Arclin®
Performance Applied

TAPPI's B&IM Committee

Spring Meeting

May 20, 2010
Savannah, GA

Raw Materials (Methanol and Urea) Review and Outlook

Reed Singleton

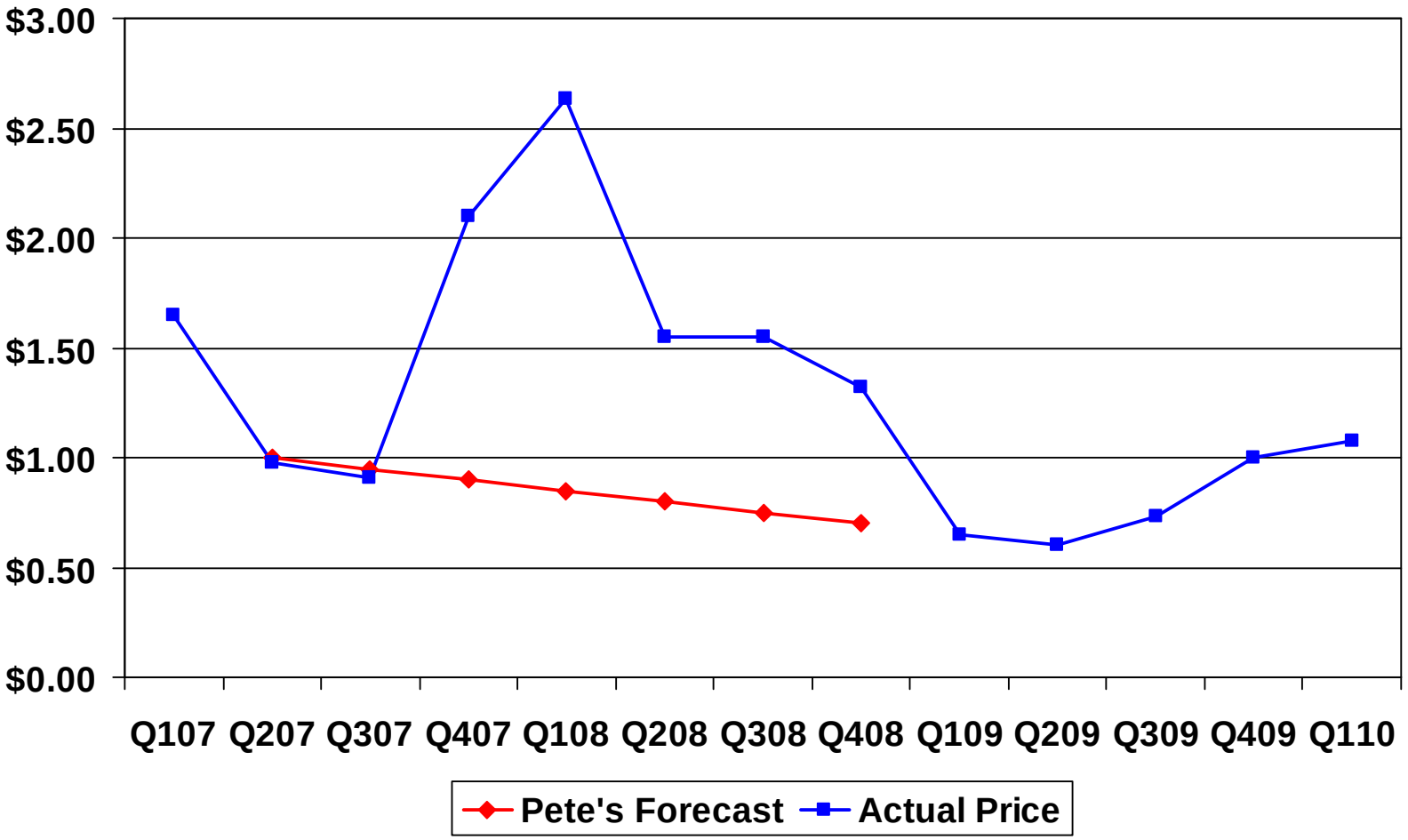
E·Gen™

Review

Pete Wallace

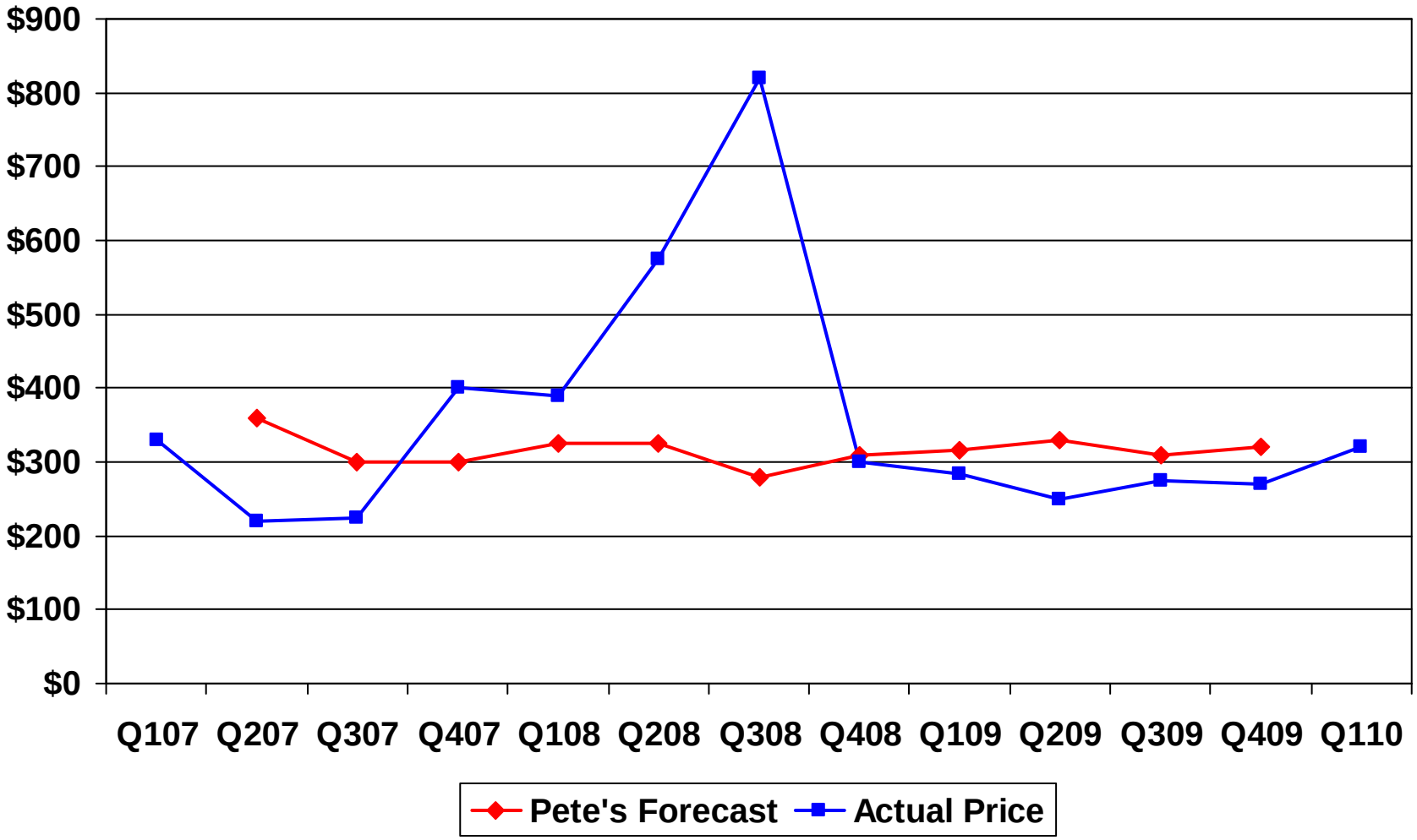
Methanol

FOB US Gulf Coast - $/gal



Urea

NOLA - $/ST


$900
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Q107
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Q407
Q108
Q208
Q308
Q408
Q109
Q209
Q309
Q409
Q110
Pete's Forecast
Actual Price

Urea/Formaldehyde Resin Review

- **To make a 45,000 lb tank truck of a typical 65% UF resin requires:**
  - **Approximately 31,500 lbs of 50% formaldehyde (requires approximately 19,000 lbs of methanol)**
  - **Approximately 20,000 lbs of granular urea, or 10 short tons.**

Formaldehyde

Supply Chain for Methanol/Formaldehyde

- **Natural Gas (Methane)**
- **Natural Gas Reacted to form Methanol.**
- **Methanol Reacted to form Formaldehyde.**
  - **The driver on formaldehyde pricing is methanol.**

