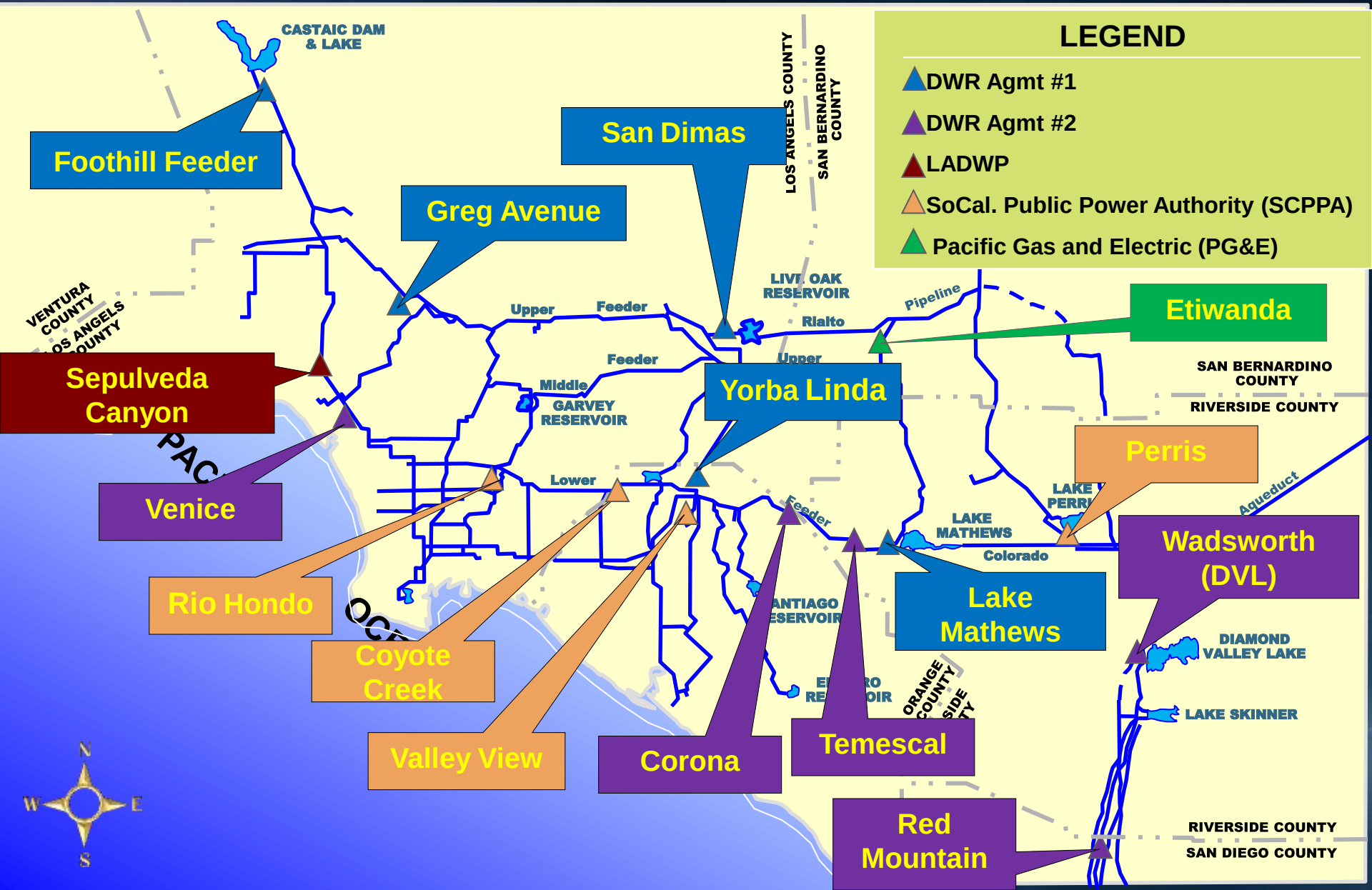
Metropolitan's Hydroelectric Generation

Engineering & Operations Committee
Item 6a
October 10, 2016

History of Metropolitan's Hydroelectric Plant Development

- Sixteen plants on the water distribution system
  - Five plants built in 1979-1981
  - Nine plants built in 1982-86
  - Etiwanda built in 1994
  - Wadsworth (DVL) converted 2001-2002
- Total nameplate capacity of 131 MW

