



Grand Canyon Monitoring and Research Center: Socioeconomics Update

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Grand Canyon Monitoring and Research Center

U.S. Department of the Interior
U.S. Geological Survey

Triennial Budget and Workplan

- Project Element 13.1
 - Economic Values of Recreational Resources along the Colorado River – Grand Canyon Whitewater Floater and Glen Canyon Angler Values
- Project Element 13.2
 - Tribal Perspectives for and Values of Resources Downstream of Glen Canyon Dam
- Project Element 13.3
 - Applied Decision Methods for the Glen Canyon Adaptive Management Program

Project Element 13.1

- Economic Values of Recreational Resources along the Colorado River – Grand Canyon Whitewater Floater and Glen Canyon Angler Values
 - Federal Register Notice (1024-NEW ended October 24, 2014)
 - Department of Interior review
 - Office of Management and Budget review
- Implementation January 2015
 - Cooperation with AZGFD
 - Creel survey
 - Coordination with National Park Service
 - Whitewater floater contact information

Colorado Mesa University Presentation



Economic Value of Energy in an Interconnected System: Hydropower at Glen Canyon Dam

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Presentation Topics

- Background of GCDAMP
- System analysis
- Economic value energy
- Grand Canyon Monitoring and Research Center



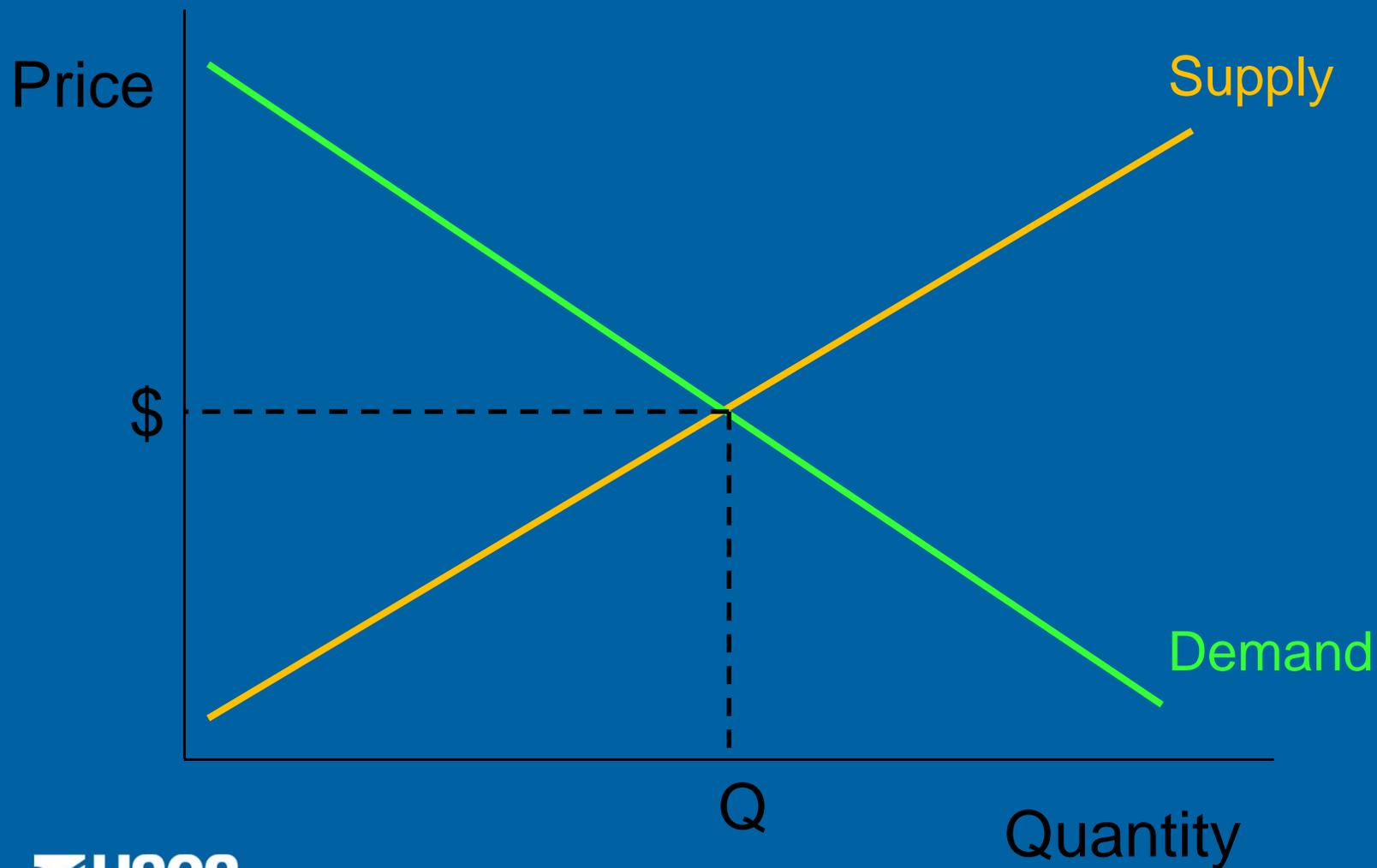
Benefit-Cost Analysis

- **Measure of economic efficiency**
 - Increase in social welfare (benefit)
 - Decrease in social welfare (cost)
- **Baseline condition compared to condition under management action**
- **Discounting and planning horizon**
 - Time value of money

