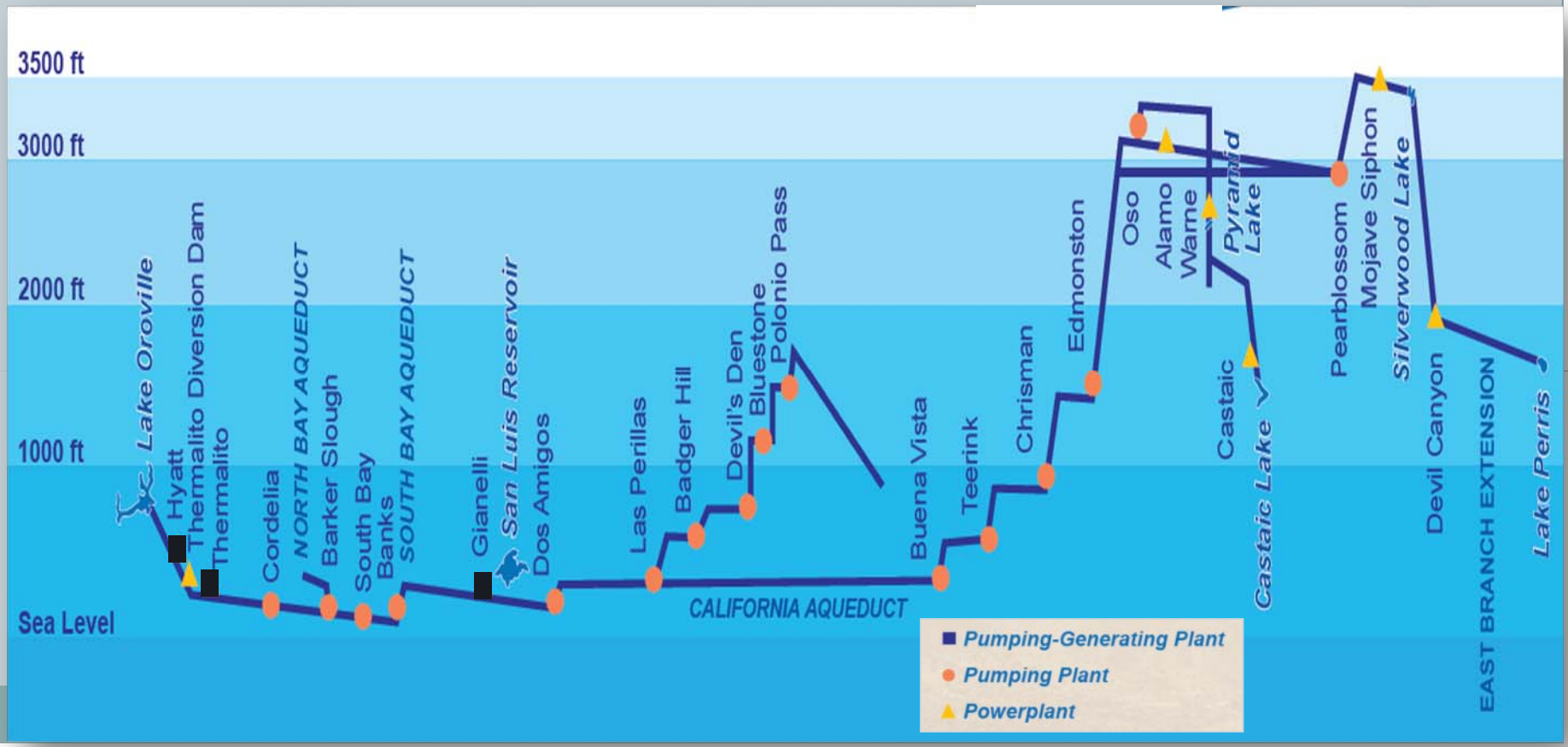
- Nation's largest state owned and operated water delivery system
- 34 storage facilities
- 20 pumping plants
- About 700 miles of canals and pipelines
- 4 pumping-generating plants
- 5 hydroelectric power plants
- 1 coal-fired power plant