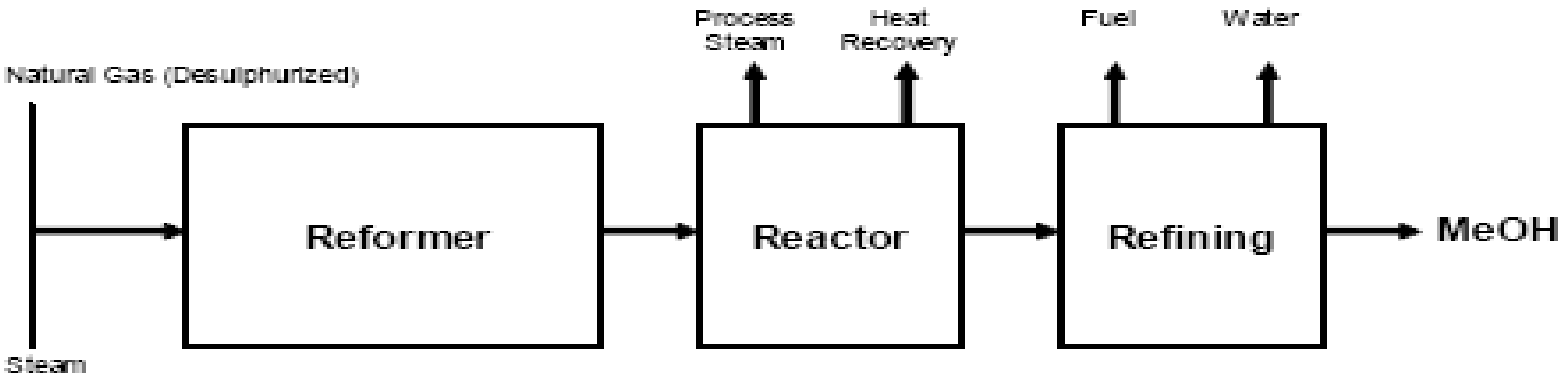
Methanol Overview

- Production & Uses
- Supply/Demand
  - Global
  - North America
  - Expansion and Rationalization
- Price History and Outlook