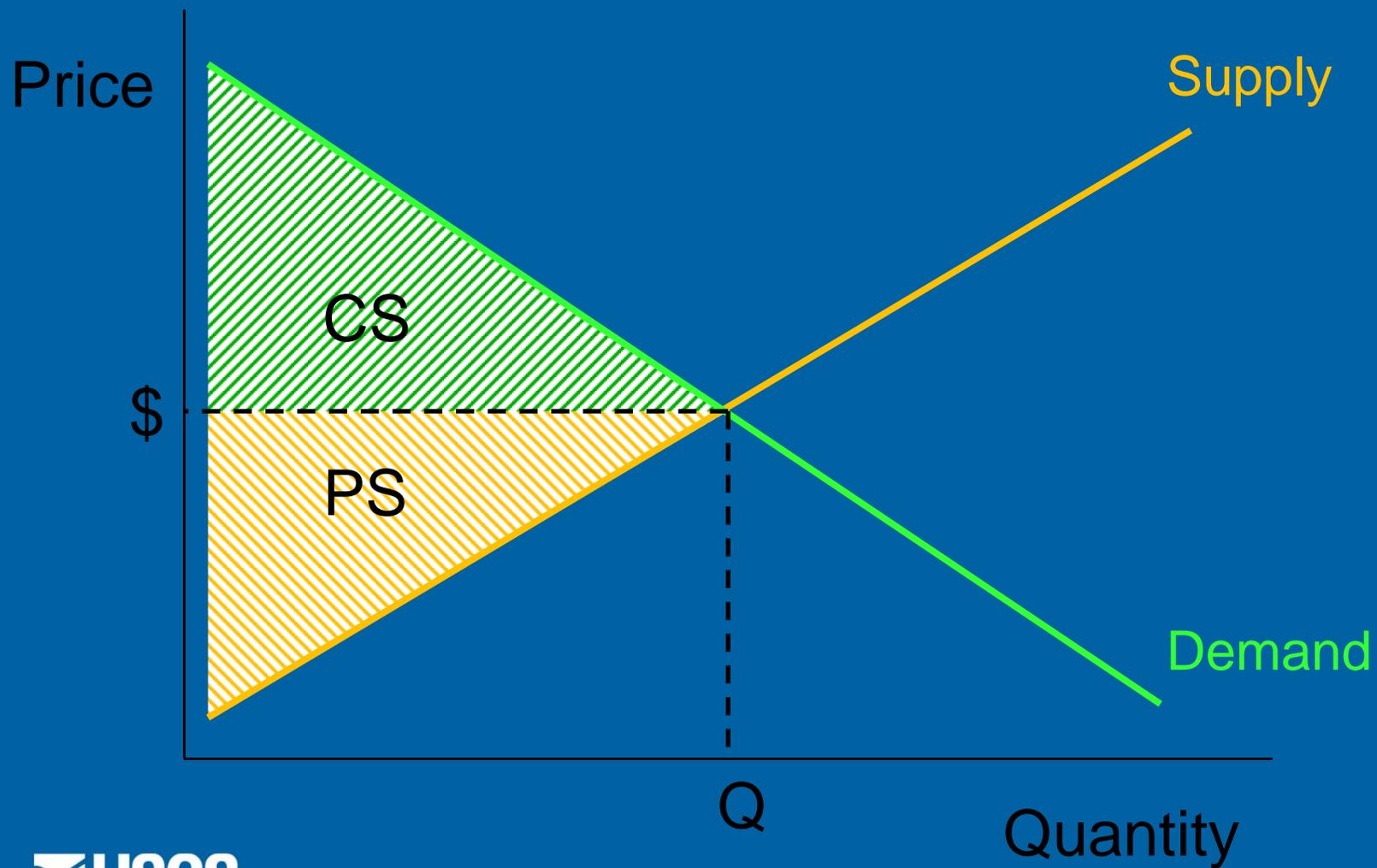
Economic Benefits and Costs

- **Economic benefit is willingness to pay, or demand, for a good or service**
 - Demand is a function of price
 - Individual income (fixed)
 - Prices of all others goods and services (fixed)
- **Economic cost is foregone opportunity of use in other sectors on the economy**
 - Labor
 - Capital
 - Resource inputs (e.g., water)