Metropolitan Hydroelectric Power Plants



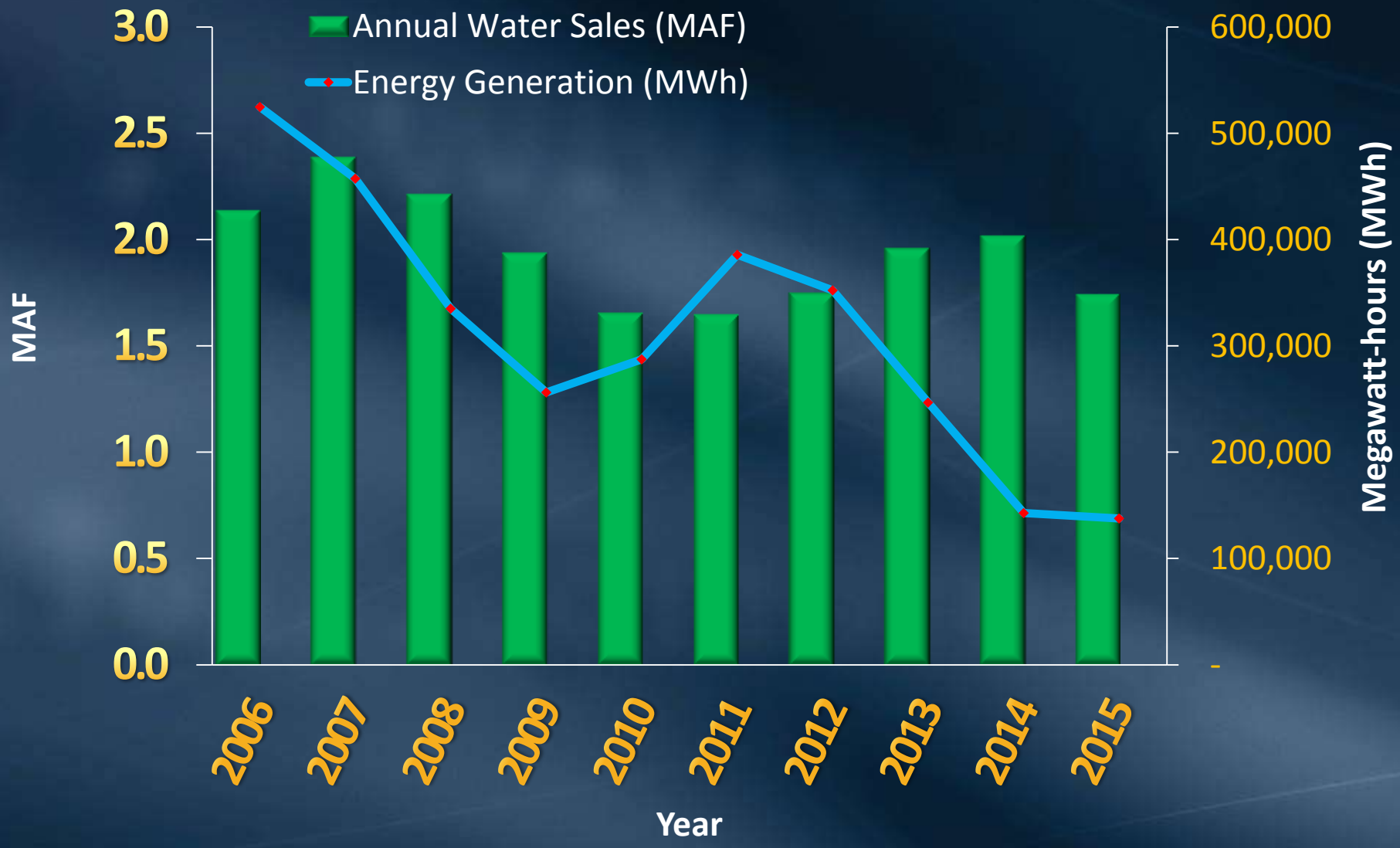
Hydroelectric Plant Energy Contracts

- **Active Agreements:**

Buyer	# plants	Capacity (MW)	Termination Date
DWR #1	5	30	Sept. 2019
DWR #2	5	51.4	Dec. 2020
SCPPA	4	17.4	Dec. 2023
LADWP	1	8.4	Dec. 2023
PG&E	1	23.9	June 2034

