Throwing Away The Crystal Ball:

Thriving In An Uncertain Energy Future

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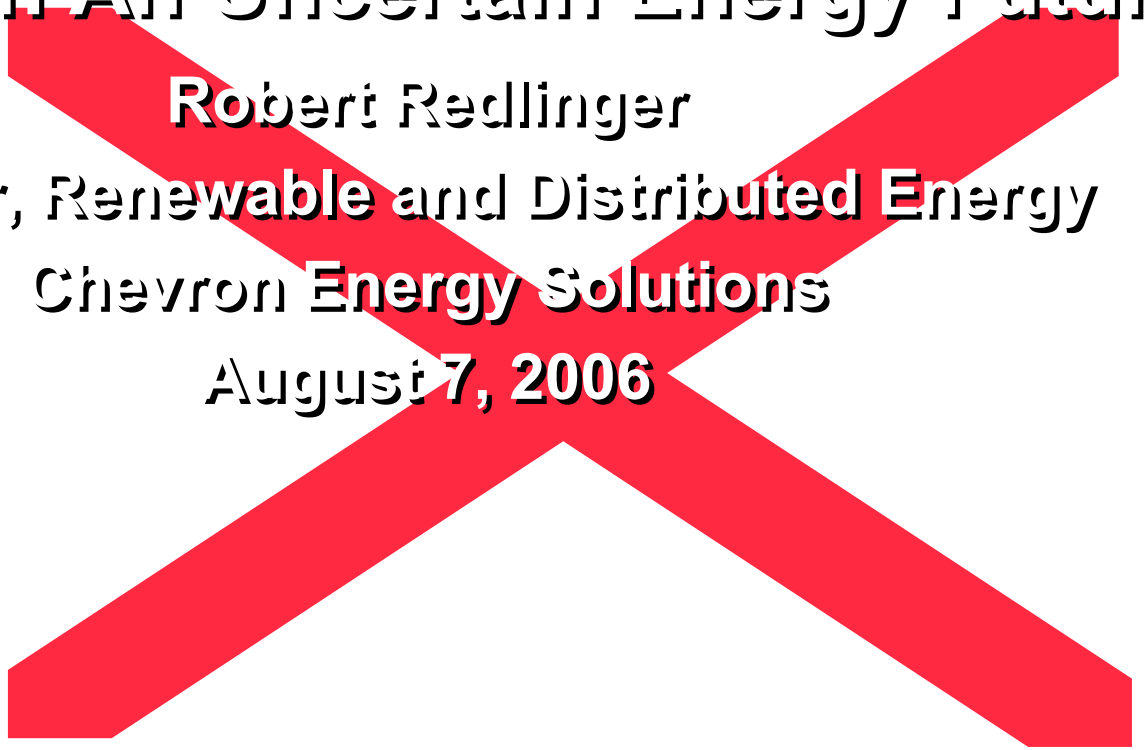
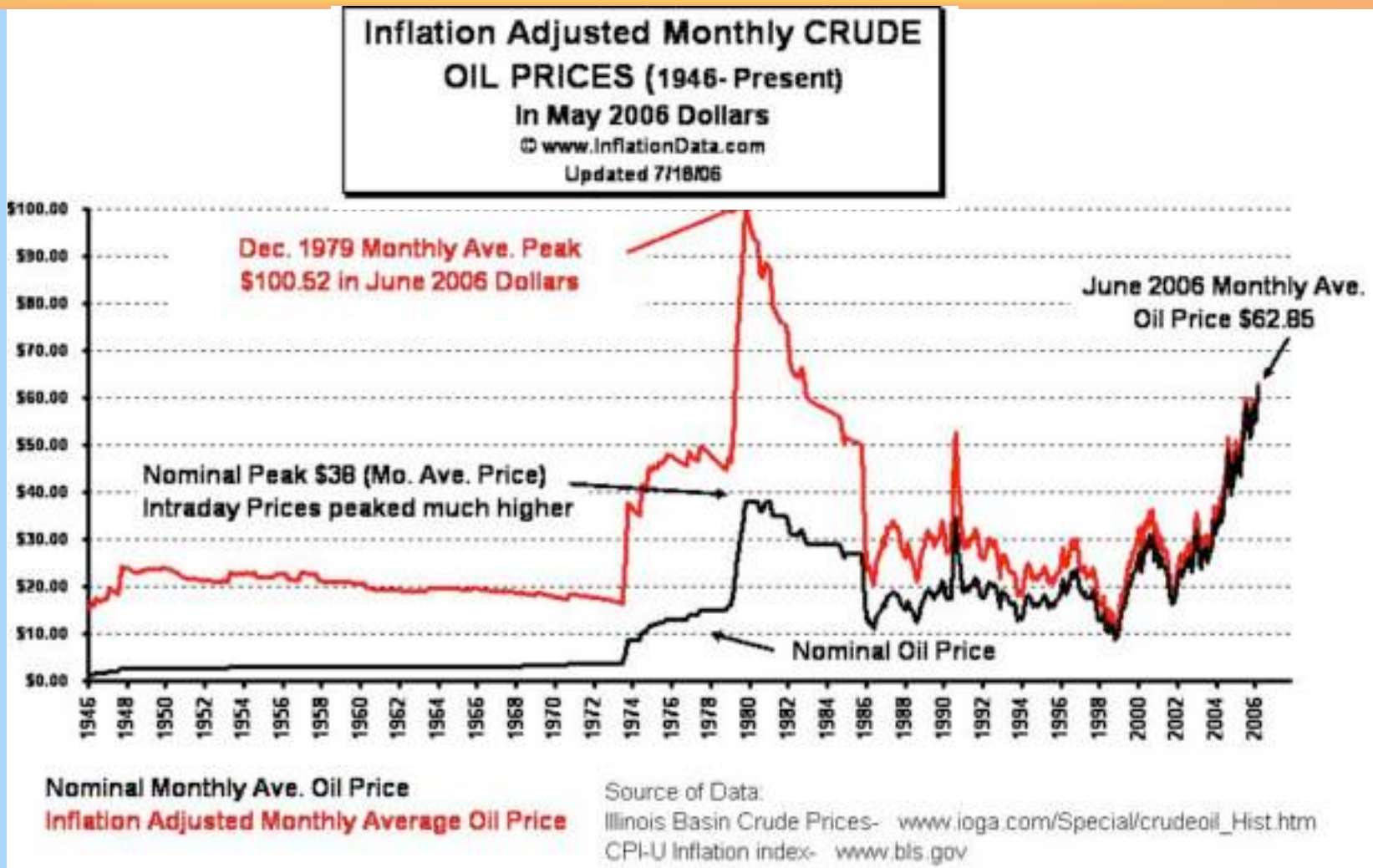