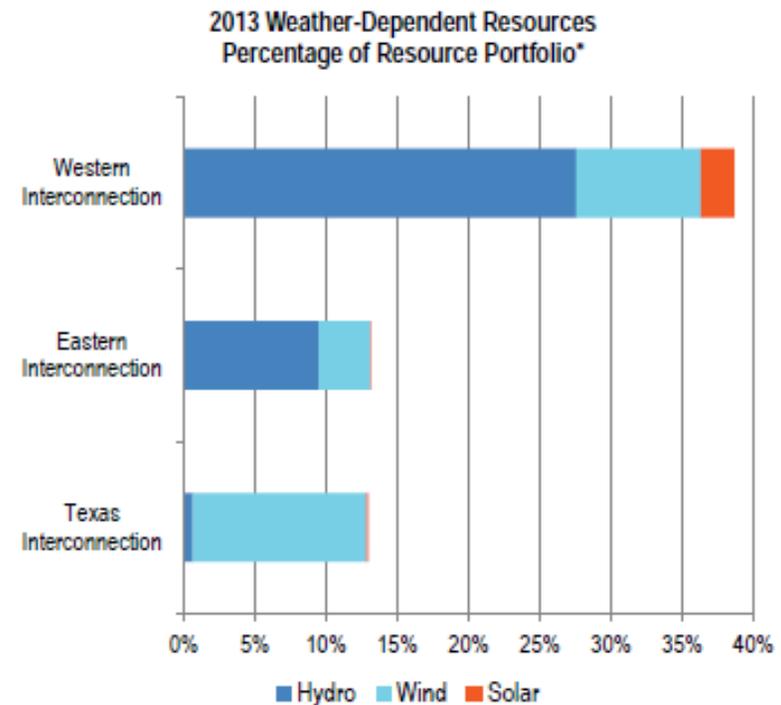
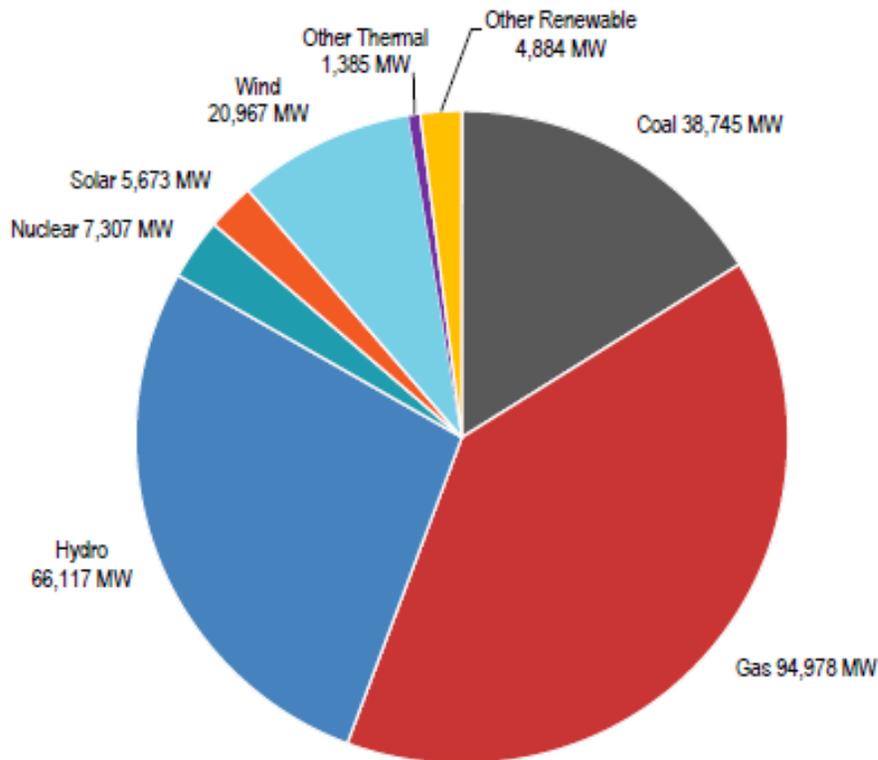
Economic Supply and Demand



What is Economic Value?