Annual Hydro Generation and Revenue

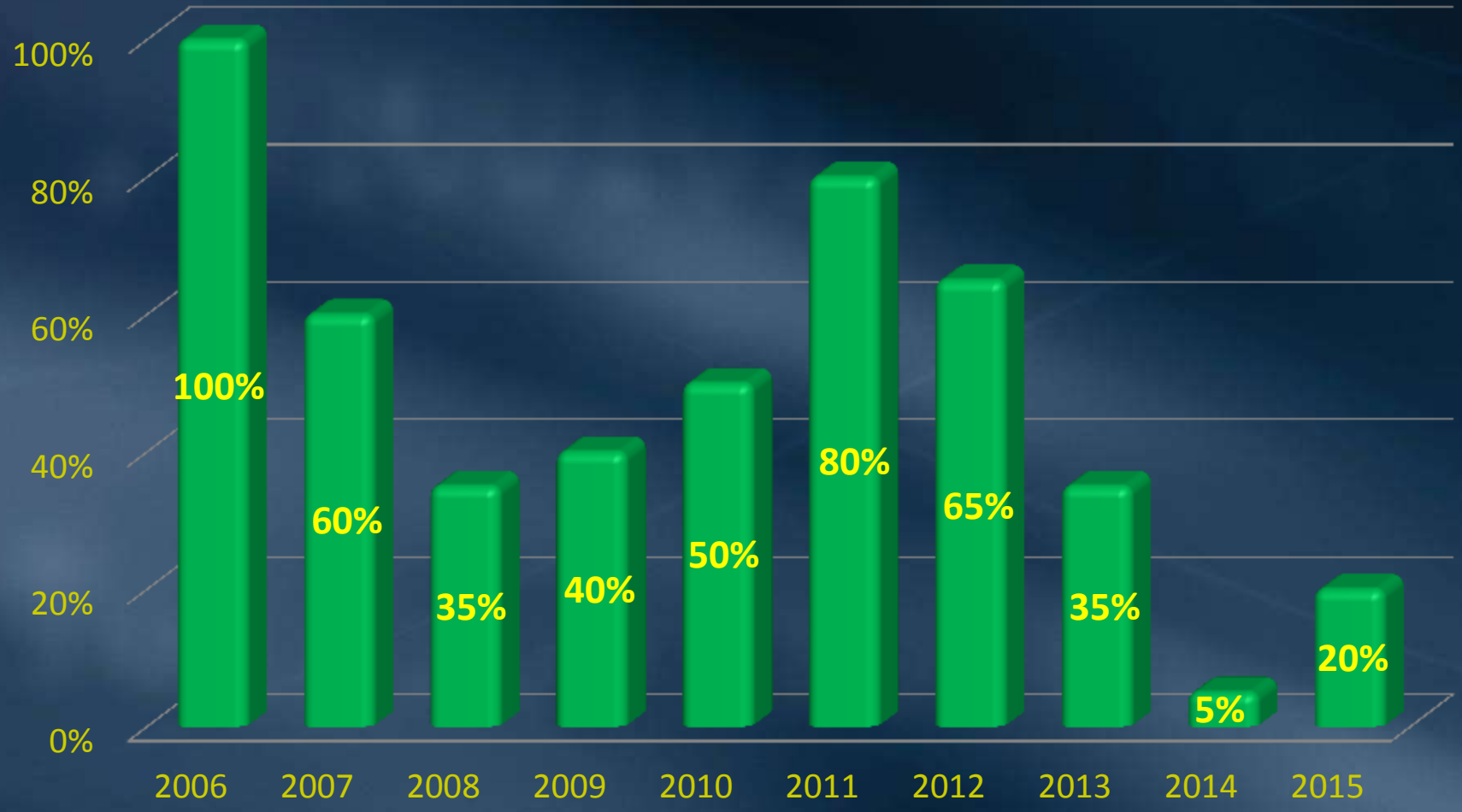
Annual Water Sales and Energy Generation



