

### National Renderers Association



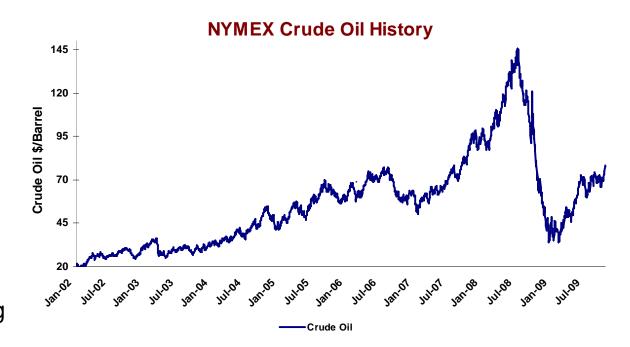
## •Managing Your Energy Resources

•October 22, 2009



### **Crude Oil Basics**

- Crude oil is a world market
- Price drivers include:
  - ✓ World supply/demand
  - ✓ World geopolitics
  - ✓ Weather
  - ✓ World economies
  - ✓ U.S. currency valuation
  - ✓ Macro economic factors
- Global oil demand is growing
- US holds 1.6% of world's reserves w/ 10% of production in 2008, but represents 23% of world demand importing 2/3 of its oil requirements
- OPEC controls 80% of the worlds oil reserves & 40% of 2008 production



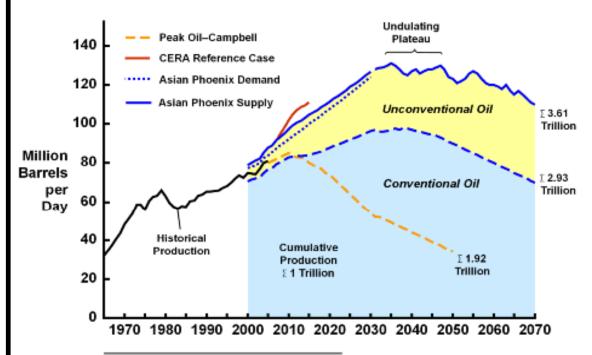
- Historically crude oil has been cheap, prices started escalating in 2004, spiked in 2008 before the recession prompted decline
- Energy, including crude oil as a % of GDP declined 1980 through 2000

## **Crude Oil: Long Term**

#### Peak Oil - Real or Not?

- ✓ Analysts price outlooks range from \$70 to \$200 per barrel

Figure 1
Undulating Plateau versus Peak Oil



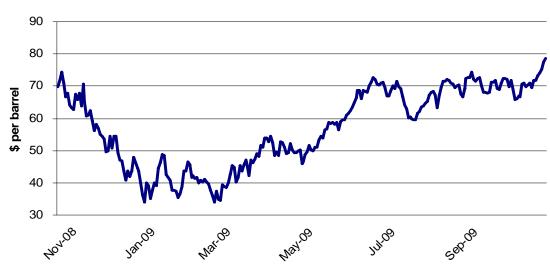
### **Long Term Supply Solutions**

- OPEC increased production
- Non OPEC development
- Unconventional sources
  - ✓ Ultra deep water
  - Oil sands
  - ✓ Oil shale
  - ✓ Coal-to-liquids
  - ✓ Natural gas-to-liquids
- Non-Hydrocarbon alternatives



# Crude Oil Pricing Macro Economic Impact





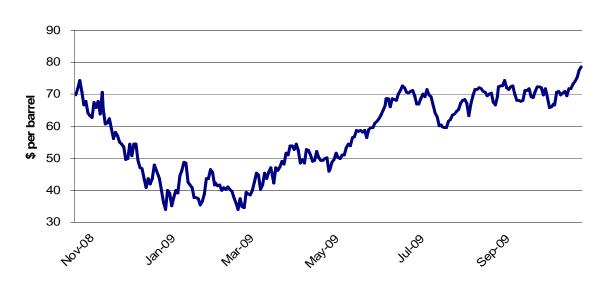
- NYBOT U.S. \$ Index US \$ vs. basket of foreign currencies
- Crude oil is traded in US dollars. The value of the US dollar directly impacts the world price of oil
- Crude oil moves inversely with the US dollar
- Recently crude oil has moved in step with the US stock market
- Commodities, including crude oil, have been & are being used as a hedge against systemic risk & inflation



