### MANAGING NATURAL GAS PRICE VOLATILITY



*May* 2008



141 W Jackson Blvd • Suite 1521 • Chicago, IL 60604 • 312.373.8250 • info@riskmgmt.net





### TABLE OF CONTENTS

### Section 1 – Macro Economic Influences on Commodity Pricing

### Section 2 – Hedge Plan Structures for Managing Natural Gas Volatility







### MACRO-MARKET PRICE INFLUENCES

#### **Resource Scarcity**

#### **Speculators & Investors**

Weak Dollar



#### **ROW Led Demand Growth**

#### **Weather Extremes**

**Environmental Crisis** 

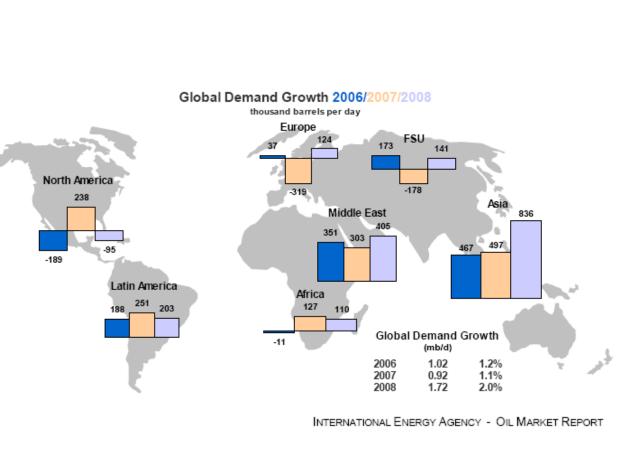


©Copyright RMI Consulting, Inc. www.riskmgmt.net

### 'ROW'-LED DEMAND GROWTH

Top World Oil Consumers, 2006 (thousand barrels per day)							
Rank	Country	Consumption					
1	United States	20,687					
2	China	7,273					
3	<u>Japan</u>	5,159					
4	Russia	2,861					
5	Germany	2,665					
6	India	2,587					
7	<u>Canada</u>	2,264					
8	Brazil	2,217					
9	Korea, South	2,174					
10	Saudi Arabia	2,139					

Top World Oil Net Importers, 2006						
(thousand barrels per day)						
Rank	Country	Imports				
1	United States	12,357				
2	<u>Japan</u>	5,031				
3	China	3,428				
4	Germany	2,514				
5	Korea, South	2,156				
6	France	1,890				
7	India	1,733				
8	Italy	1,568				
9	Spain	1,562				
10	Taiwan	940				