Water Deliveries

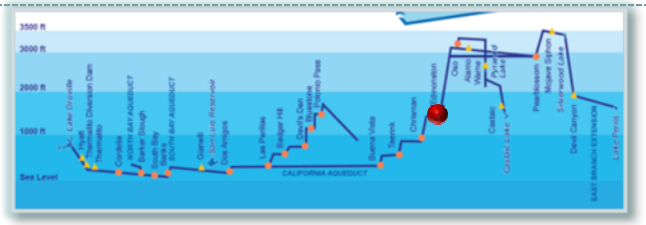
- Serves 25 million people and 750,000 acres of farmland
- Total water supply contracts of 4.2 MAF
- Delivery average is approximately 3.3 MAF
- Water use distribution 50% agriculture & environmental and 50% urban
- 95% of all costs are paid by 29 water contractors (all local public agencies)

SWP Profile

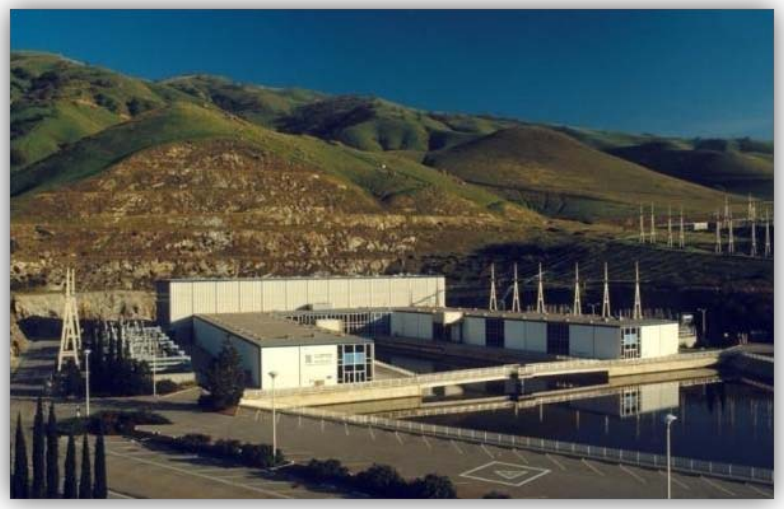
Elevation changes provide opportunities for generation to help meet pumping needs



Edmonston Pumping Plant



- Lifts water 1,926 feet over the Tehachapi mountains
- Plant capacity: 4,480 cfs
- 14 Pumps: 80,000 hp each



SWP PUMPING AND GENERATING

- SWP is the largest single power consumer in California
  - **Pumping capacity** = 2,600 MW
  - 6,000 to 9,600 GWh consumed to move water
  - 40% to 60% from our own resources

- SWP is the third largest generator of clean hydropower
  - **Generation capacity** = 1,700 MW
  - 4,000 to 7,000 GWh generated
  - Produces about 14% of California's hydropower

