



Xcel EnergySM

***Western Power Markets
a Practitioner's
Perspective***

***Presented by: Paul J. Bonavia
September 20, 2001***

Xcel Energy

- ***Public Service Co. of Colorado***
- ***Cheyenne Light Fuel & Power***
- ***Northern States Power***
- ***Southwestern Public Service***

Xcel Energy

WSCC

- ***Utility***

- ***4% of WSCC Load***

- ***Generator***

- ***21% of New WSCC Capacity in Past 5 Years***
- ***Share Fuel and Purchased Energy Costs with Colorado Customers***

- ***Merchant***

- ***Share Trading Margins with Colorado Customers***

Western Power Markets

Warrick's Law

- **The Market Always Wins**

Capps' Commentary

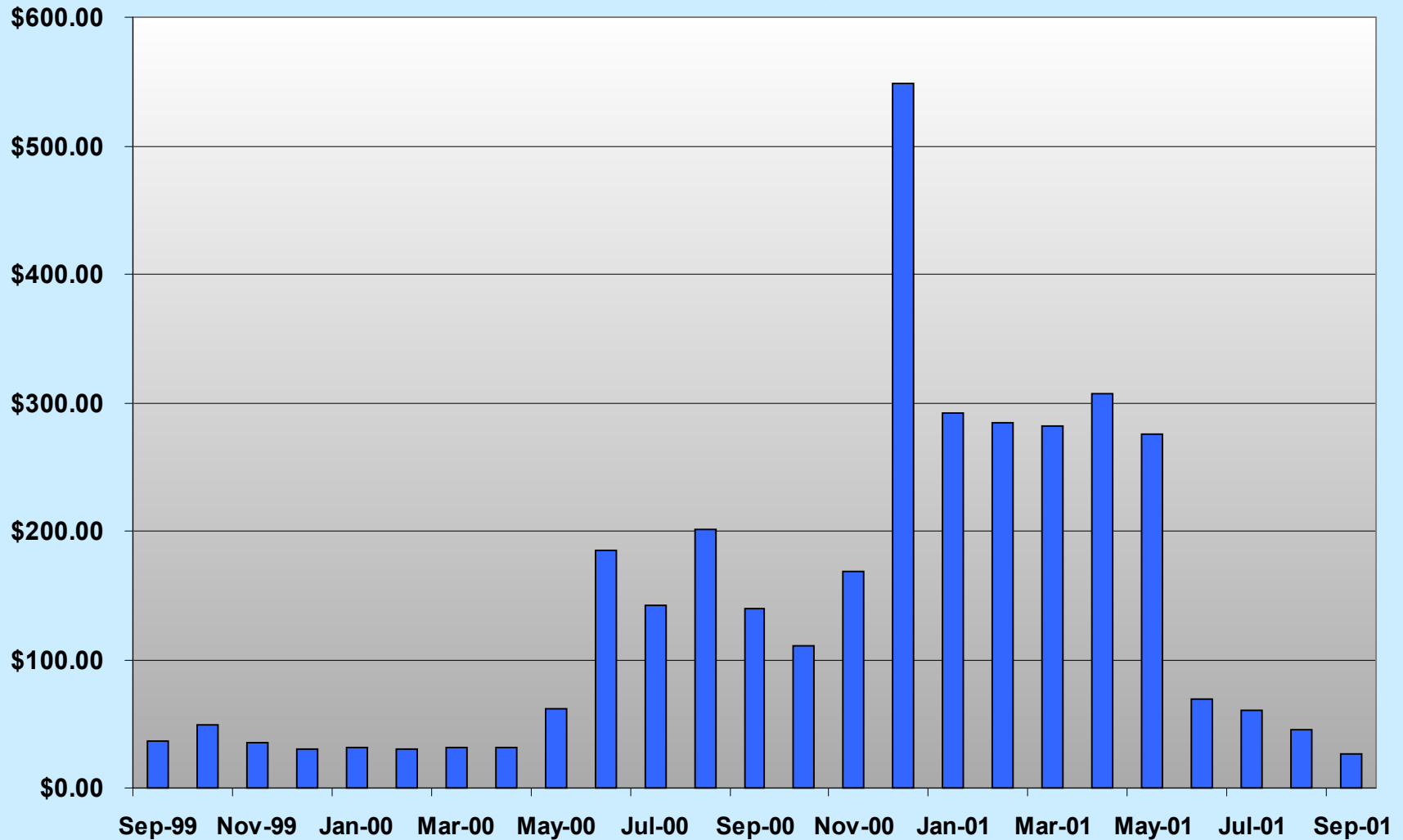
- **Technology Tells What You *Can* Do**
- **Economics Tells What You *Want To* Do**
- **Politics Tells What You *Will* Do**