Methanol production

JJ&A/MMSA World Methanol Study 2008

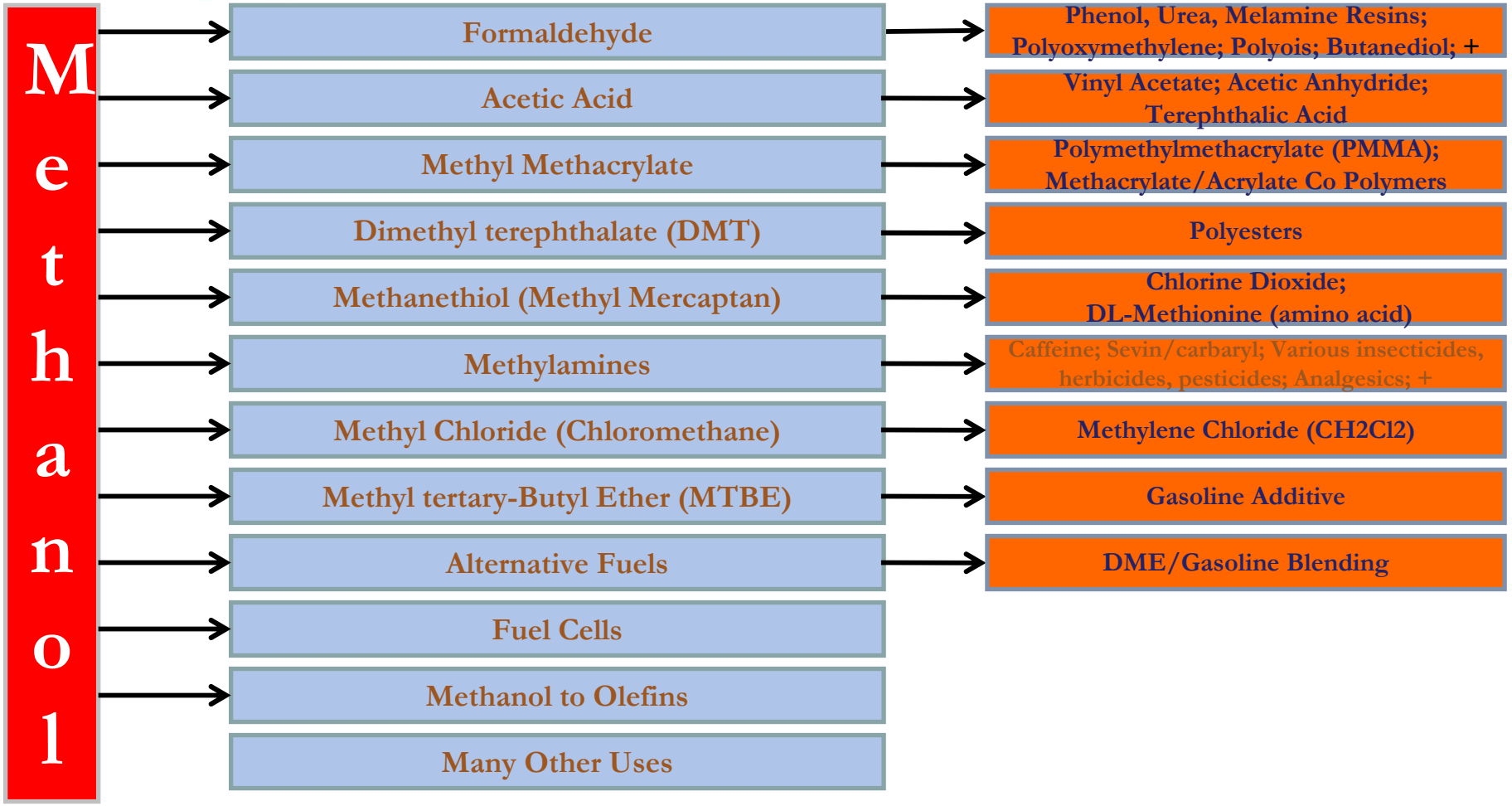
Simplified Methanol Flow Diagram



Methanol

- **Feedstock**
  - Natural Gas and Coal
- **Primary Markets**
  - Formaldehyde, widely used to make resins and other chemicals
  - Methyl-tert-butyl-ether (MTBE), used as a gasoline oxygenate
  - Acetic Acid
  - Methyl Amines
  - Windshield washer fluid
  - Energy applications
  - Other chemicals
- **Primary Cost Drivers**
  - Supply/Demand
  - Energy Costs