### WEATHER EXTREMES

February blizzard in China





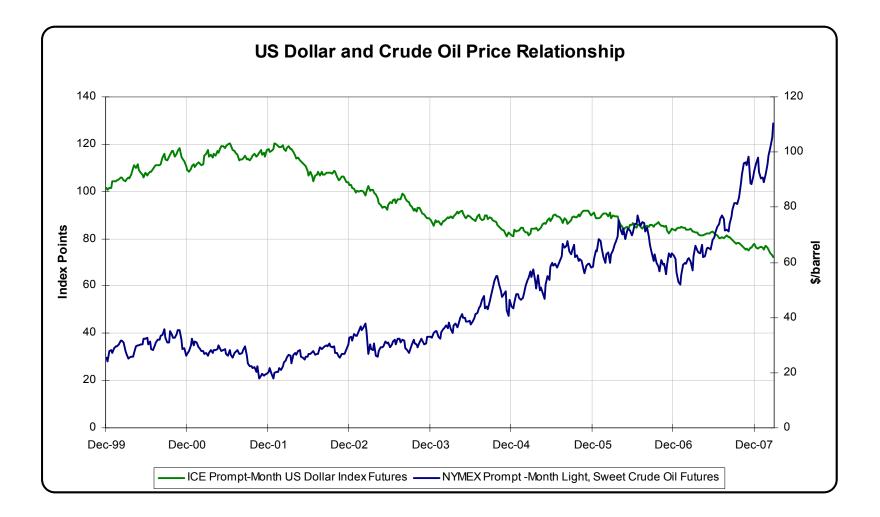


Flooded Yallourn coal mine in Australia

BP's Thunderhorse platform listing in Gulf of Mexico after Hurricane Katrina

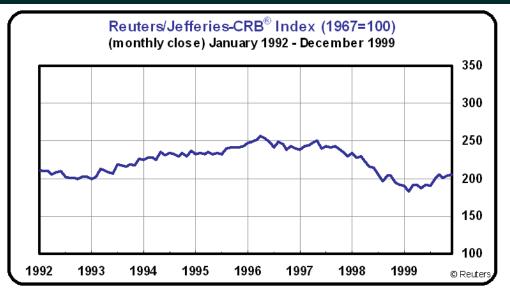


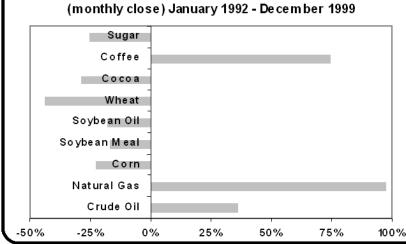
### WEAK DOLLAR



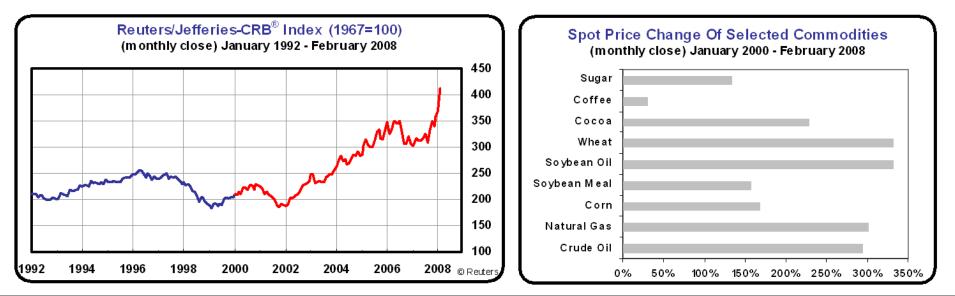


# COMMODITY PRICE TRENDS – WHAT CHANGED?





Spot Price Change Of Selected Commodities



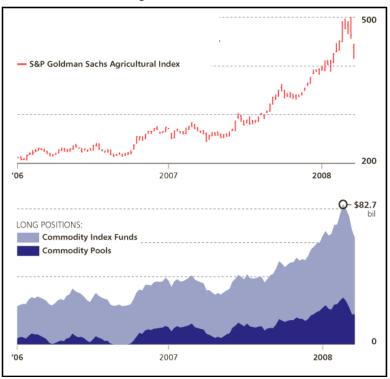


# SPECULATORS & INVESTORS – BY THE NUMBERS

Citigroup Inc. Global Commodity	
Investment Analysis (US\$ billion)	

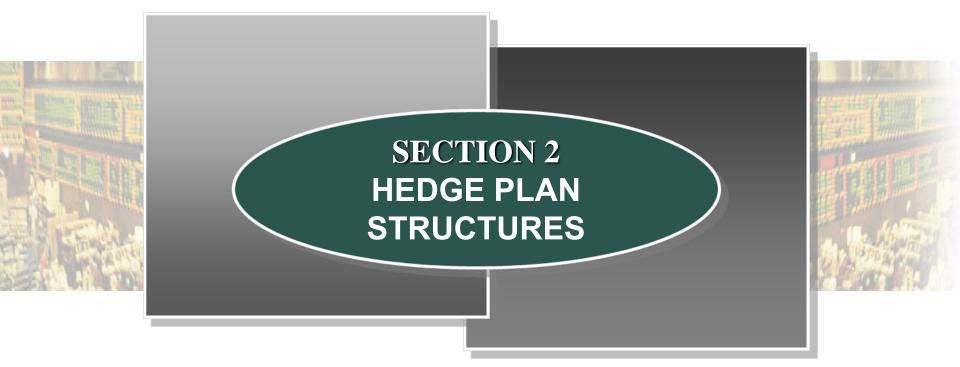
	End 2007 Investment Total	Q1 2008 Investment Increase	Investment Total (3/31/08)
Indexes	145	40	185
CTA's	80	14	94
Hedge Funds	60	15	75
ETF's	35	11	46
Total	320	80	400

#### **Purely Coincidence?**



Sources: Standard & Poor's; Commodity Futures Trading Commission; Steve Briese

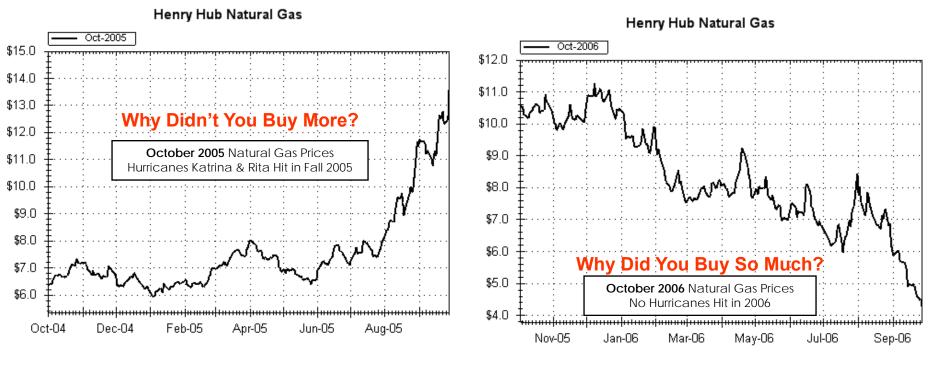


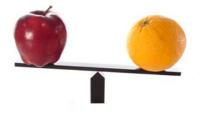




### GETTING TO THE REAL ISSUES

The Energy Hedger's Dilemma: How Did I Do?