Western Power Markets

- ***What Happened?***
- ***Why Did This Happen?***
- ***What Have We Learned?***

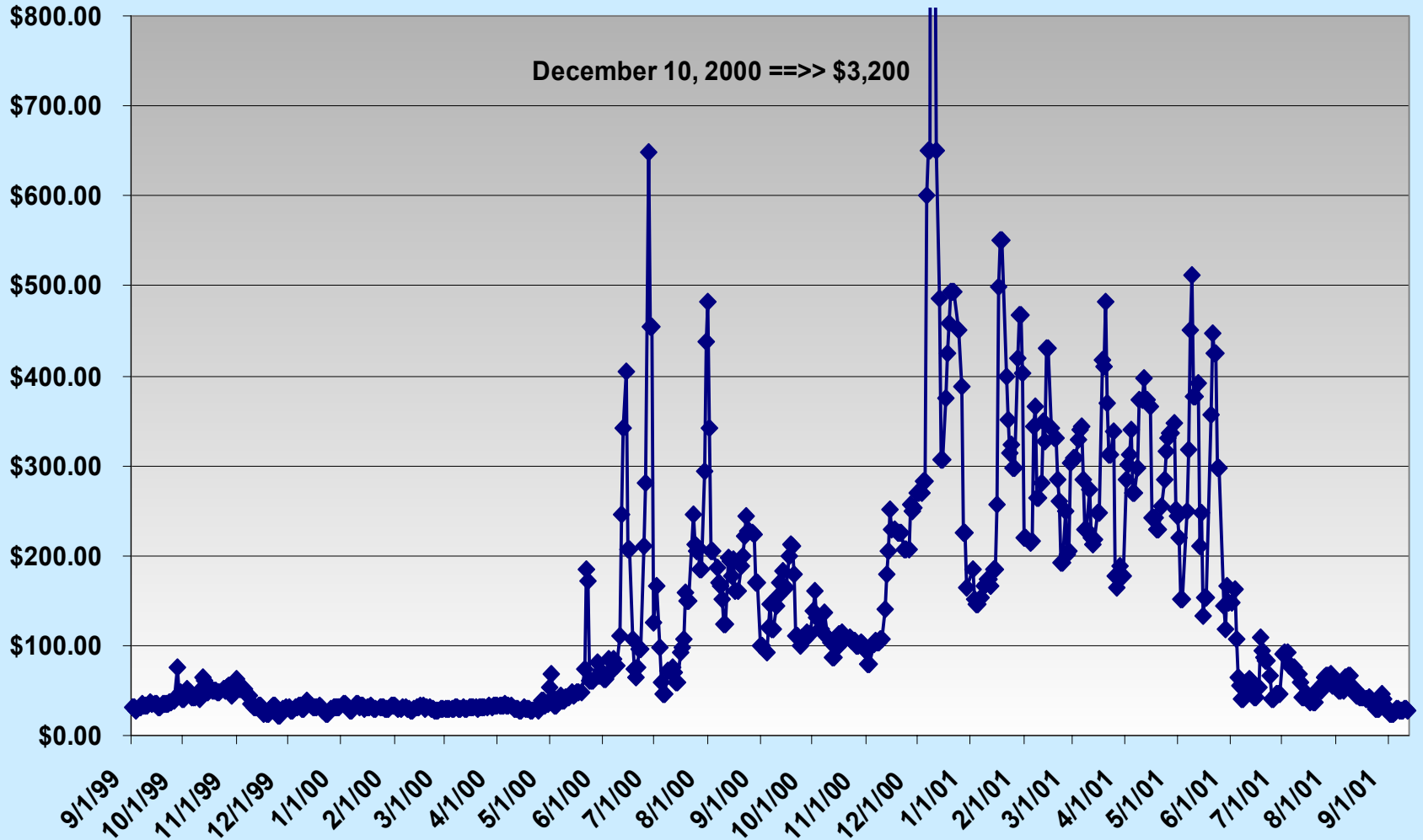
Historic Electricity Prices

COB On Peak Monthly Prices