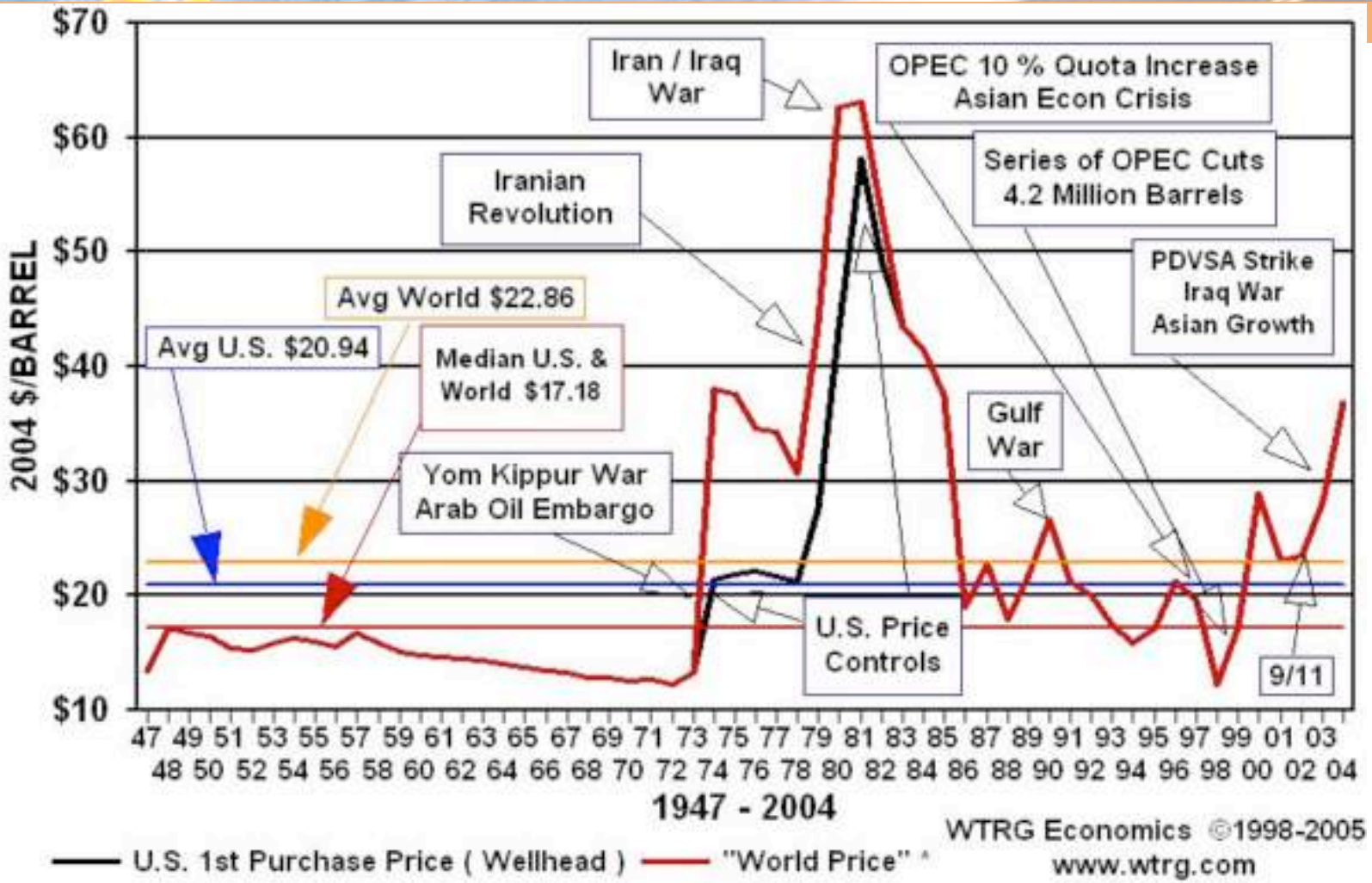
A Brief History of Oil Prices

Behind the Wheel: Management Focus