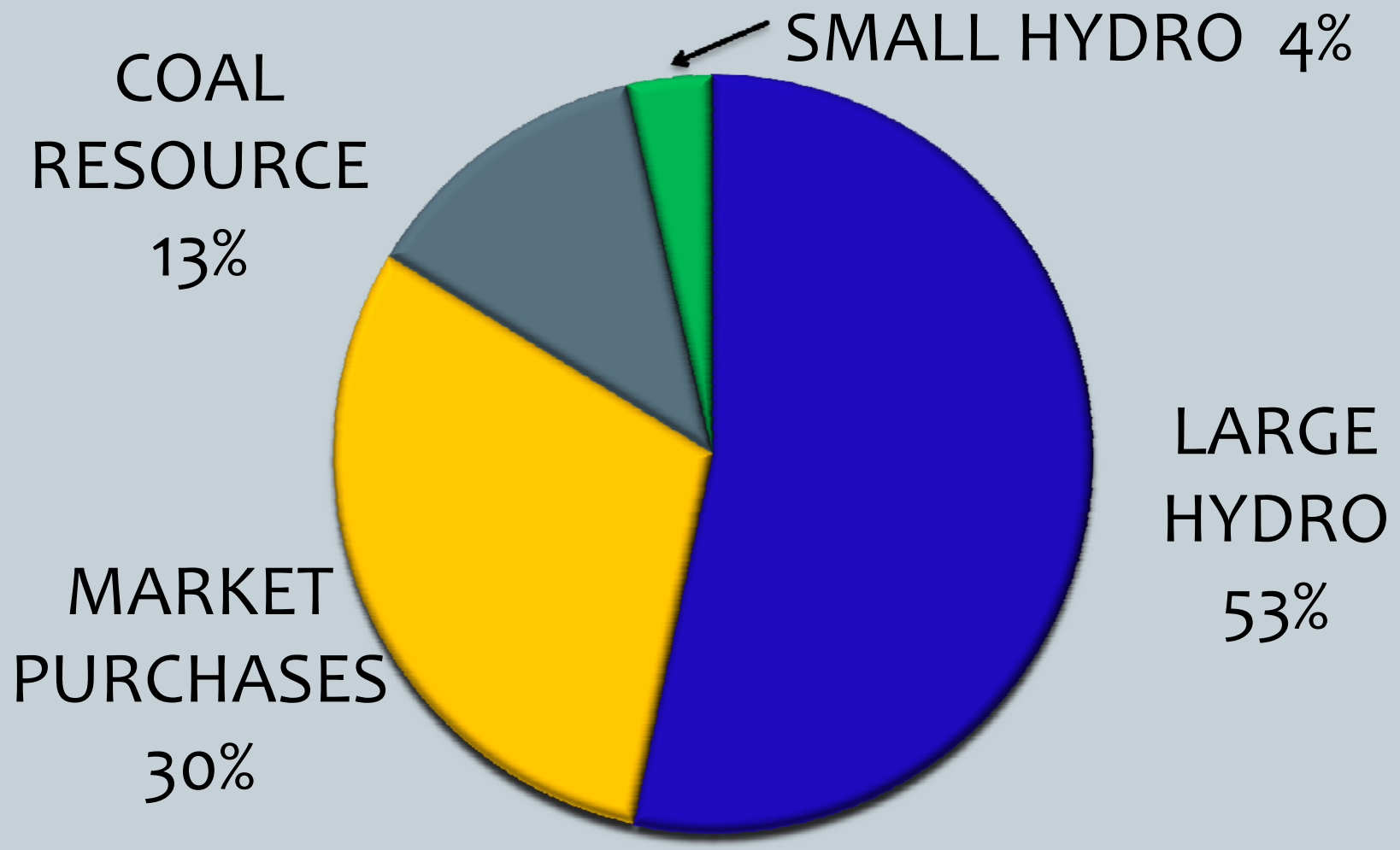
Comparison to CA Utilities

- 4% of CAISO Load
- SWP utilizes about 3% of all electricity used by CA electric utilities
- 6th largest CA electrical consumption by utility but only about 9% size of PG&E