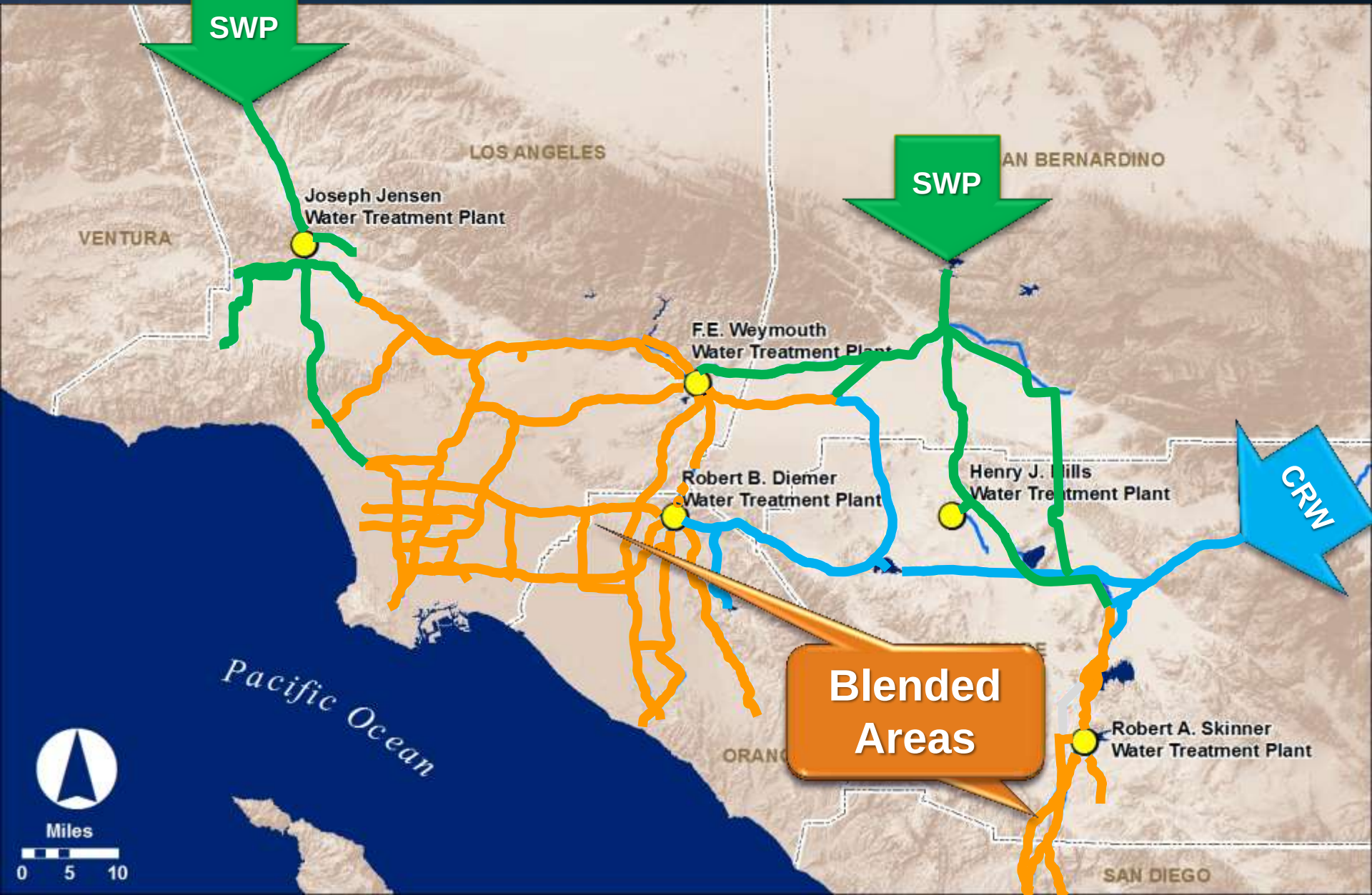
Other Factors Affecting Generation and Revenue

- Source of water
  - State Water Project
  - Colorado River Aqueduct
  - Blended water
- Operational parameters
- Pricing methodology