2013 Western Interconnection Resource Portfolio

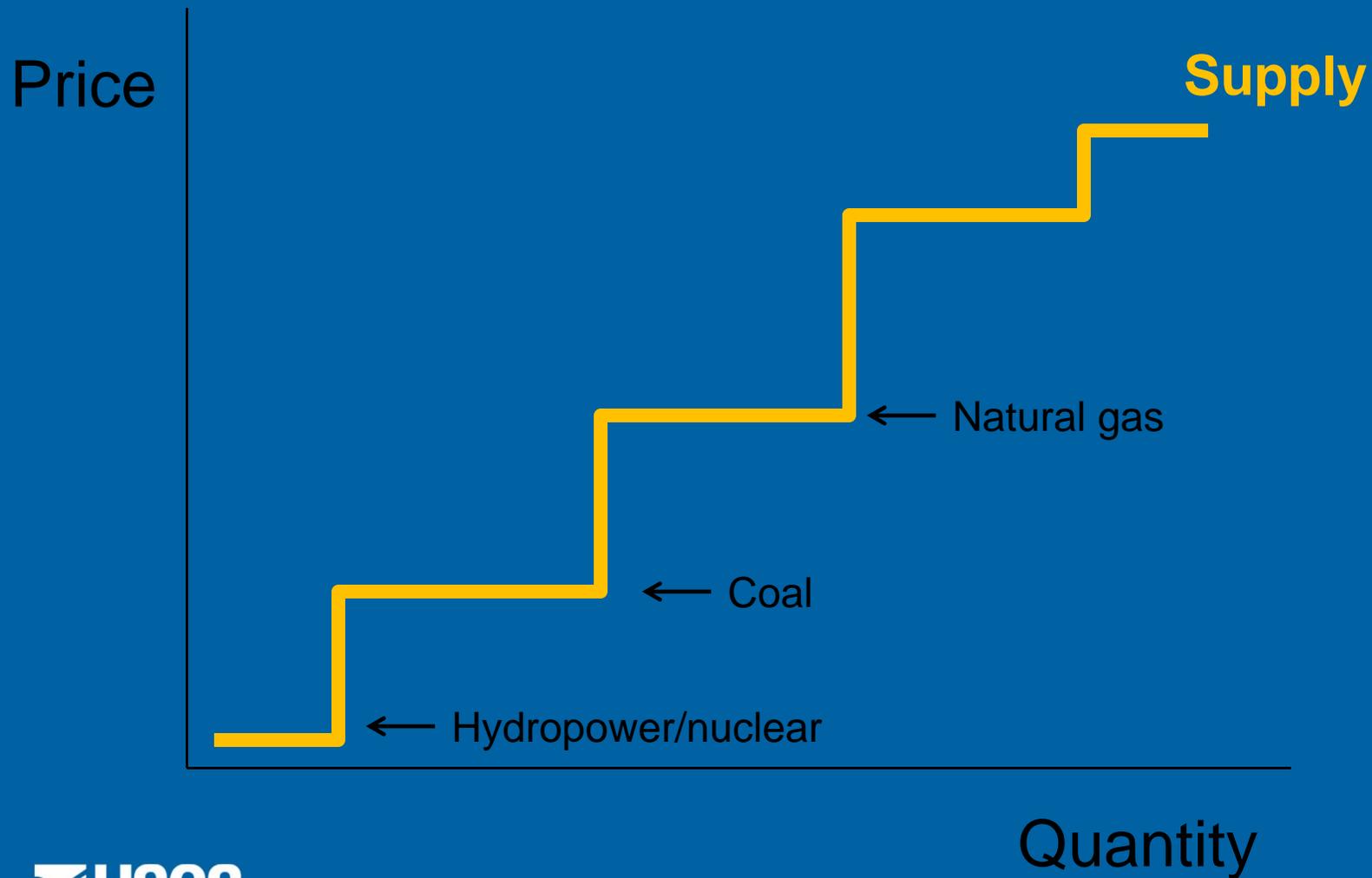


GENERATION

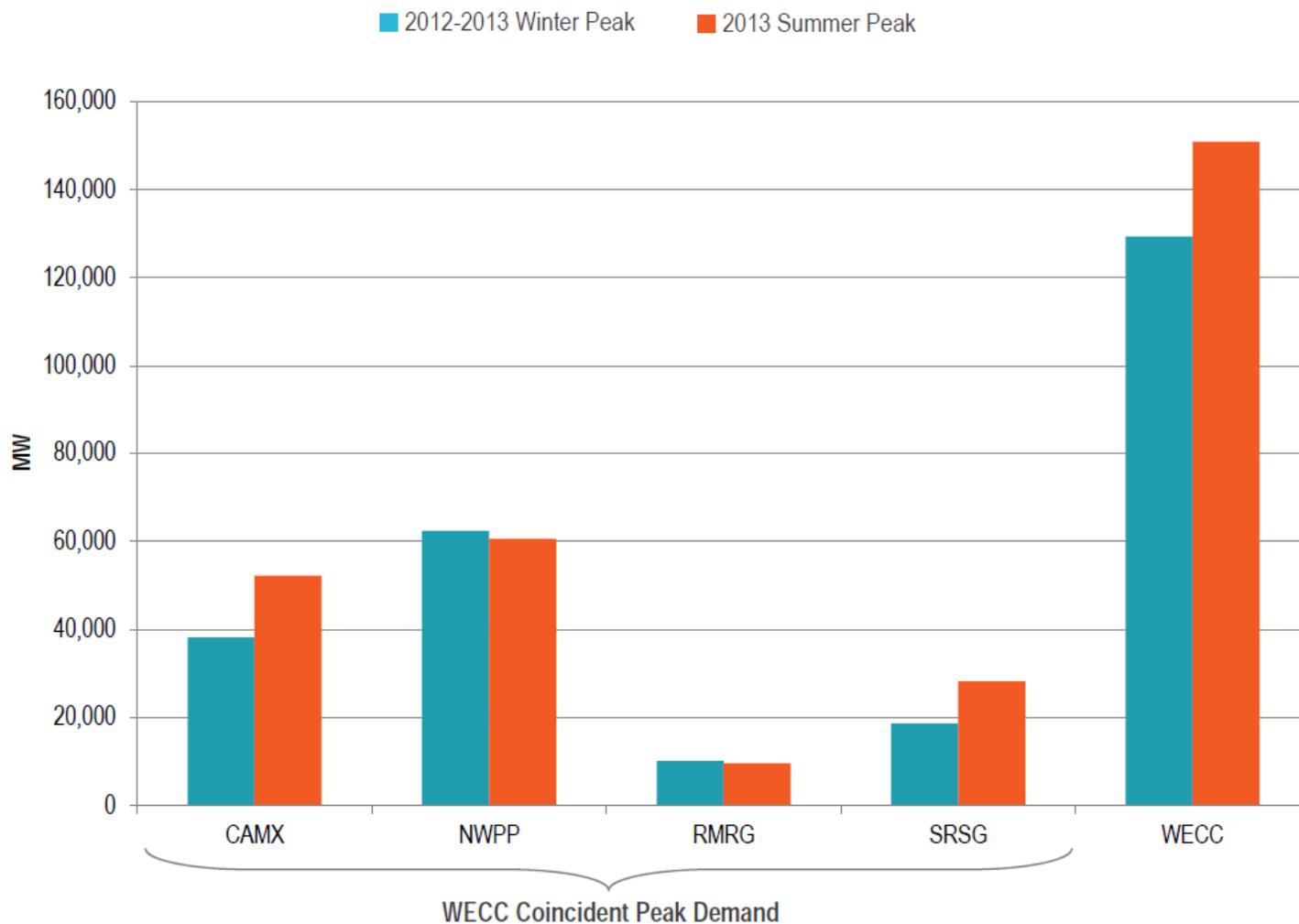
WECC used nameplate capacity for wind and solar resources. Expected summer maximum capacity was used for all other resources when the data was available, otherwise nameplate was used.