# HEDGE PROTECTION/INSURANCE 2008 & BEYOND



 2008 has proven that just because your house had not burned recently there was no guaranty that a fire would not have ensued at some point in the future



 Having a hedge program is analogous to securing a home insurance policy



 It is prudent to maintain home insurance just as it is prudent to maintain a hedge program

The pending direction of natural gas prices is even far less certain.



# PRICING OBJECTIVES

OBJECTIVES
$\sqrt{10}$ Establish Price Stability
$\sqrt{10}$ Buy at Historic Low Value
✓ Protect Against Major Price Increases
$\sqrt{Reduce costs in future years}$

### WHAT TO DO?

The best advice to offer is ...

 $\checkmark$  Quantify your hedge strategy

✓ Maintain structure and discipline in your hedge program

 $\checkmark$  Think long term in a market with a short-term focus



Quantitative variables to consider to achieve a rational purchase price...

- ✓ Risk Analysis DEFINE RISK
- ✓ Historic Prices DEFINE VALUE
- ✓ Price Targets Beyond Current Year THINK LONG TERM
- ✓ Time Targets PRICE STABILITY
- ✓ The Application of Multiple Tools UTILIZE OPTIONS

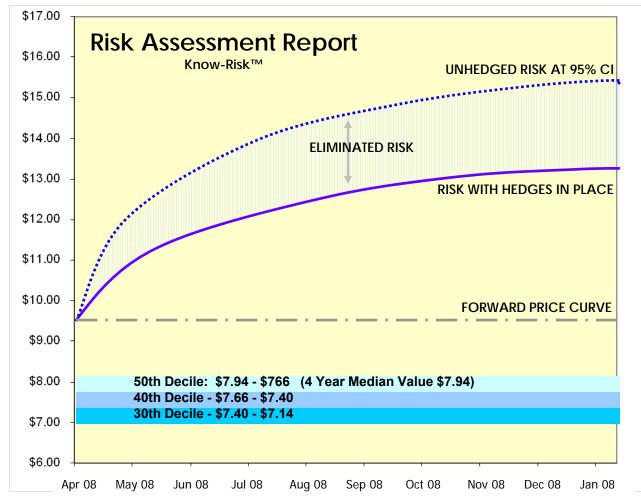


### DEFINE & QUANTIFY RISK

On a daily basis, the price risk and opportunity of an energy or commodity portfolio can be measured using metrics like VaR and the RMI price matrix

- RAR quantifies the price risk by month during a calendar year
- The proximity of the forward curve to historical value can judged versus upside price risk

KNOW-RISK Risk Management System. A product of Risk Management Inc.

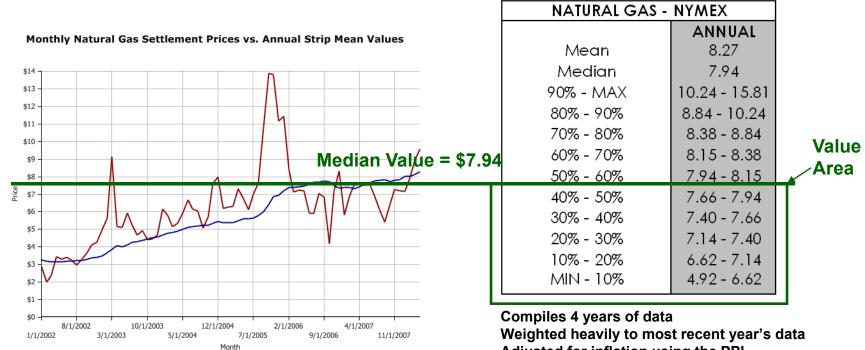




# VALUE MANAGEMENT

### Define what makes a price expensive or cheap, and develop a strategy to create a competitive advantage

- Identify prices that represent historical 'value' and compare them to the current market
- Prices in the 'value area' have inherently lower opportunity risk, and greater strategic value
- Aggressively contract the commodity at pre-determined 'value' levels