Annual State Water Project Allocation (%) 2006-2015

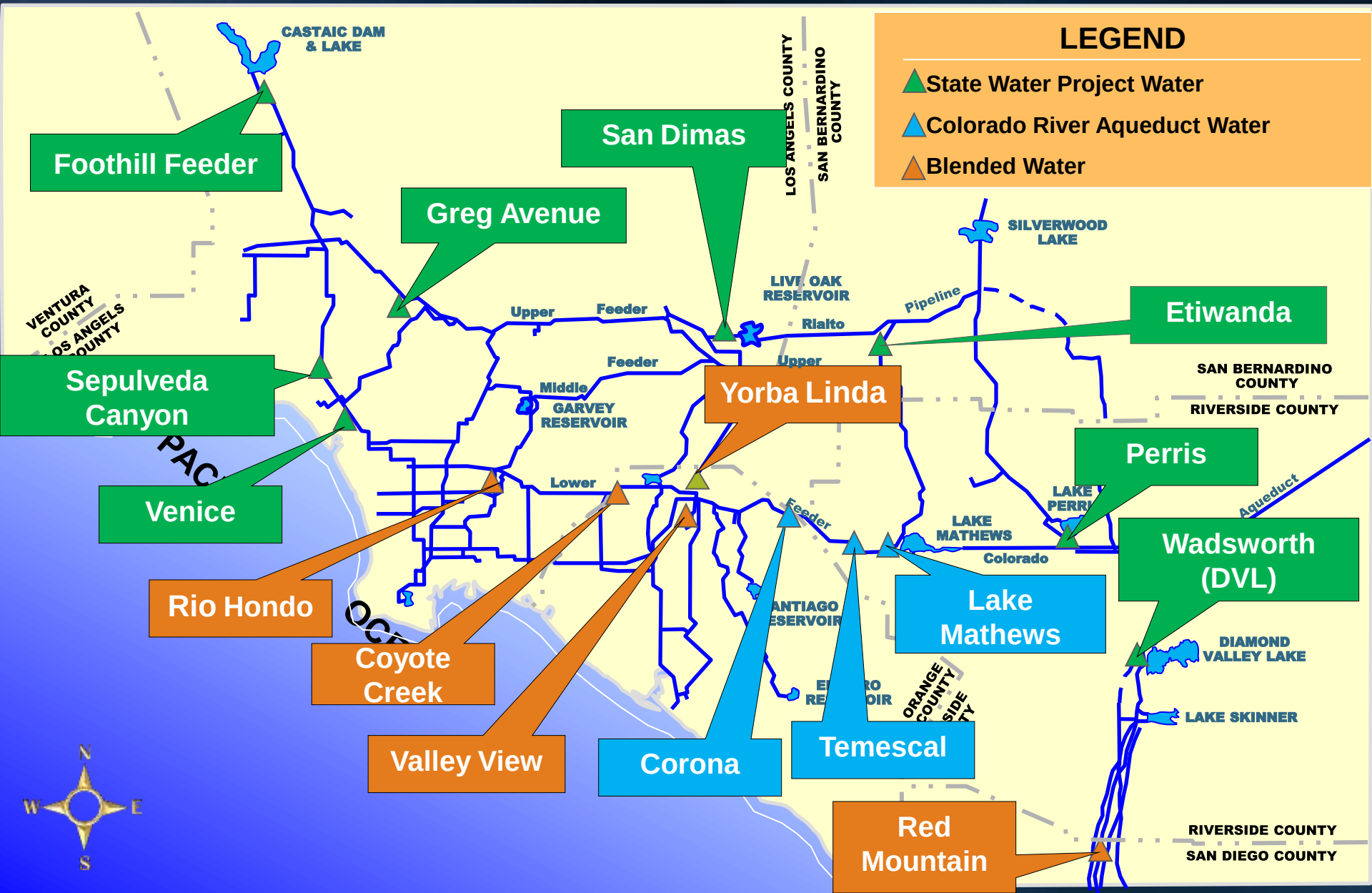


Typical Blending Operation



Drought Operation

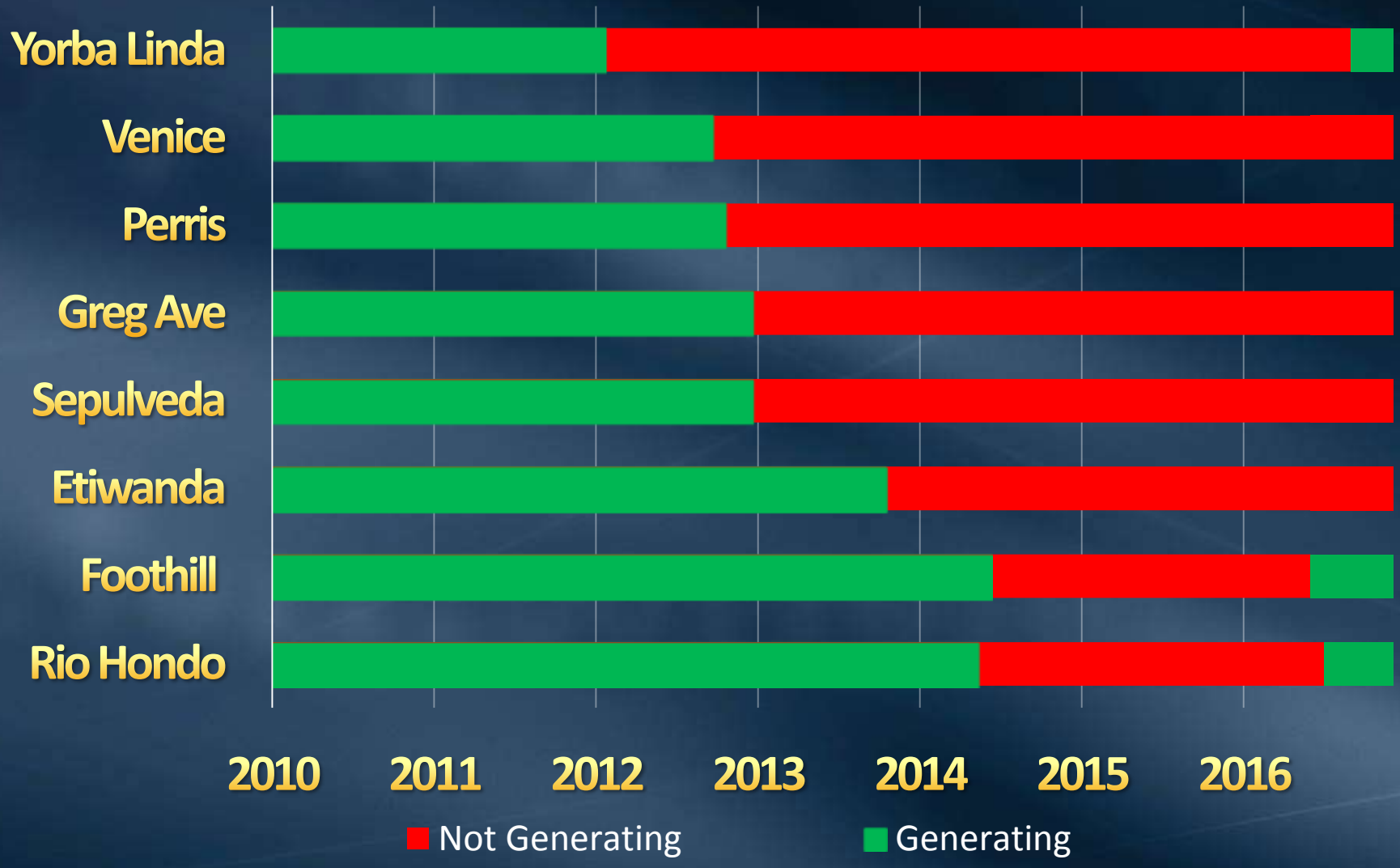
Metropolitan Hydroelectric Power Plants



Operational Parameters

- Minimum and maximum flows
- New construction
- Storage releases and elevation

Hydro Plants Not Generating