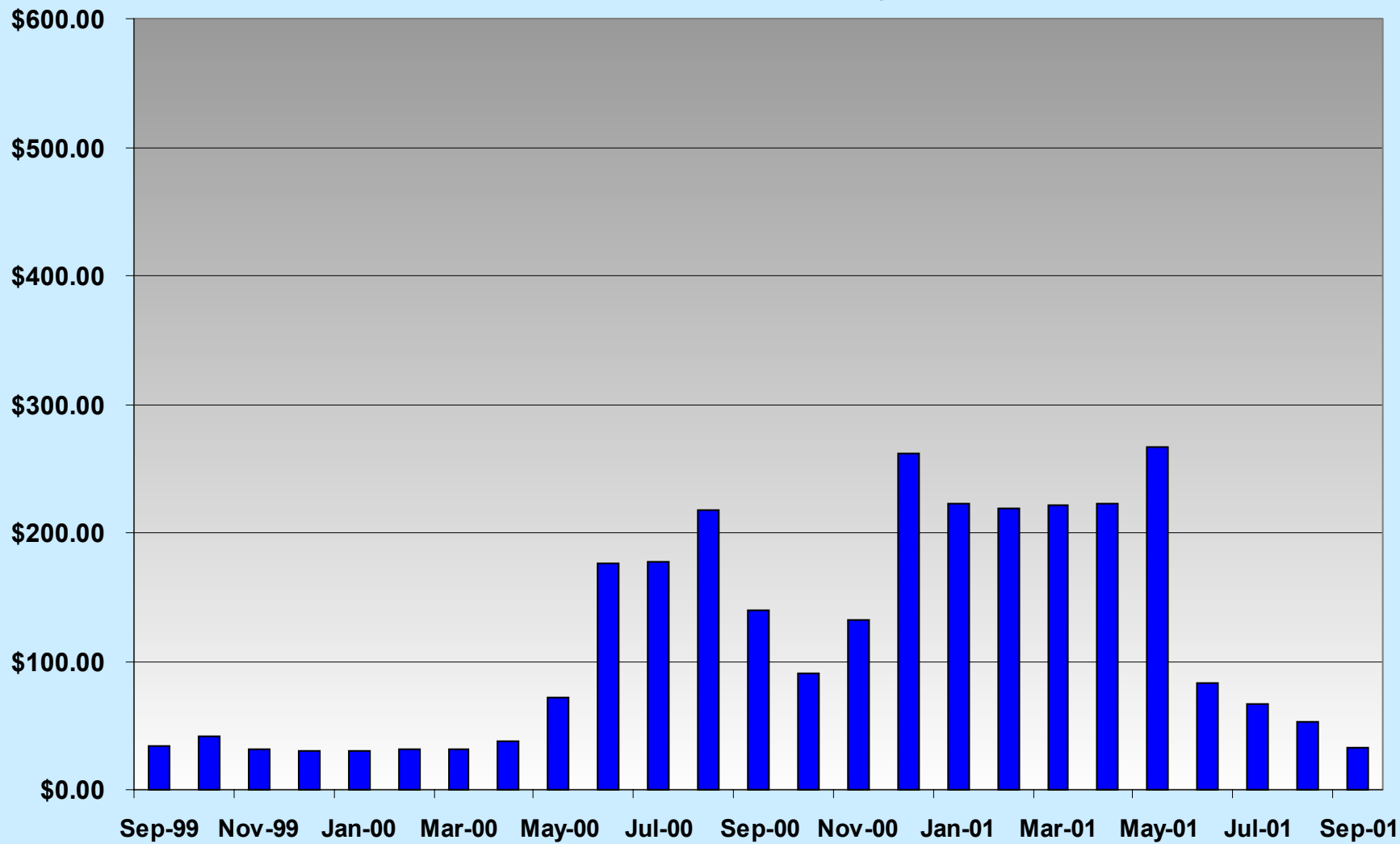
Historic Electricity Prices

COB ON PEAK PRICES



Historic Electricity Prices

Palo Verde On Peak Monthly Prices