# Crude Oil Pricing Macro Economic Impact



NYMEX Crude Oil October 2008 - October 2009

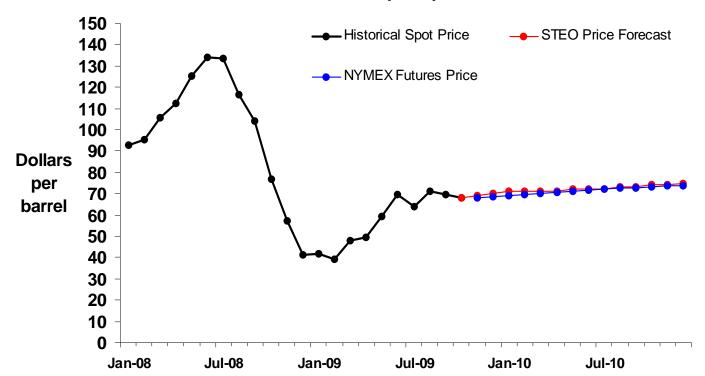


- CRB Index commodities fund index used as benchmark for investment into commodity funds
- 2008 crude oil price run up to \$145
  per barrel was largely attributable
  to a macro economic push out of
  equities & into commodities. CRB
  Index peaked near 480 in July
  2008
- Fed policy support the recent crude oil run
  - Printing money devalues the dollar, increases risk of inflation
  - If successful at stimulating the economy, demand will come back





#### West Texas Intermediate (WTI) Crude Oil Price



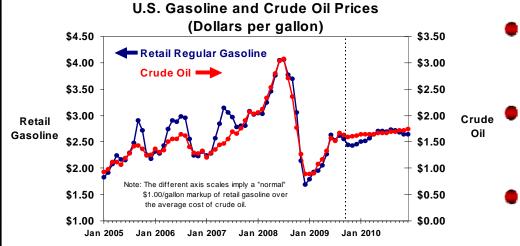
Note: Confidence interval derived from options market information on October 1, 2009

Short-Term Energy Outlook, October 2009

- Crude oil has been trading in the range of \$65 to \$75/barrel over the last 75 days despite an abundance of oil in inventory
- Mid Feb thru late July, crude oil prices increased 103% as the economy showed signs of improvement
- Analysts 2010 forecasts range from \$55 to \$92/barrel
- OPEC actions imply an \$80 to \$100 range based on recent developments

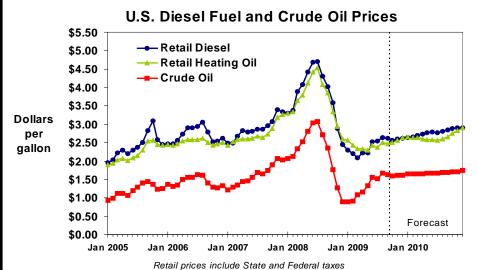


### **Refined Oil Products**



Notes: Crude oil price is refiner average acquisition cost. Retail gasoline price includes State and Federal taxes. Short-Term Energy Outlook, October 2009



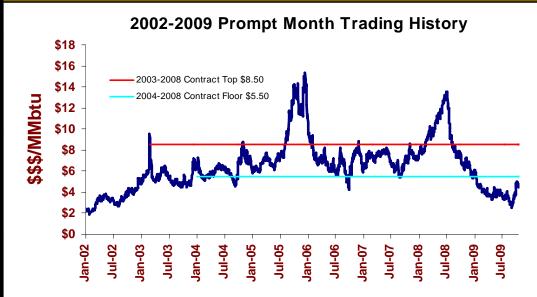


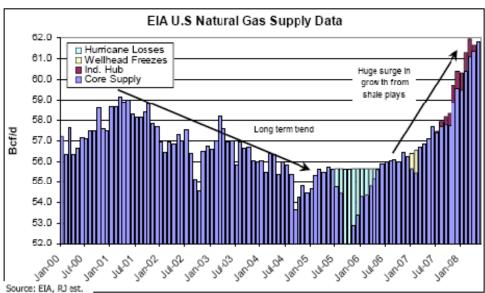
- Total demand is down year on year -- Crude oil and refined product inventories have continued to build to well outside the 5 year norm
  - The market is looking at macro economic variables & ahead to recovery; ignoring the current fundamentals
- \$60 to \$70 per barrel is likely the long term floor vs. Tar Sands & Bio Fuel alternatives
  - Current prices are putting 7.6 M barrels per day (or 50%) of forecasted requirements of new long term supply development at risk (CERA)
- Expect gasoline and distillate (diesel) pricing to follow crude oil
- Refining Capacity Since 1981, refining capacity has declined 9% while demand has increased by 38%