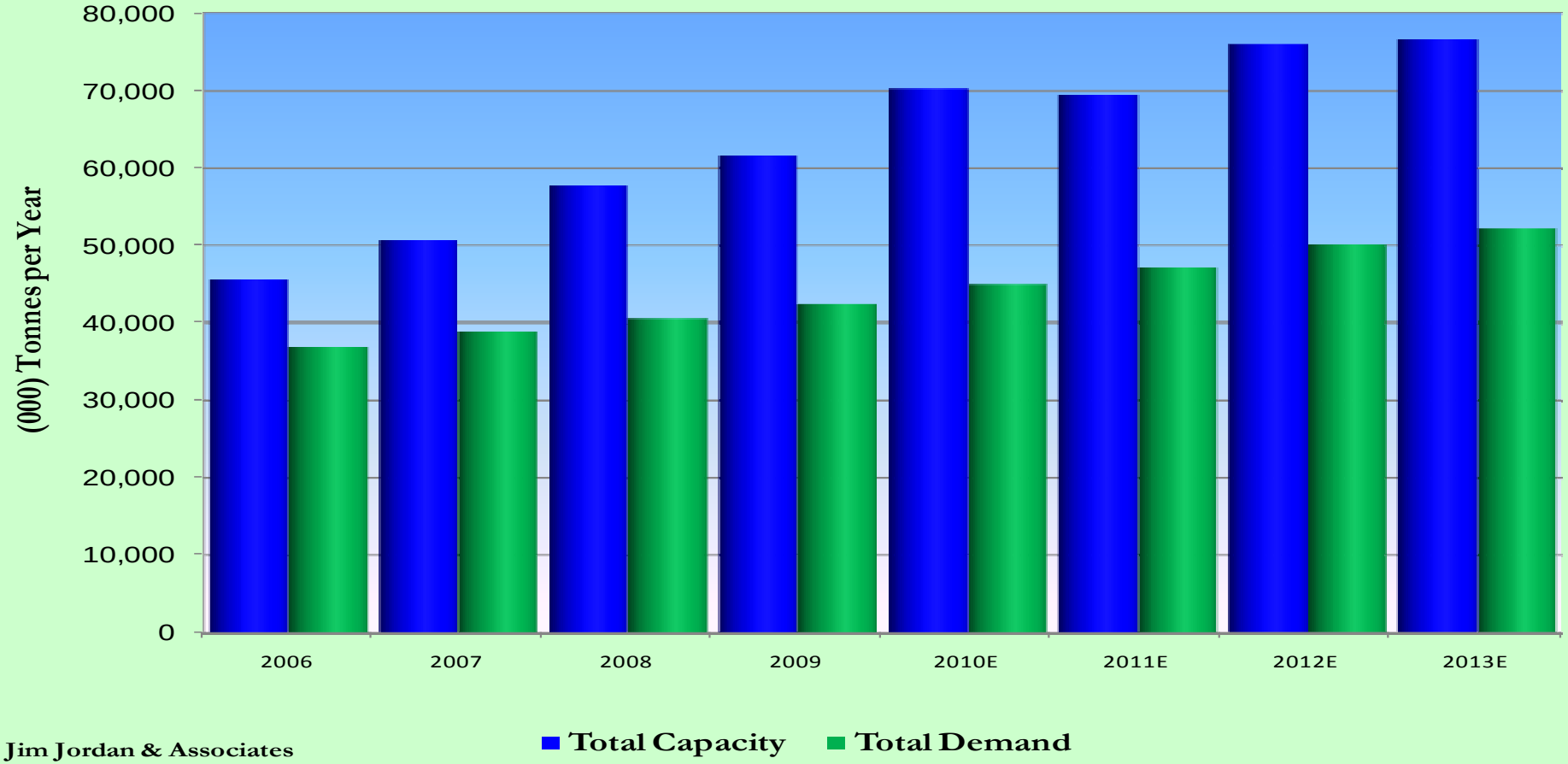
Methanol and Its Uses



Global Supply & Demand

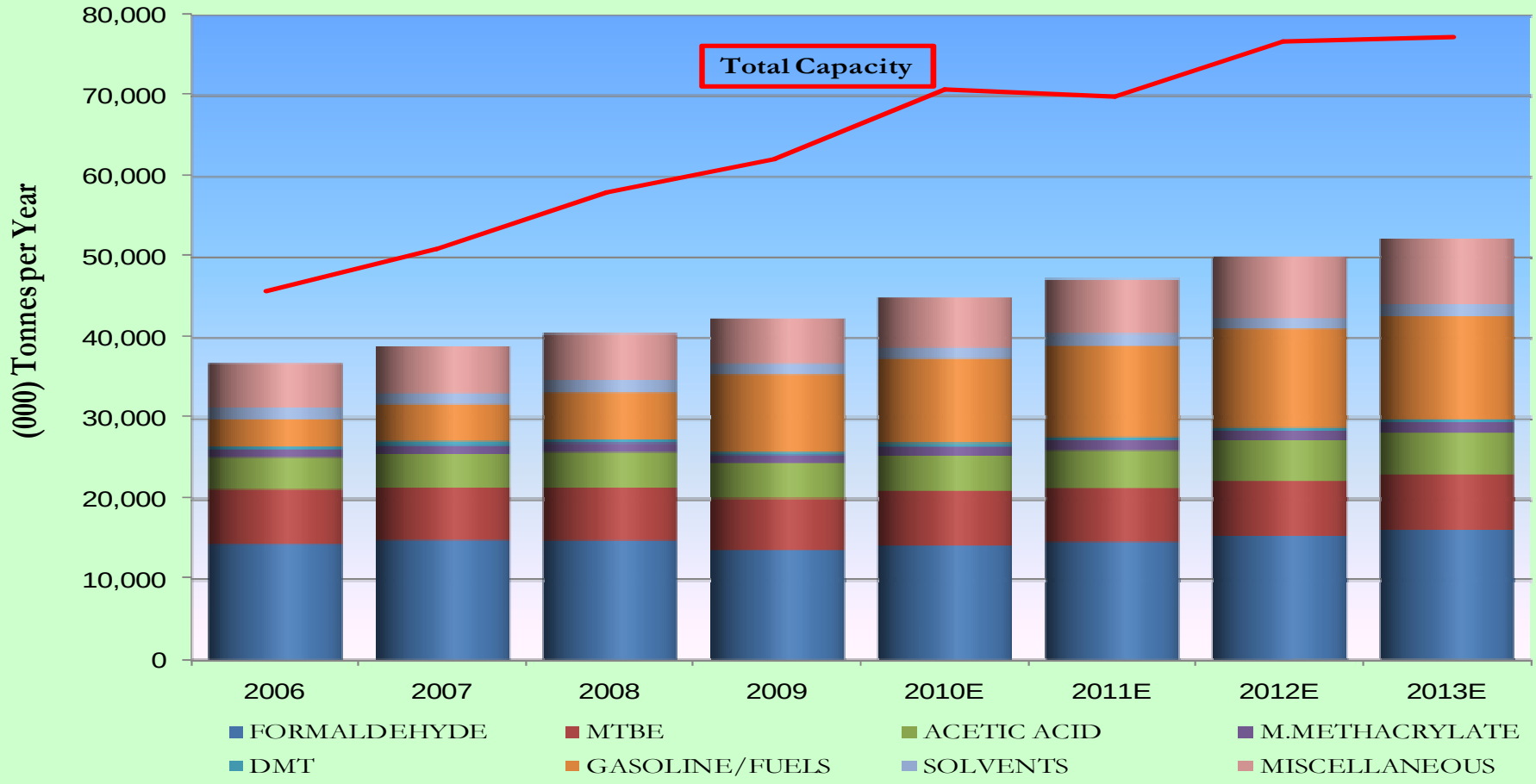
- Global demand is returning from the 2009 low
- Supply still growing, but potential exists for significant rationalization of high-cost production
- Biggest demand
  - Construction applications
  - Automotive
  - Energy applications increasing in importance