*Weather-dependent resources include hydro, wind and solar generation.

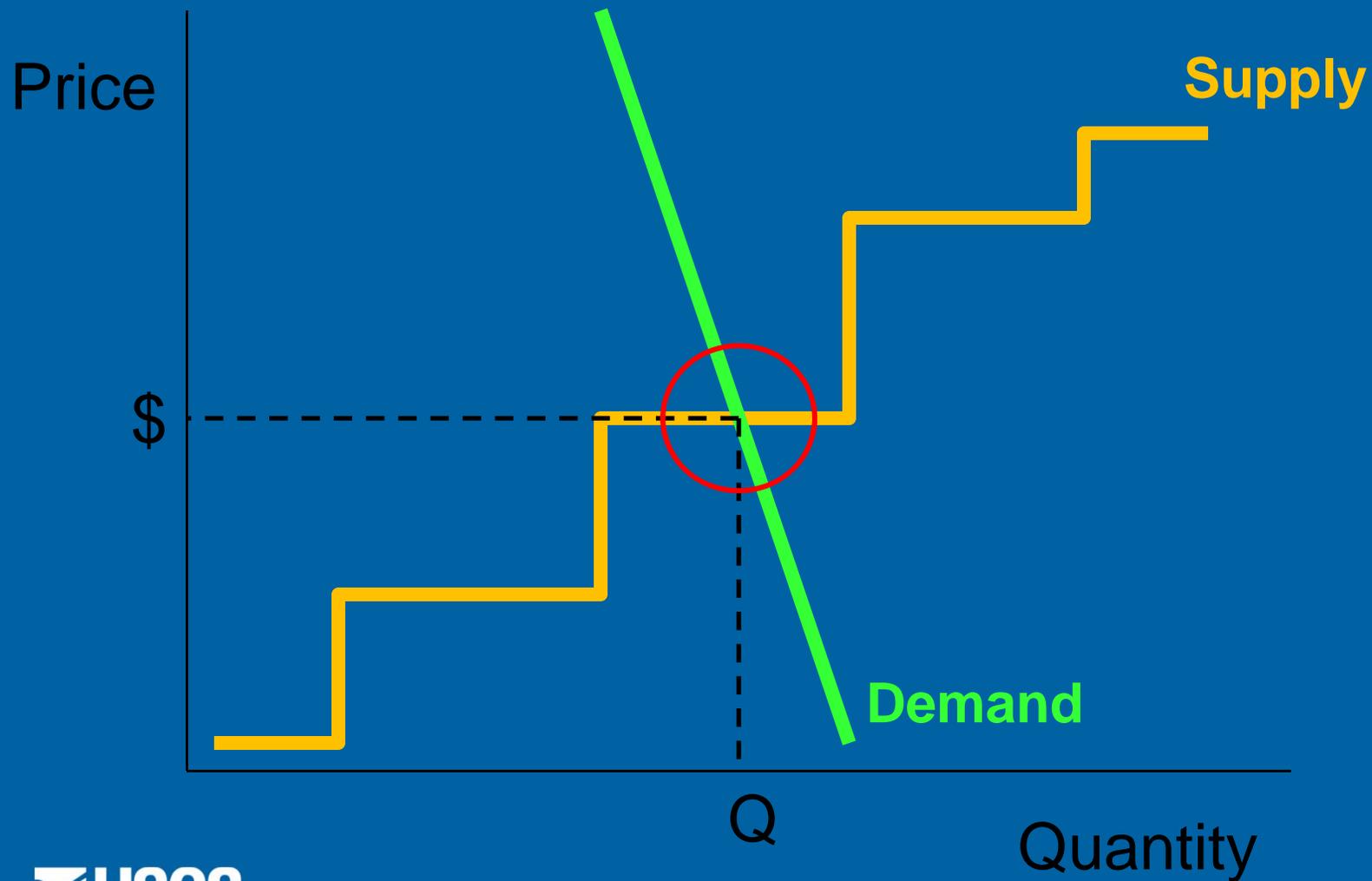
Economic Value of Energy



WECC and Subregional Summer and Winter Peak Demand

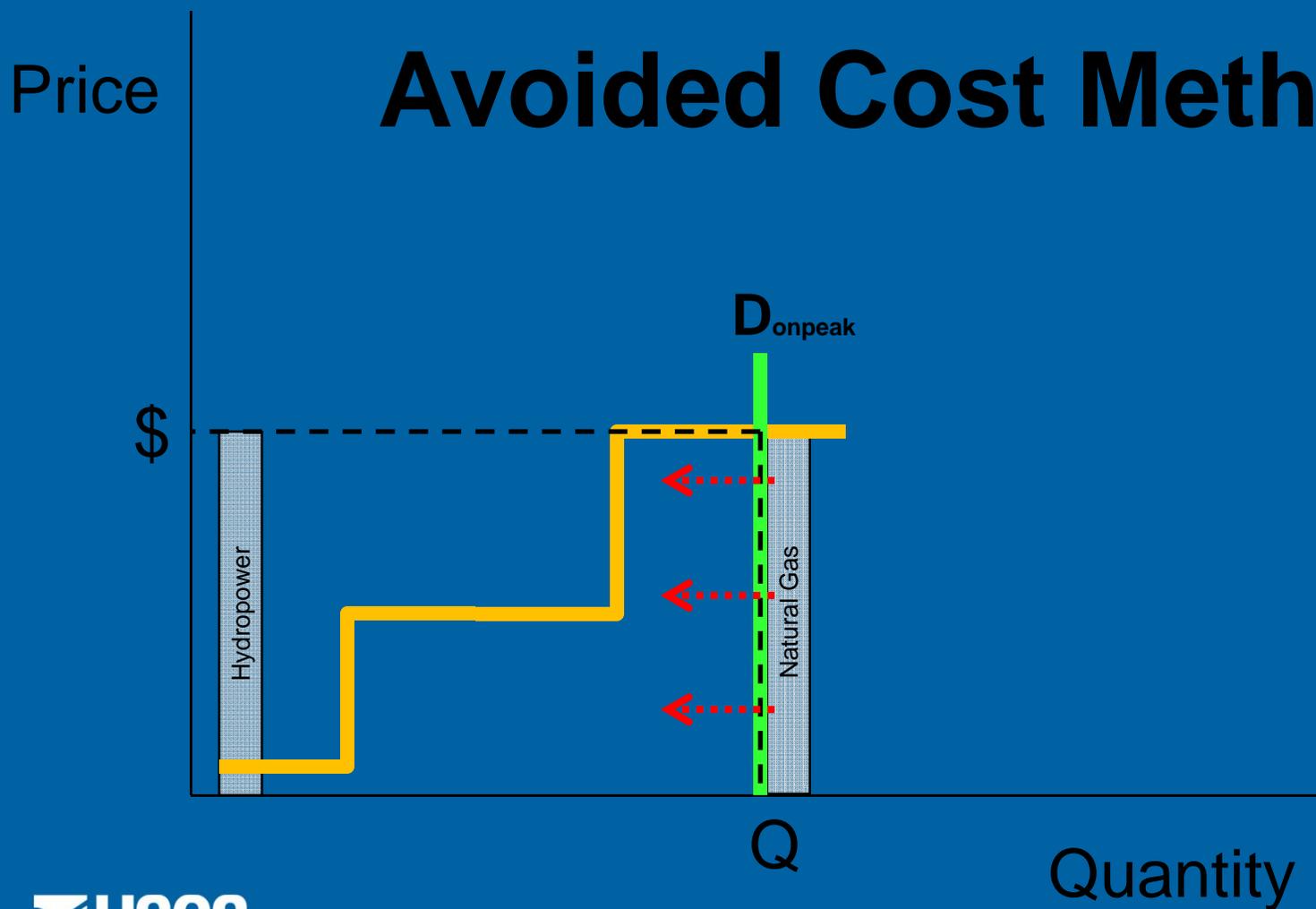


Economic Value of Energy



Economic Value of Energy

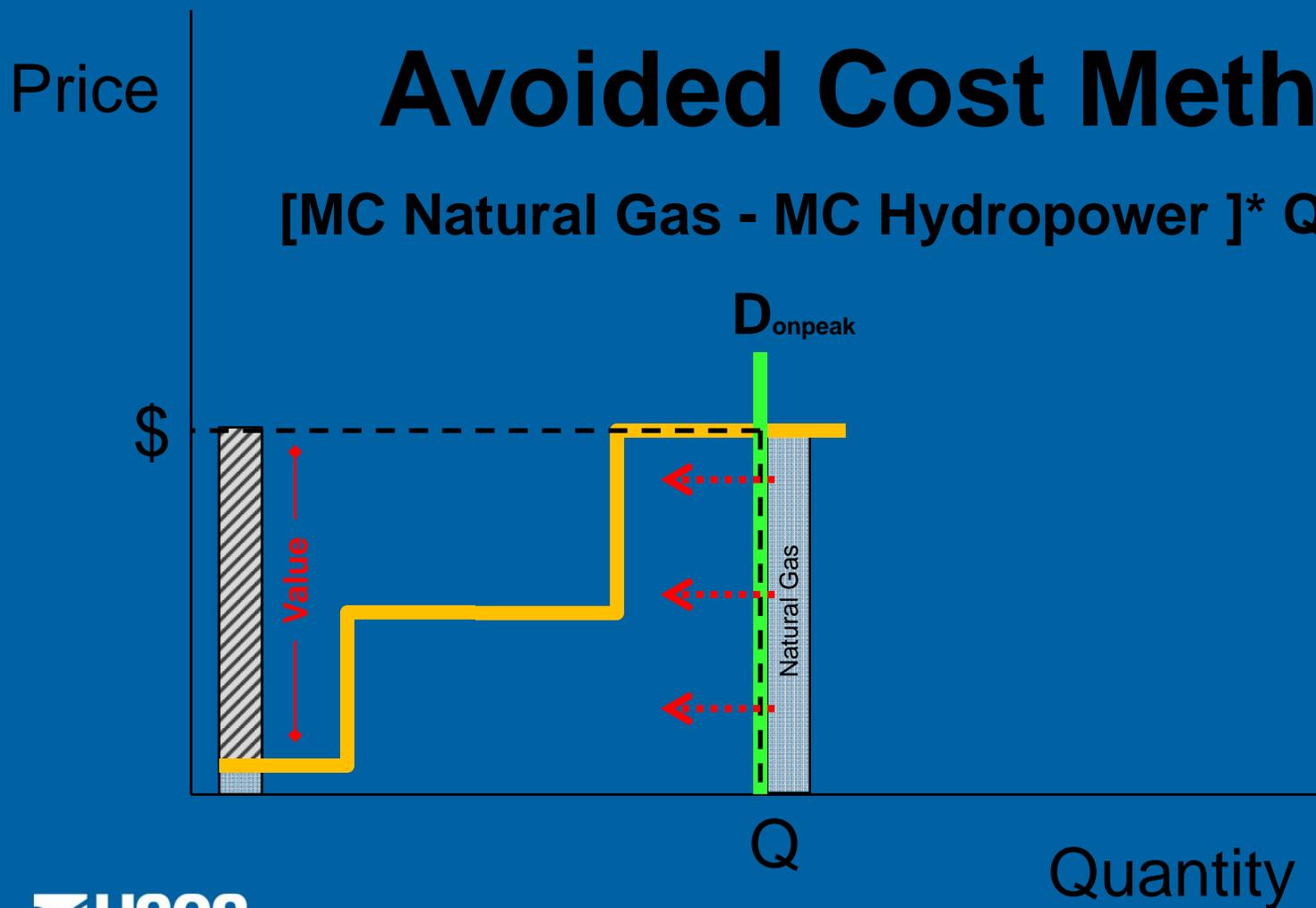
Avoided Cost Method



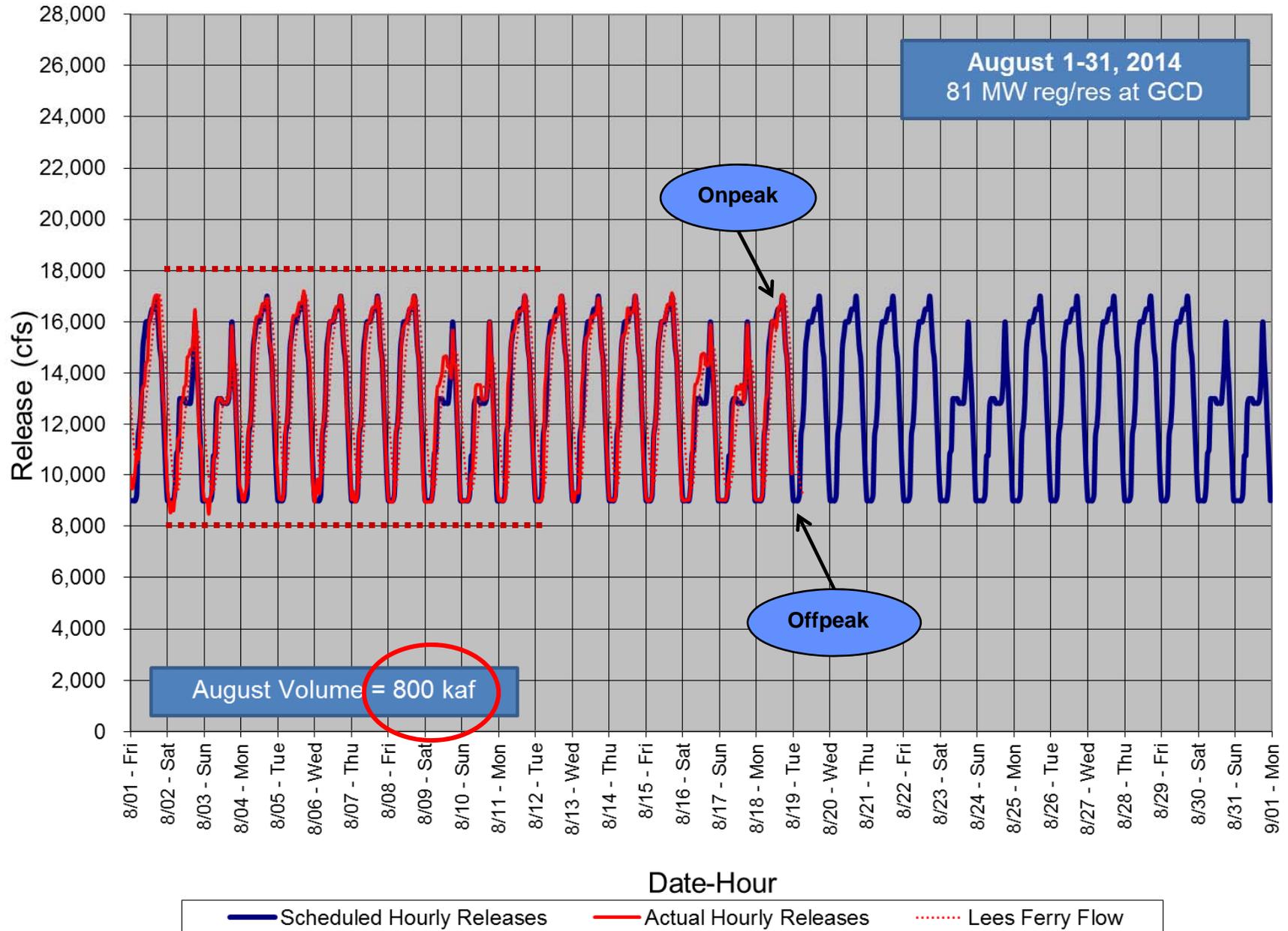