**e**la

## **Natural Gas Basics**





- Natural gas is primarily a North American market & traded on the NYMEX futures market
- Price drivers include:
  - ✓ North American supply/demand
  - ✓ Weather
  - ✓ U.S. economy
  - ✓ Crude oil & LNG influence
  - ✓ Macro economic factors
- 2008 was a prolific year for supply discoveries, US production up 8% yr on yr
- ✓ Independence Hub 1 Bcf per day deep water Gulf of Mexico production
- ✓ Rockies Express Pipeline (REX) 1.5 Bcf per day initial capacity moving Rockies gas east
- Non-conventional shale plays Major source of new on shore natural gas production



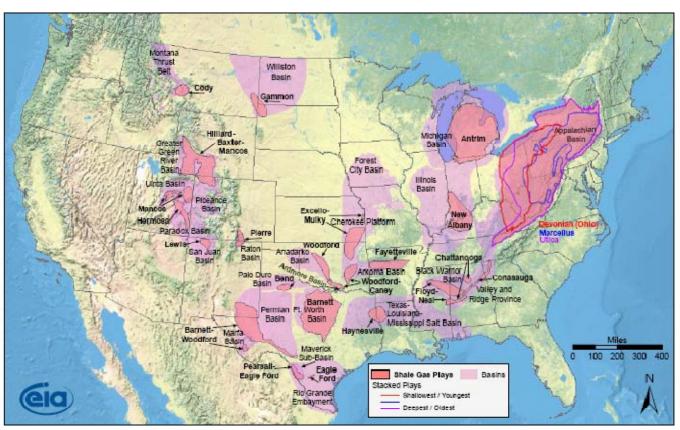


## **Natural Gas Supply Developments**

#### Shale Gas Production

- Estimated potential reserves are huge, biggest development in 20 years
- Cost curves in the \$4 to \$6 per mmbtu range
- Focus has shifted to Haynesville (LA) & Marcellus (Northeast) formations
- Production high grading –
   New shale formations & new horizontal wells are as much as 5 to 3 times as productive
- Will impact regional markets, particularly in the Northeast
- Shale production should allow for a rebound in supply once the supply/demand balance tightens & prices increase

#### Shale Gas Plays, Lower 48 States



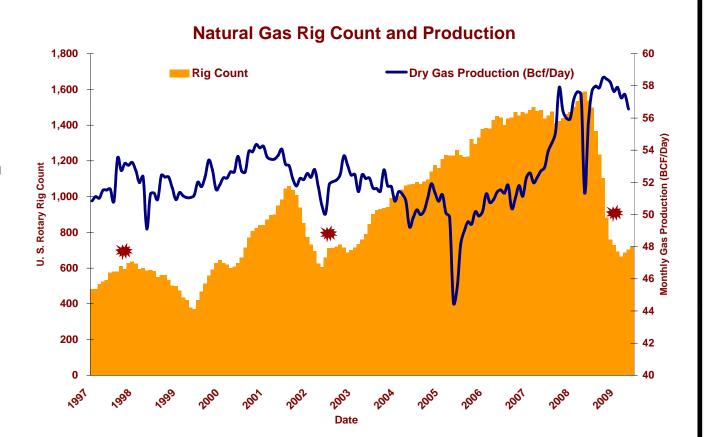
Source: Energy information Administration based on data from various published istudies Updated: May 28, 2009





## Natural Gas Supply Developments

- Natural Gas Rig Count vs. Production
- Peaked at 1,606 rigs in September 2008
- US natural gas rig count appears to have bottomed out in July at 665, down 59% from the peak
- Current natural gas rig count is 721
- Monthly production peaked this Feb at 58.5 Bcf per day, 4% higher than Sept '08 when drilling rig count peaked
- June US production was the first month since last September's hurricane prompted shut ins that production was down year on year from 2008 by 0.54 Bcf per day



> Actual production declines have begun after lagging the drop in rig count; down 2 Bcf per day since Feb