World Methanol Capacity vs Demand



Jim Jordan & Associates

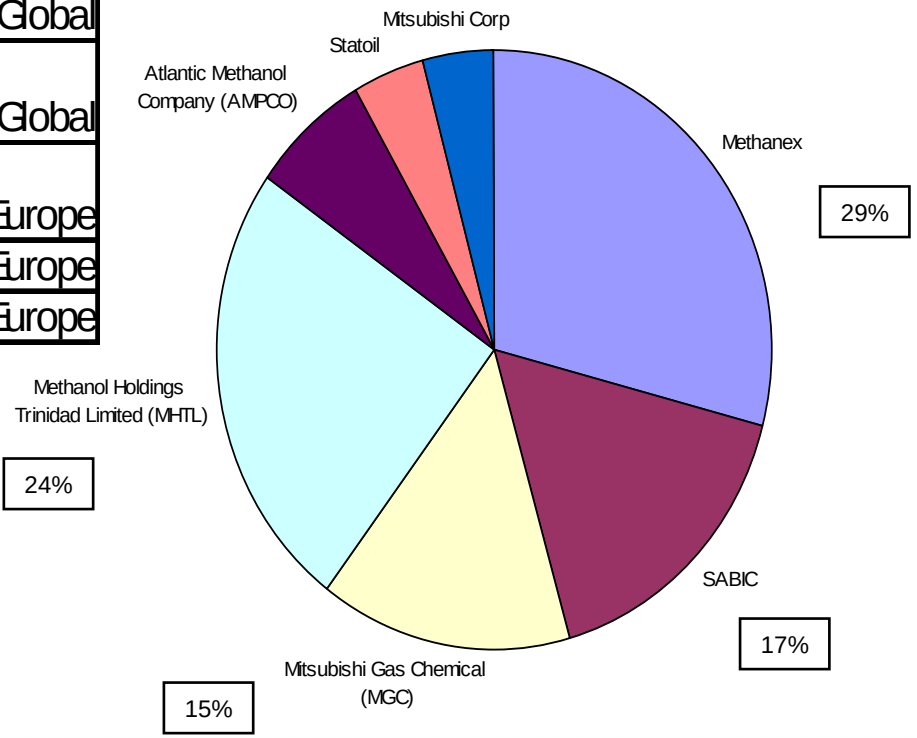
Methanol Demand in the World



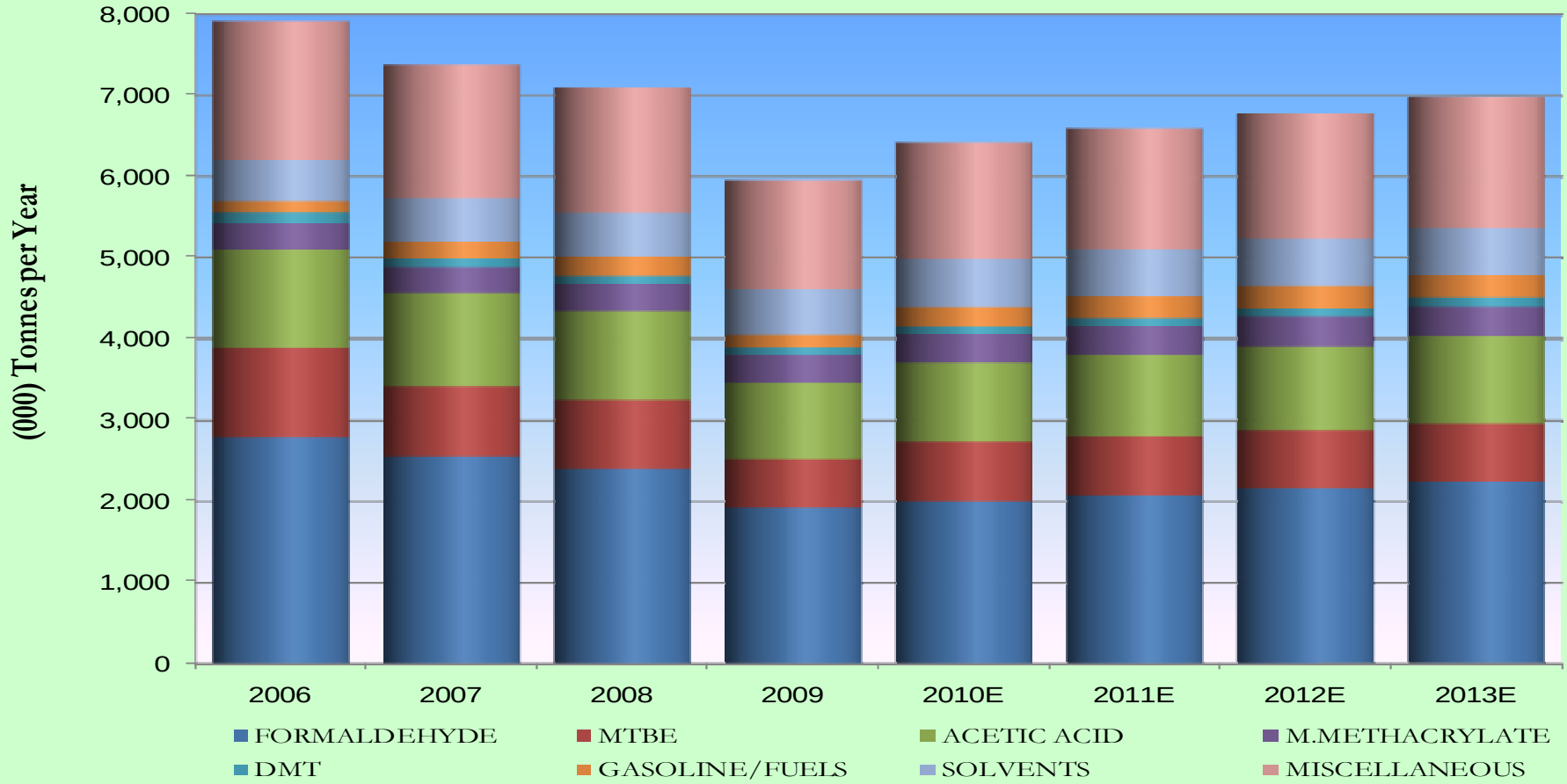
Jim Jordan & Associates

Marketing leaders (exclusive of China)

Company	Marketing capacity (mm mt)	Primary supply region
Methanex	6	Global
SABIC	3.4	Europe and Asia
Mitsubishi Gas Chemical (MGC)	3.0	Global
Methanol Holdings Trinidad Limited (MHTL)	5.0	Global
Atlantic Methanol Company (AMPCO)	1.4	NA and Europe