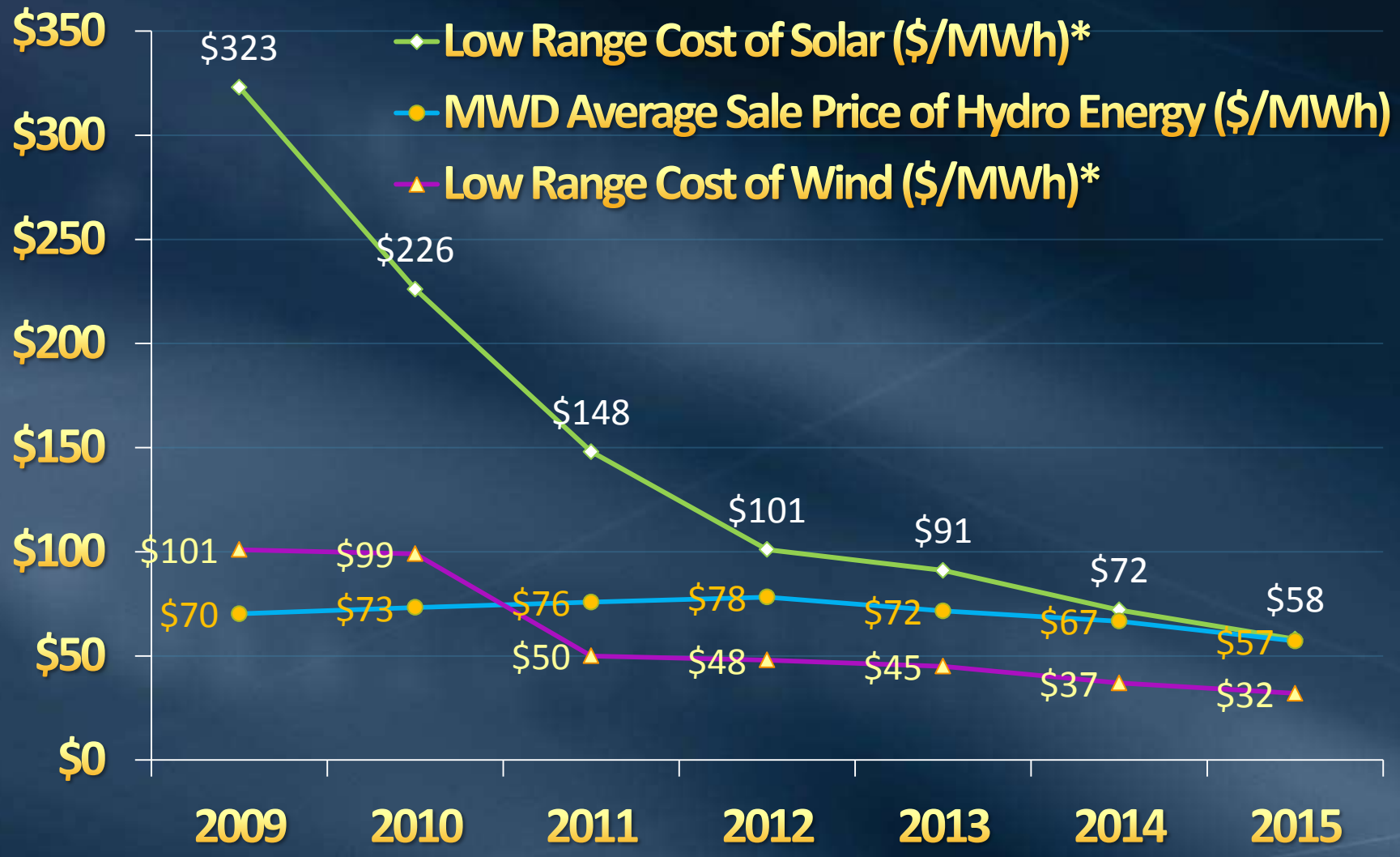
Pricing

- Time of generation (season)
- Market price vs. fixed price
- Natural gas price
- Alternative generator price

Factors Affecting the Future Value of Metropolitan's Hydroelectric Generation

- Guaranteed production
- Supply vs. Demand - current over supply
- Production cost

Price of Renewable Energy - Trends



*Source: Lazard's Unsubsidized Levelized Cost of Energy Analysis – Version 9.0

Summary

- Hydroelectric revenue highly variable due to a combination of factors:
  - Drought conditions
  - Low State Water Project allocation
  - Nature of operations
  - Softening market energy prices


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928