Benefits to the Grid

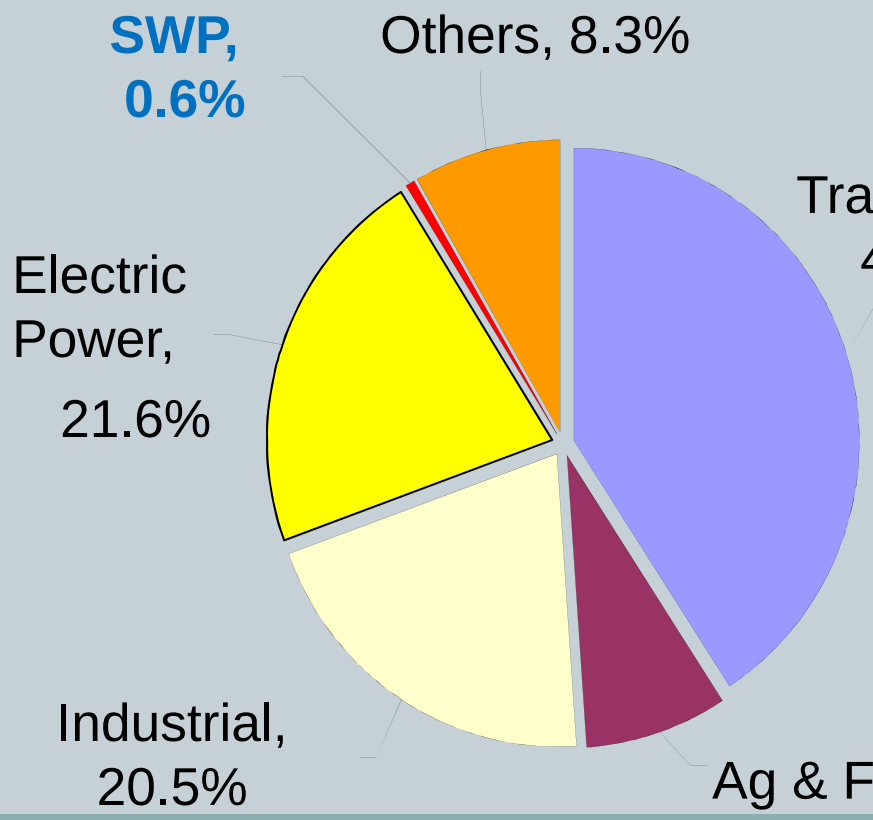
- Load dropping agreement w/CAISO
- SWP's off-peak power use means fewer plants are cycling up and down
- SWP's reduction of on-peak pumping reduces the stress on CAISO grid during super-peak hours
- Limited operational flexibility inhibits further provision of benefits
  - Delta restrictions
  - Water deliveries drive power schedules

2010 SWP Pump Load 7,224 GWh



Greenhouse Gas Emissions in CA

Sources of California's 2004 GHG Emissions By End Use Sector



- SWP operations contribute 0.6% of CA greenhouse gases
- SWP hydropower provides:
  - Flexibility to power grid
  - Replaces dirtier power sources during peak demand periods