Economic Value of Energy

Avoided Cost Method

$$[\text{MC Natural Gas} - \text{MC Hydropower}] * \text{Quantity}$$



Glen Canyon Dam Hourly Release Pattern AUG 2014



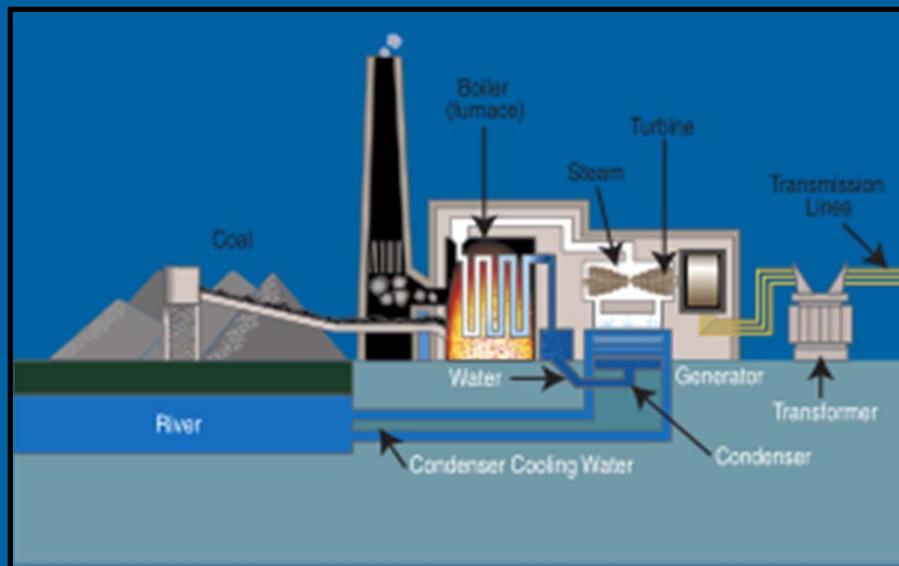
Capacity Expansion Costs



- **Avoid double counting**
 - Variable cost of energy and fixed cost of capacity
- **Technologies need to be comparable**

System Impacts