Historic Oil Prices, With Some Context

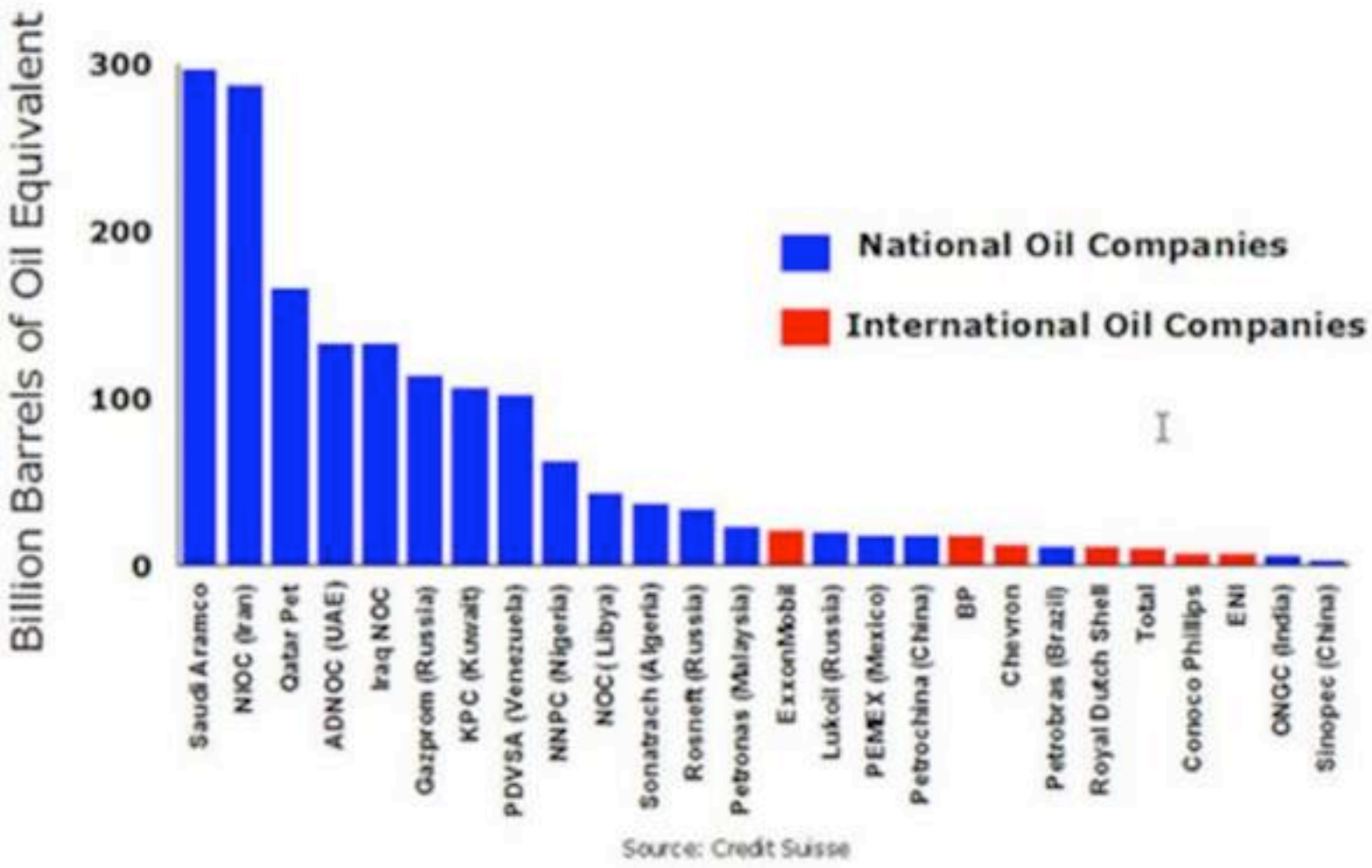
Behind the Wheel: Management Focus



Crude Oil Prices, 2004 $. Courtesy of WTRG Economics

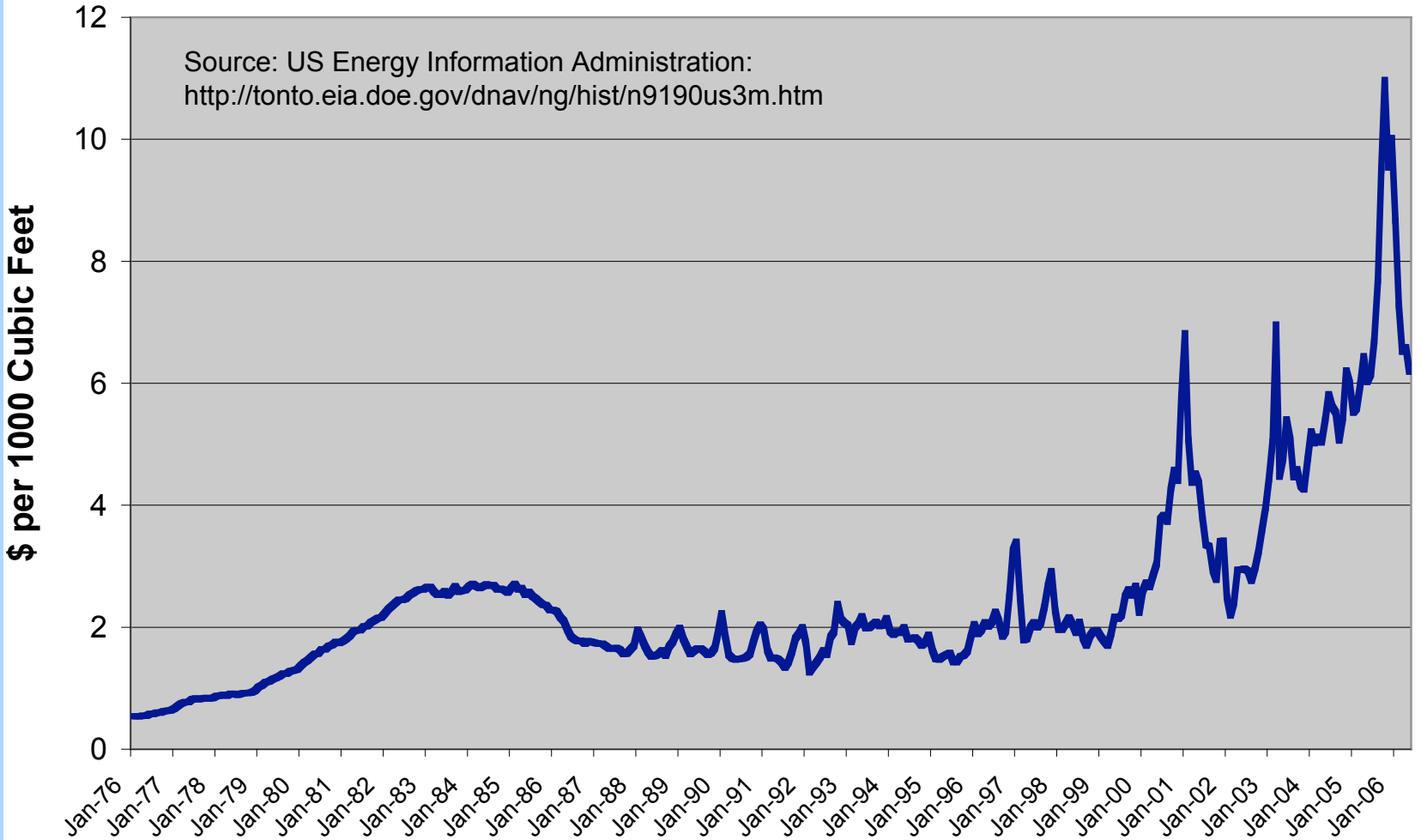
Who Controls The World's Proven Reserves of Oil and Gas?