DWR Emission Reduction Goals

- Reduce emissions at or below AB 32 2020 Goal

- 50% reduction below 1990 levels by 2020 which exceeds AB 32 goal

- 80% reduction below 1990 levels by 2050

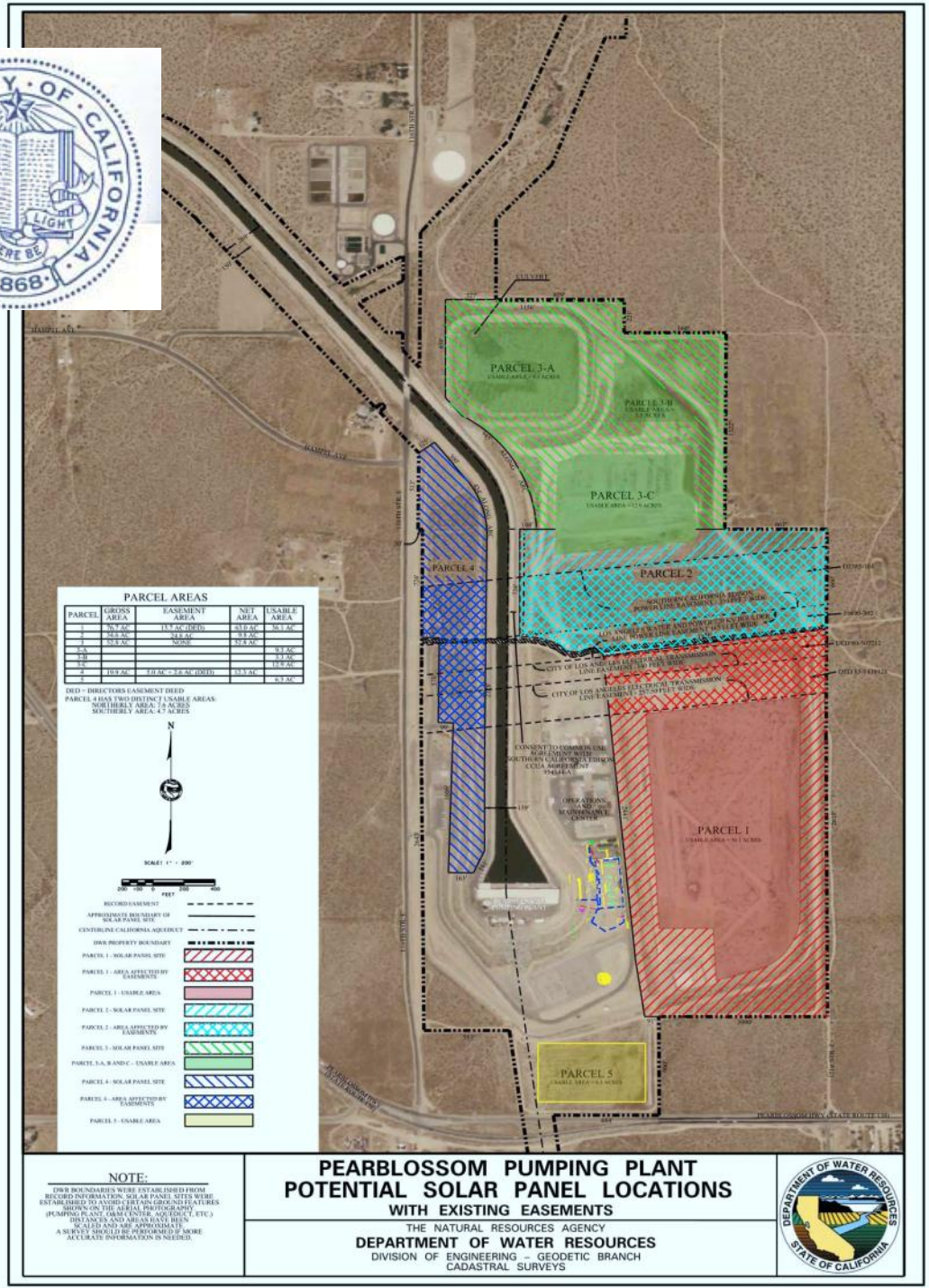
Termination of Coal-Fired Resource

- Four units at the Reid Gardner Facility in Nevada
- SWP has 67.8% ownership of Unit 4 (a 275 MW unit)
- Expires July 25, 2013
- May 2007, DWR sent letter to owner stating DWR would not renew or extend the existing contract

The Future of the California Aqueduct ?

Pearblossom Pumping Plant

- Usable 68 acres
- ±13 MW of solar
- Higher elevation
- Already secured area
- No CEQA issues
- Potential to expand project up to 20 MW
- Developed draft PPA and RFP