Adjusted for inflation using the PPI



# DEVELOP STRATEGY

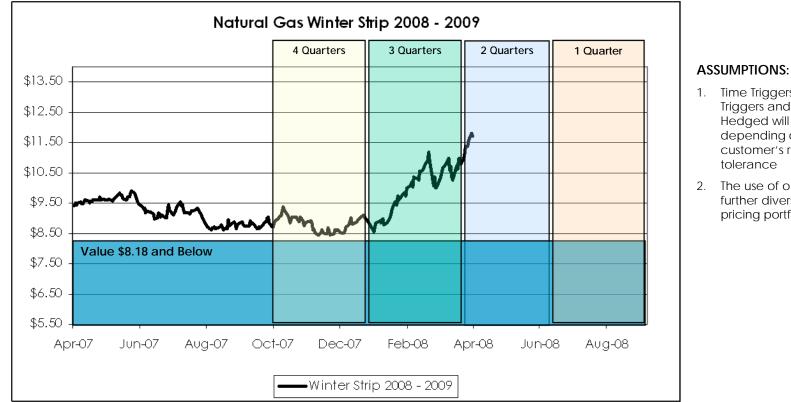
### A Successful Price Target Strategy:

- Meets company hedge objectives
- Acknowledges
  quantified market
  risks and volatility
- Considers market opportunities beyond current year
- Contains objective execution parameters

QUANTIFY EXECUTION					
Value Target Define 'good' long-term value, and match value with purchasing aggressiveness	<b>Time Target</b> Mitigate risk by ensuring certain levels of minimum coverage prior to a season or planning period	<b>Pricing Tools</b> Utilize judgment in the use of options in conjunction with fixed pricing and index gas.			
<b>Example:</b> Below Historical Median	<b>Example:</b> Dollar Cost Averaging	<b>Example:</b> Buy Caps, Collars, etc.			



### GENERIC WINTER 2008-2009 HEDGE PLAN



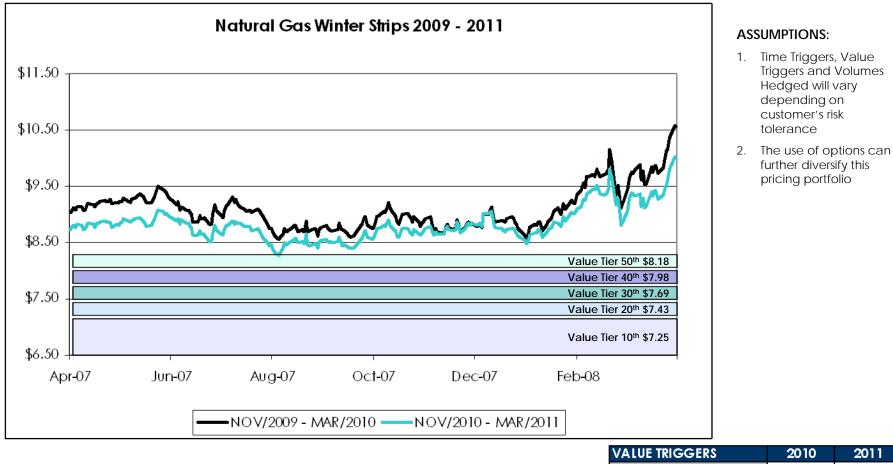
- 1. Time Triggers, Value Triggers and Volumes Hedged will vary depending on customer's risk
- 2. The use of options can further diversify this pricing portfolio

#### \* Cumulative Totals

	VALUE TRIGGERS				TIME TRIGGERS				Total Purchased	
	Trigger 1 50 <sup>th</sup> Decile	Trigger 2 40 <sup>th</sup> Decile	Trigger 3 30 <sup>th</sup> Decile	Trigger 4 20 <sup>th</sup> Decile	Trigger 5 10 <sup>th</sup> Decile	Trigger Dec07	Trigger Mar08	Trigger Jun08	Trigger Sep08	as of 4/23/2008
Quantity	15%	30%*	45%*	60%*	75%*	10%	20%*	30%*	40%*	20%
Price	\$8.18	\$7.98	\$7.69	\$7.43	\$7.25	\$8.80	\$10.97			\$9.884



## GENERIC WINTER 2010-2011 STRIP HEDGE PLANS



VALUE TRIGGERS	2010	2011
50th Decile		
40th Decile	10%	
30th Decile	10%	10%
20th Decile	10%	10%
10th Decile	10%	10%
TOTAL	<b>40</b> %	30%



- 1. Better Define and Refine Your Objectives
- 2. Acknowledge and Adjust to Extraordinary Variables, e.g. Economical and Political Events
- 3. Utilize a More Mechanical and Quantifiable Approach
- 4. Compartmentalize Your Use of Discretion
- 5. Think Beyond the Current Year