Behind the Wheel: Management Focus



Historic Natural Gas Prices: US Wellhead

Behind the Wheel: Management Focus



A Slide From Last Year's Presentation:

Behind the Wheel: Management Focus

Markets Do Get It Wrong

NYMEX Natural Gas Futures

Purchase Date: Future Date and Price	Oct. 2, 2003 ($/MMBtu)	Aug. 4, 2005 ($/MMBtu)
Sep. 2005	$4.489	$8.340
Jan. 2006	$4.944	$9.597
Oct. 2009	$4.527	$6.828

www.nymex.com

- Has anything fundamentally changed?
- Markets are myopic
  - Markets failed to predict the price increases, and they will fail to predict a price drop too.

What Has Happened To Gas Prices Since Then?

Behind the Wheel: Management Focus

My rash musings from last year:

"If I had the courage and the money, I'd be selling gas short."

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Some Actual Prices ($/MMBtu)
$11.70 CA Peak
$6.68 CA Low
$8.133 NYMEX 7/26/06

Sources: NYMEX and California Energy Markets (Energy NewsData Corp)

- CA border prices peaked at $11.99 in October: Katrina and Rita.
- CA border prices hit a low of $3.95 in November: Lots of storage.
- CA prices in the mid-$5 range in March: Lots and Lots of storage.
- CA border prices dropped below $5 in May.
- Long term NYMEX prices still climbing.

The Convergence of Oil, Natural Gas, and Electricity

Behind the Wheel: Management Focus

- Natural gas prices track those of oil much more than they used to.
- Electricity is increasingly produced by natural gas.
  - High gas prices have slowed but not reversed this trend.
  - Coal prices have also tracked oil and gas upward.
- Will an electricity-oil link complete the triangle?

Could a Re-Emergence of Electric Cars Re-Link Oil and Electricity?

Behind the Wheel: Management Focus

- Lots of hype over plug-in hybrids.
- Don’t write off the pure electric car yet.

Tesla Motors

- 0-60 in 4 sec.
- 240 miles on a single charge.
- $89,000.

Source: The Economist, 7/29/06

The Bottom Line

Behind the Wheel: Management Focus

- Oil, gas, and electricity prices will become increasingly linked.
- Energy prices are becoming increasingly volatile and unpredictable.
- Energy prices are fundamentally driven by 3 factors:
  - Weather
  - Politics
  - Global Economy

Who To Listen To?

Behind the Wheel: Management Focus

- Don’t trust the weather forecast?
- Don’t trust your politicians?
- Don’t trust the oil company guy?

- Then trust your financial advisor (sometimes).

When the Future is Uncertain, Do as the Financial Markets Do:

Behind the Wheel: Management Focus

DIVERSIFY YOUR PORTFOLIO.
HEDGE YOUR RISKS.