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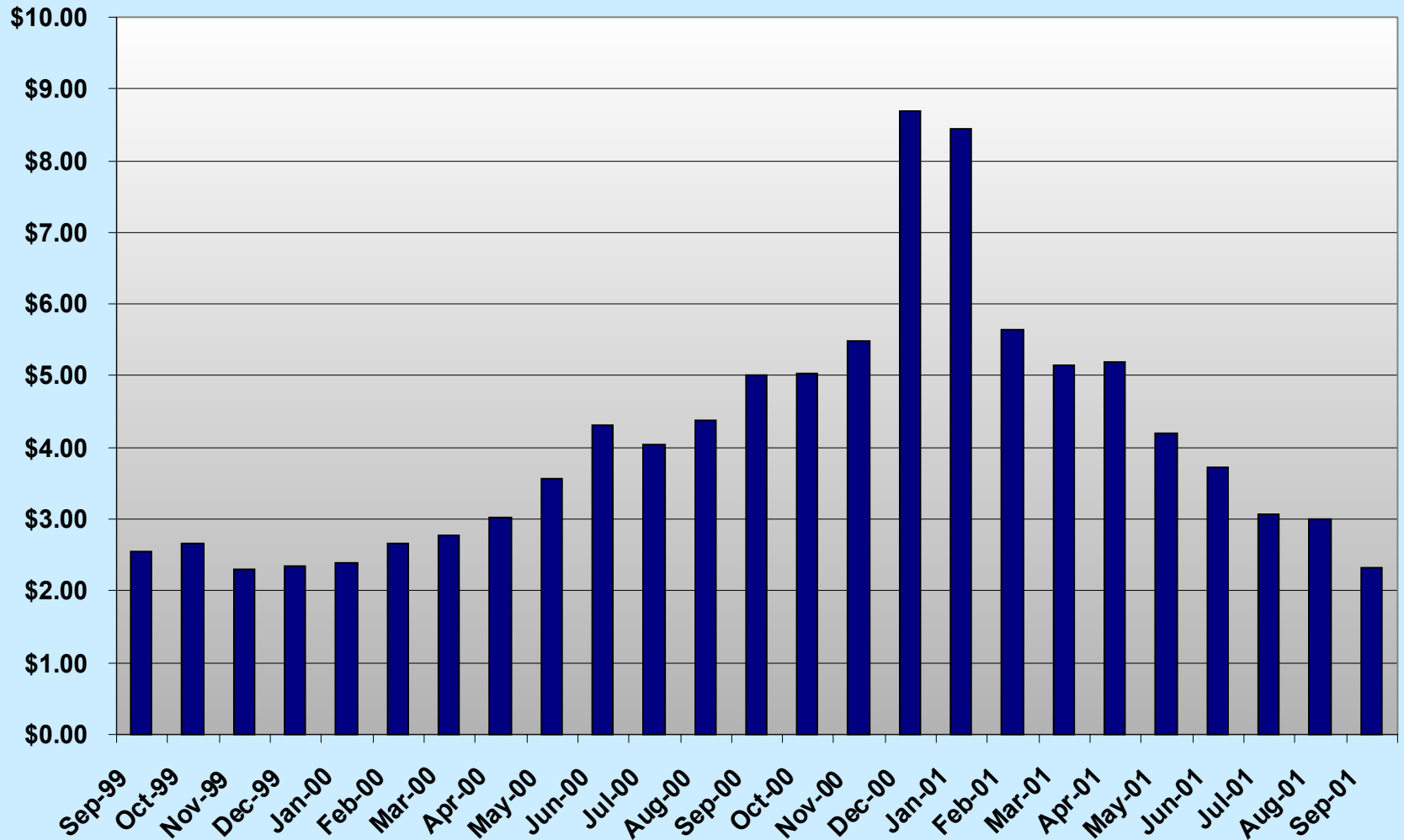
Why Did This Happen?

Supply

- **Natural Gas Price Spikes**
- **Hydro Output Variation**
- **2001 Generation Additions**