Statoil	0.9	Europe
Mitsubishi Corp	0.8	NA and Europe



Methanol Demand in North America



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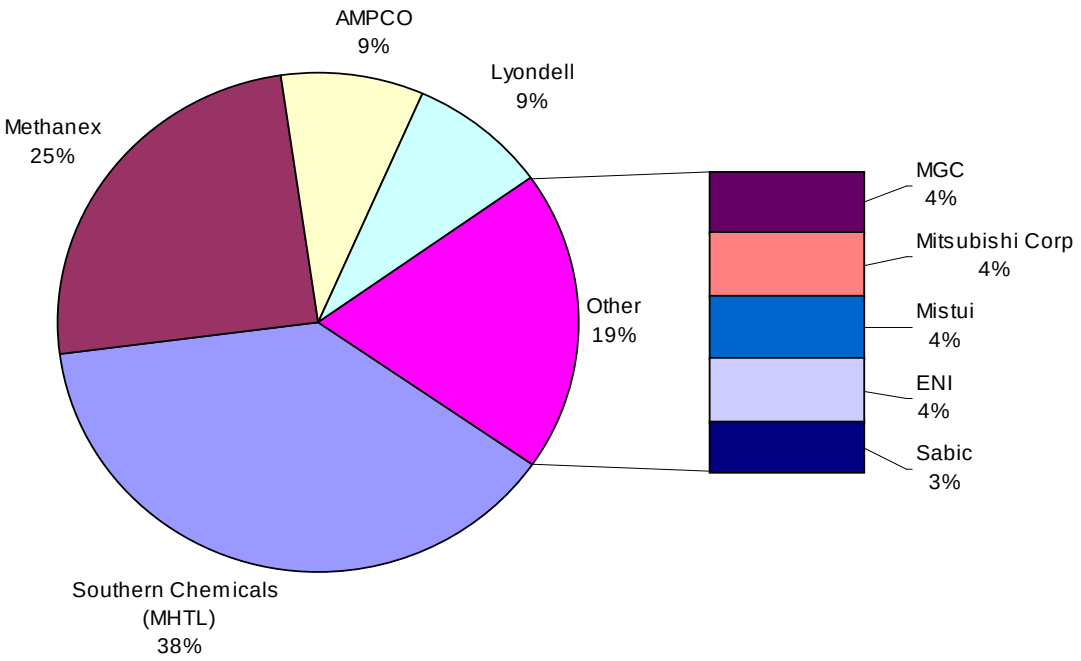
North American Methanol Supply (major)

Company	NA supply (mm mt)
Southern Chemicals (MHTL)	2.35
Methanex	1.55
AMPCO	0.55
Lyondell	0.53
MGC	0.25
Mitsubishi Corp	0.25
Mistui	0.25
ENI	0.25
Sabic	0.20



Capacity Expansions

METHANOL EXPANSION FORECAST 2009-2012

(000 Metric Tons)