Financial Portfolio

- Stocks
- Bonds
- Cash
- Real Estate
- Precious Metals

Energy Portfolio

- Energy Efficiency
- Cogeneration
- Solar
- Demand Response
- Green Power Purchase

Energy Efficiency

Behind the Wheel: Management Focus

Energy efficiency almost always makes sense.

- Lowest cost energy resource.
- Natural hedge against energy price changes.
  - Price increase: energy efficiency becomes more cost-effective.
  - Price decrease: energy bills decline and savings are still achieved.
- Facility infrastructure improvements.
- Occupant comfort and health improvements.
- Greatest environmental benefits.

Cogeneration

Behind the Wheel: Management Focus

Important part of a well-diversified portfolio.

- Hedges against electricity price increases.
- In today's high gas price environment:
  - Low spark spread may be temporary.
  - Think long term.
    - What made sense a few years ago?
    - What is likely to make sense in a few years?
- Look for high heat loads.
- Look for additional/secondary benefits.
  - Standby, backup, environmental, tax.

Solar Photovoltaics

Behind the Wheel: Management Focus

It's not just about simple payback.

- Hedge fuel costs.
  - Zero fuel cost for 25+ years.
- Natural peaking resource.
  - Protects against high gas and electric prices.
    - Dependence on natural gas for peaking power.
  - Critical peak pricing in California.
- Tax benefits
  - Investment tax credit, accelerated depreciation.
  - 3rd party own-operate model.

Demand Response

Behind the Wheel: Management Focus

Prepare for the Future.

- Market slowly moving toward real-time pricing
  - Greater volatility
  - Higher peak prices
- Critical peak pricing
- Keep an eye on demand bidding and incentive programs
- Establish EMS price responsiveness capability

Green Power Purchase

Behind the Wheel: Management Focus

Optional green power purchase programs are becoming increasingly available.

- Utility green pricing programs
- Direct access green power
- Fixes long-term fuel costs
- Typically involves a price premium, but not necessarily
  - In late 2005, Xcel Energy's Windsource wind energy program became cheaper than conventional utility power.

Lots of Incentives: Energy Policy Act of 2005

Behind the Wheel: Management Focus

Much is either mandated or incented by 2005 EPAct:

- 2% per yr energy efficiency improvement for federal bldgs.
- Energy Savings Performance Contracts renewed for 10 yrs.
- 25% increase in energy efficiency for state buildings.
- Tax deduction for investment in efficient building systems.
- Renewable Energy Production Incentive for tax-exempt entities.
- Encourages installation of solar PV systems on federal bldgs.
- Encourages federal agencies to procure fuel cells.
- Special government fund can incent renewable energy systems on Federal buildings.
- Mandates Net Metering availability for all utility customers.
- Federal investment tax credit for PV, fuel cells and microturbines.
- Clean Renewable Energy Bonds: special tax credit bonds for government agencies.

Case Study: Alameda County – Santa Rita Jail

Behind the Wheel: Management Focus

- Comprehensive energy efficiency 1993-2001
- 1 MW solar photovoltaics 2001
- Demand response system 2001
- 1 MW fuel cell cogeneration 2004-2006
- Total utility demand reduction = ~ 2500 kW

Photo Courtesy of PowerLight Corp.

Photo Courtesy of FuelCell Energy, Inc.

Case Study: U.S. Postal Service

Behind the Wheel: Management Focus

- West Sacramento P&DC
  - Largest U.S. non-military solar power installation

    (now surpassed by West Oakland P&DC)
  - With efficiency upgrades, USPS saves $615,000 annually
- San Francisco mail centers
  - U.S.'s first fuel cell/solar renewable power plant
  - With efficiency upgrades, USPS saves $1.23 million annually (46% reduction in electricity purchases)
- Other projects throughout CA
- All projects are self-funding
- 2 MW of solar PV to-date

U.S. Postal Service
Energy Efficiency and Solar Project
West Sacramento, CA

Case Study: U.S. Army - Picatinny Arsenal (NJ)

Behind the Wheel: Management Focus

- Heating decentralization project
  - Decommissioned 60-yr-old central plant, steam system
  - New distributed heating systems in >140 buildings
  - New natural gas distribution system
  - New building control system
  - Ongoing O&M
- Multiple Benefits
  - $3 million annual energy savings
  - $2.5 million maintenance cost eliminated
  - Reliability, flexibility
  - Self-funded under Federal ESPC program