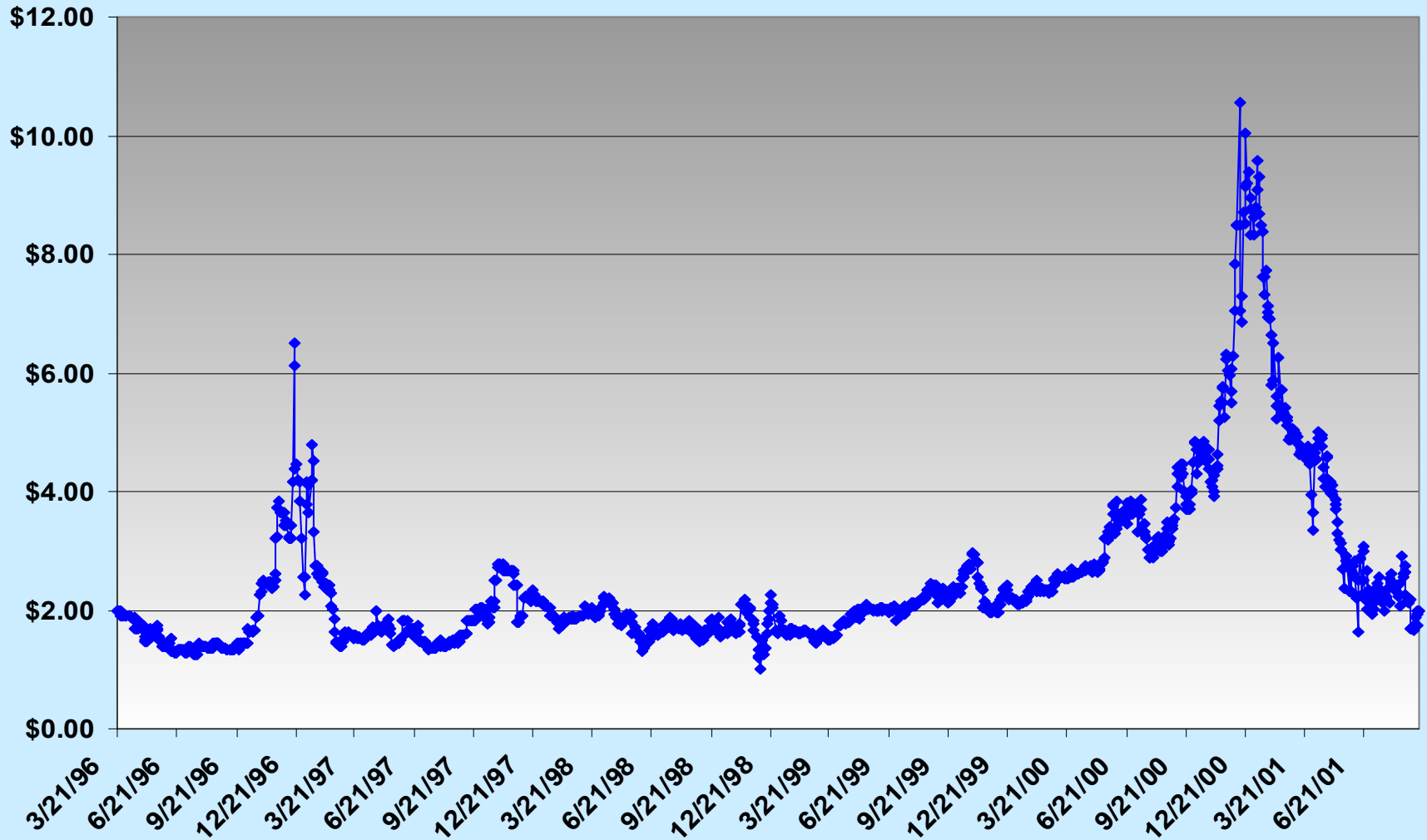
Historic Natural Gas Prices

Average Monthly Henry Hub Spot Gas Price



Historic Natural Gas Prices

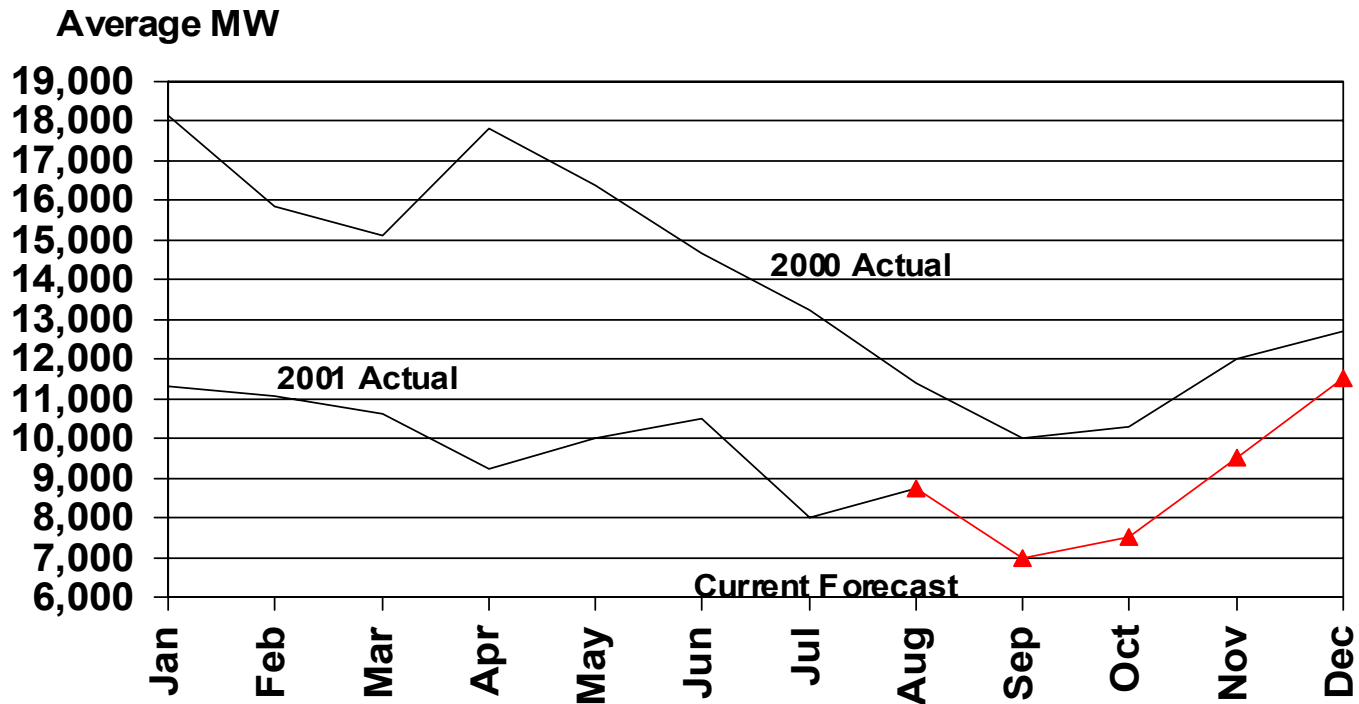
CIG NATURAL GAS DAILY PRICE



Hydro Generation

PACIFIC NORTHWEST HYDRO GENERATION

PIRA



Sources: U.S. Army Corps of Engineers and PIRA

2001 New Capacity

2001 New Capacity Additions - Commercial Availability

<u>MONTH</u>	<u>PROJECT</u>	<u>MW</u>	<u>AREA</u>	<u>DEVELOPER</u>
May	South Point	545	AZ	Calpine
May	Fort St. Vrain	235	CO	Xcel
June	Griffith Energy	595	AZ	Duke
June	Pinnacle West	130	AZ	Pinnacle West
June	Klamath Falls	500	OR	Klamath Cogen
June	Proctor&Gamble	40	No. CA	Proctor&Gamble
June/Jul	Fountain Valley	240	CO	Black Hills Gen
July	Sutter County	545	No. CA	Calpine
July	TRI City	350	No. Nev.	Morgan Stanley
July	Los Medanos	500	No. CA	Calpine
July	Wild Flower	135	So. CA	Indigo
July	Rathdrum	228	ID	Cogentrix/Avista
July	Rosarita 8/9	524	Mexico	CFE
Aug.	Desert Basin	560	AZ	HIPG
Aug.	Huntington 3/4	450	So. CA	AES
Aug.	Sunrise	320	Cen. CA	Edison Mission
<u>TOTAL</u>		<u>5897</u>		

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Why Did This Happen?