## Natural Gas Demand Developments

#### 2009 Outlook

- Industrial demand destruction
  - ✓ Feb 15% reduction, equivalent to a 3.2 Bcf per day drop in demand
  - ✓ July 2009 YTD industrial demand down 473 Bcf in comparison to 2008
  - ✓ Metals, chemicals & automotive sectors particularly hard hit
- Residential and commercial demand is essentially non-elastic, driven primarily as a function of the weather

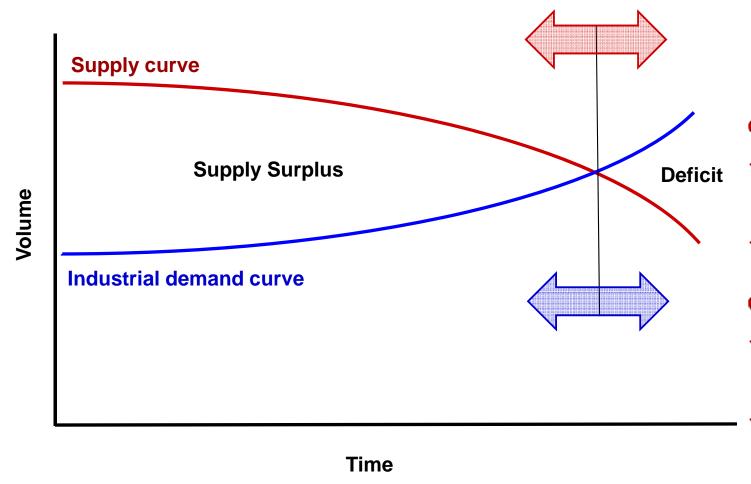


- Weather sensitivity: Residential & Commercial (R&C) heating load
  - ✓ Average winter R&C natural gas demand (2003 2008): 36.6 Bcfd
  - ✓ High (2003/04) R&C season average: 40.3 Bcfd 4.4% greater than the average
  - ✓ Low (2005/2006) R&C season average: 36.1 Bcfd 6.6% less than the average
  - ✓ Impact on storage: plus draw of 205 Bcf or minus draw of 300 over the heating season





# Supply Demand Balance Natural Gas



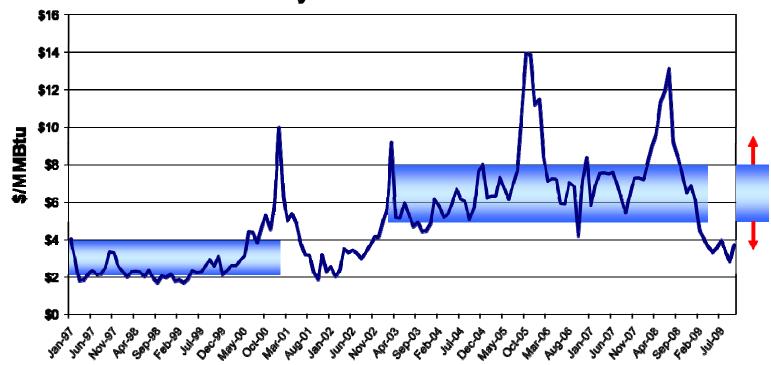
- 2009 market conditions have led to record high natural gas storage, 20% more than normal
- Key variables:
- Timing of production declines in response to lower prices
- ✓ Industrial demand recovery
- EMR outlook:
- Shale plays appear to have pushed out the production declines
- We expect some industrial demand to not come back lessening the overall future demand



## **Natural Gas Price Outlook**

- The good old days are gone!! Don't expect a long term return to \$3 per mmbtu natural gas
- Long term expect NYMEX natural gas to trade in the \$5.50 to \$8.50 per mmbtu range

#### NYMEX Last Day Settle June 1990 - October 2009



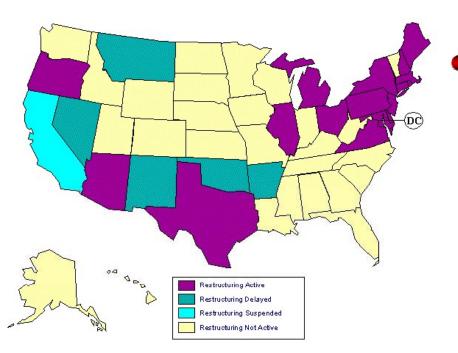
- Current NYMEX pricing 10/19/09 (\$/mmbtu)
- ✓ Prompt month \$4.835
- ✓ 12 month strip \$6.02
- ✓ 2010 strip \$6.31
- ✓ 2011 strip \$7.02