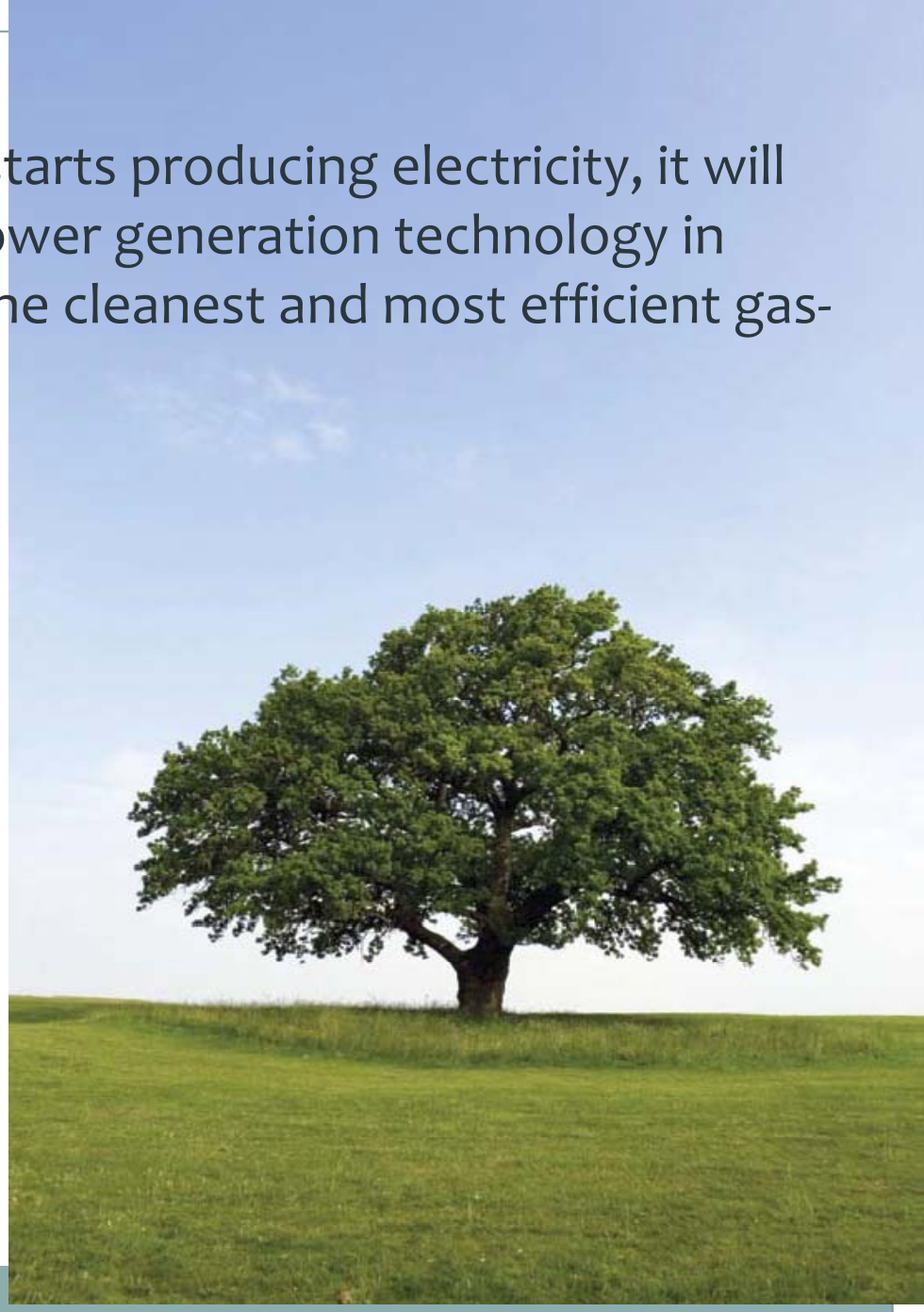
LODI ENERGY CENTER

INNOVATION, STEWARDSHIP, VALUES

- 280 MW Combined Cycle Natural Gas
- 13 Public Participants
- DWR share 90 MW
- 33% of facility
- $140 Million DWR investment
- Operational June 2012

When the Lodi Energy Center starts producing electricity, it will stand at the cutting edge of power generation technology in America. It will house one of the cleanest and most efficient gas-fired systems in the U.S

- Fast start technology
- Ramp up and down quickly
- Help provide firming power for renewable energy that is generating intermittently



Edmonston Pump Replacement Project

- Decreased power use – 40,000 MWh annually
- Energy savings equivalent to a 24-acre solar farm

Other "Green" Activities

- Wind and Solar RFPs
- Development of small hydro
- Reporting and verification of 2007 thru 2009 emissions for SWP and DWR owned facilities to the CA Climate Action Registry.
- Reporting to The Climate Registry for 2010 emissions.
- Annual reporting of energy use to Air Resources Board
- Participation in the Governor's Climate Action Team

Future SWP Pumped-Storage

Provide firming generation resources for wind and other intermittent renewables

- Help DWR meet Green Energy Policy goals
- Address climate change

Summary

- SWP has a GHG policy that will meet or exceed all AB-32 milestones
- SWP provides strong public benefits to the California electrical grid
- DWR is pursuing a suite of tools:
  - Acquiring renewable energy resources
  - Refurbishing pumps and generators to improve energy efficiency
  - Switching from coal to cleaner natural gas resources
  - Developing small hydro

Questions / Contact

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