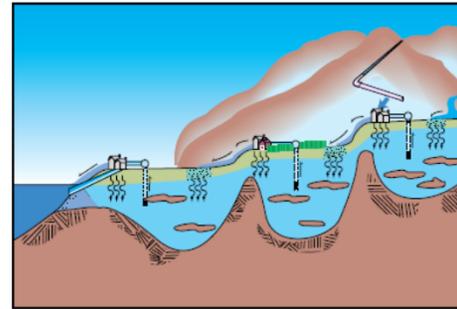
- Downstream resource
 - Benefits
 - Costs
- Energy production
 - Water use
 - Emissions
 - Etc.



Estimating Economic Value of...



SALINITY MANAGEMENT STUDY Final Report

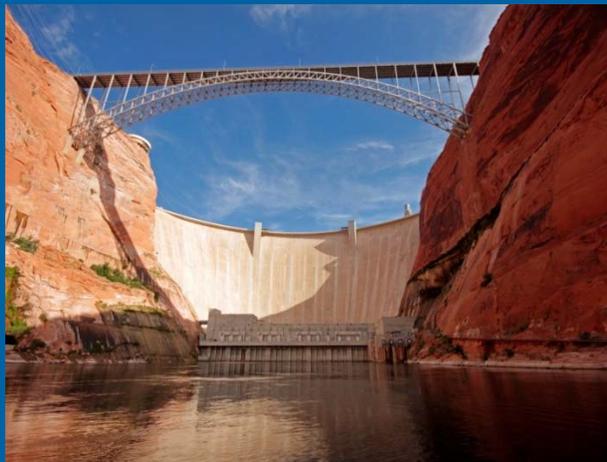


MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

June 1999



 USGS



http://gallery.usgs.gov/photos/04_27_2009_ejY115Obb7_04_27_2009_0

A scenic landscape featuring a dirt path leading through a valley. On the left, a large, gnarled tree with vibrant yellow autumn leaves stands prominently. The path is flanked by various green and yellow shrubs and bushes. In the background, a rugged mountain range with reddish-brown rock formations stretches across the horizon under a clear blue sky. The overall atmosphere is bright and sunny.

Questions?