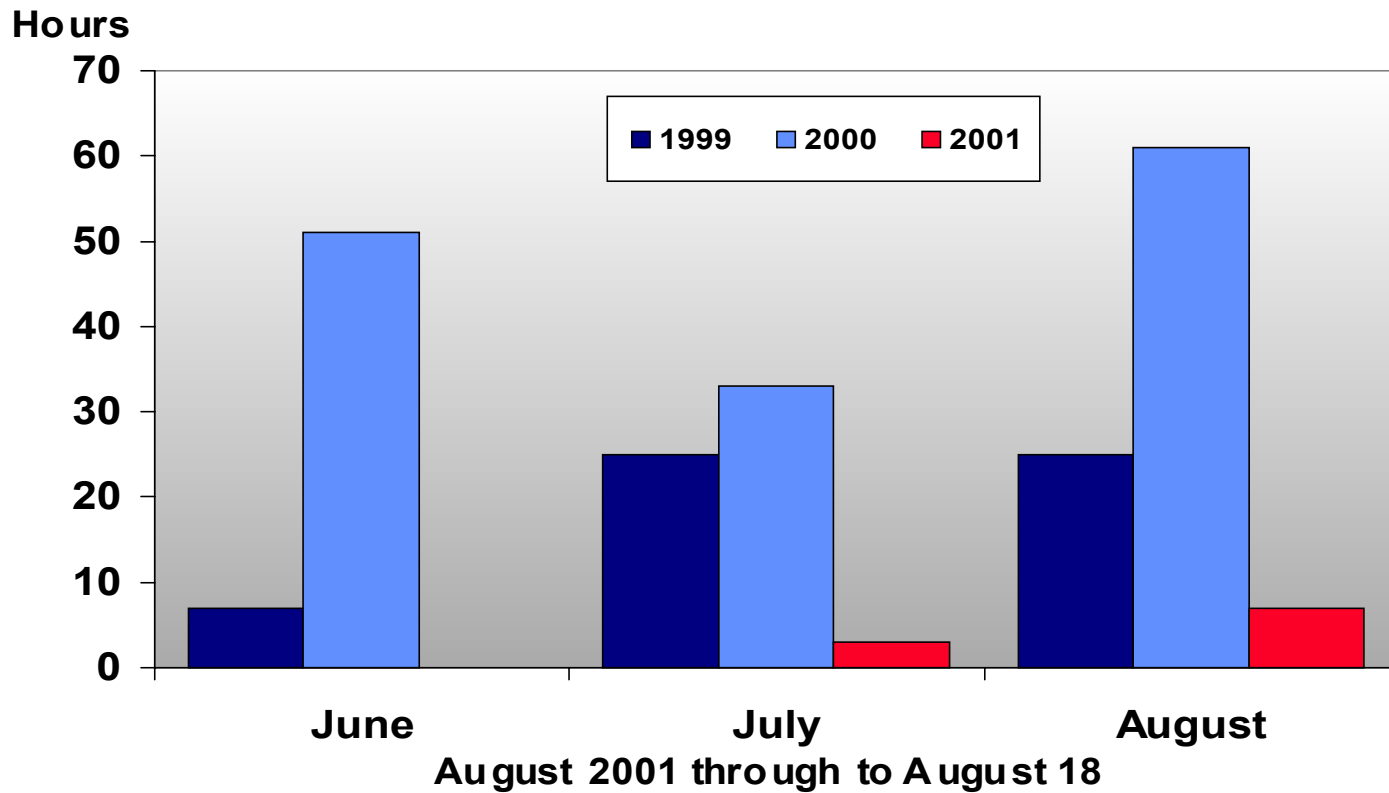
Demand

- **June 2000 CAISO Average Daily Peak Load Increased 13% vs. June 1999**
- **Dramatic Reduction in Summer 2001 Daily Peaks**

Peak Hour Demand

CALIFORNIA PEAK LOAD TAKES A DIVE
Number of hours CAISO load exceeded 40,000 MW

PIRA



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Why Did This Happen?

2001 VS. 2000

**6 - 7000 MW Reduction in CA/NW
Peak Loads**

+ 6000 MW Capacity Additions.

**= 12 - 13,000 MW Swing In Load /
Resource Balance**

Western Power Markets

Why are Price Variances so Steep?

- **Inelastic Demand -- Duty to Serve**
- **Technology & Infrastructure Limitations**
- **Prudent Risk Management**

Risk Management

- **Price Risk (Value at Risk)**
- **Credit Risk**
- **Operating Risk**
- **Transmission Risk**
- **Regulatory Risk**

What Have We Learned?

***Warrick & Capps are
Both Right***

What Have We Learned?

***“...help, or at least
do no harm.”***

Hippocrates

What Have We Learned?

***“If it were done when ‘tis
done, then ‘twere well it
were done quickly.”***

***William Shakespeare,
Macbeth, Act 1, Scene 7***

What Have We Learned?

“Don’t look back...”

Satchel Paige

What Have We Learned?

***“One can not step in to
the same river twice.”***

Heraclitus



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