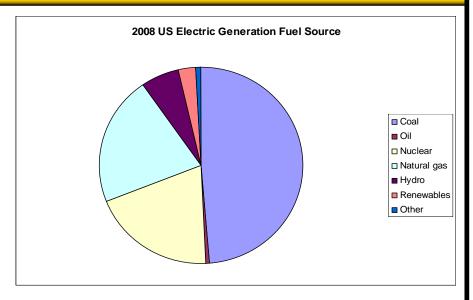


## **Electricity Basics**

#### Electric market fundamentals:

- ✓ Regional delivery system requires instantaneous supply to meet demand, no storage technology
- ✓ Generation mix significant driver of retail rates and long term concerns driven by environmental & global warming issues
- ✓ The US electricity grid is aging & needs continued investment





### Electric Deregulation

- ✓ Started in late 1990's
- ✓ Fragmented due to regulatory structure & industry vertical ownership
- ✓ Wholesale power markets have evolved through the development of Independent System Operators (ISO) & Regions Transmission Operators (RTO)
- ✓ Electricity market pricing is heavily influenced by natural gas pricing

Energy

Management

Resources

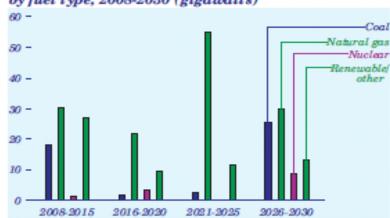
## **Electricity Market Developments**

- Slowing market growth increases (1%/yr)
- Competitive market developments
  - ✓ Michigan limited competitive pricing
  - ✓ Pennsylvania PPL 2010, others in 2011
  - ✓ Ohio
  - ✓ California
- Regulatory Activities
  - ✓ Smart Grid
  - Energy Conservation/Rate De-Coupling
  - Environmental activism, state mandated renewables
- Carbon Cap & Trade
  - ✓ Federal Legislation in process
  - ✓ Implementation will increase electric generation cost

Figure 54. U.S. electricity demand growth, 1950-2030 (percent, 3-year moving average)



Figure 56. Electricity generation capacity additions by fuel type, 2008-2030 (gigawatts)

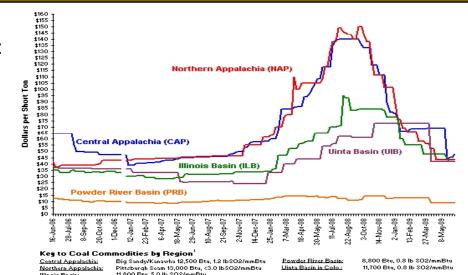




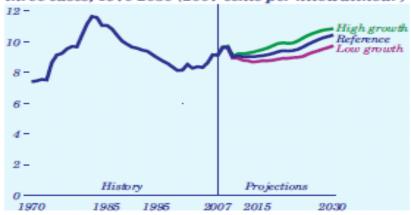


## **Electricity Price Outlook**

- Wholesale generation prices will be dependent upon:
  - ✓ Utility generation mix & underlying fuel source pricing
  - ✓ Regional market hub pricing
  - ✓ Cap & Trade
- Transmission/Distribution
  - Shift from regional structure to national grid
  - Expanding use of renewable resources
    - Example: Wind energy & T Boone Pickens plan
  - ✓ Aging transmission grid
- Price outlook
  - ✓ Short term, expect softening in prices reflective
    of lower fuel costs
  - ✓ Long term, expect fuel costs increases and infrastructure investments to drive prices higher by 1 to 3% per year on average, with some local increases much higher (10 to 30%)











# Questions/ Contact Information for Follow Up

### **Questions**

# Contact Information for Follow Up Rich Rogers

Vice President Sales & Marketing 816-883-1018

rrogers@emr-energy.com

Client Confidential – For use by EMR Clients only. This Update is provided for informational and discussion purposes only. The contents are not intended to be used as investment advice or recommendations of any buy or sell strategies. The information contained herein is believed to be reliable, but EMR does not represent that it is complete or fully accurate. Clients should use the information in this Update as a part of an independent analysis of the market.