Projects Approved or Under Construction

Name	Location	Ownership	Capacity	Timing
Brunei Methanol Company	Brunei	MGC/Itochu/Brunei Nat	850	Q2 2010
Methanex/Others	Egypt	Methanex/Others	1,300	Q2 2010
Salalah Methanol	Oman	Oman Oil	1,000	Q2 2010
Metor	Venezuela	MGC/Mitsubishi Corp/PDVSA	1,000	Q2 2010
AzMeCo *	Azerbaijani	Azerbaijani Methanol Company	720	Q1 2011
China	Various	Various	12,000	2010-2012
		Total	16,870	

* The Azerbaijani plant scheduled for 2011 is a relocation of the former Celanese Plant from Edmonton, Canada.

Jim Jordan & Associates, LP

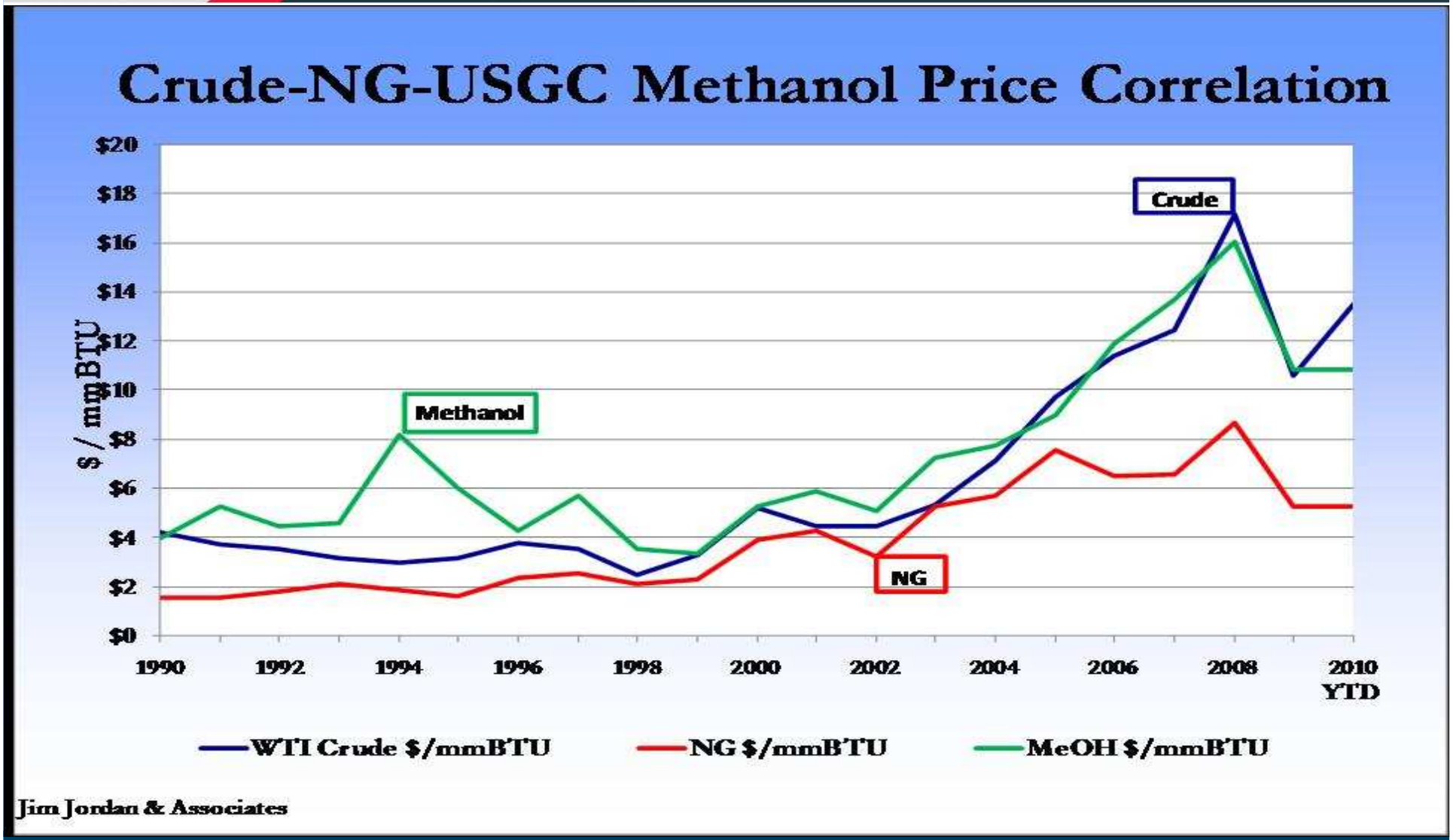
Methanol pricing

Methanol price posting agencies*

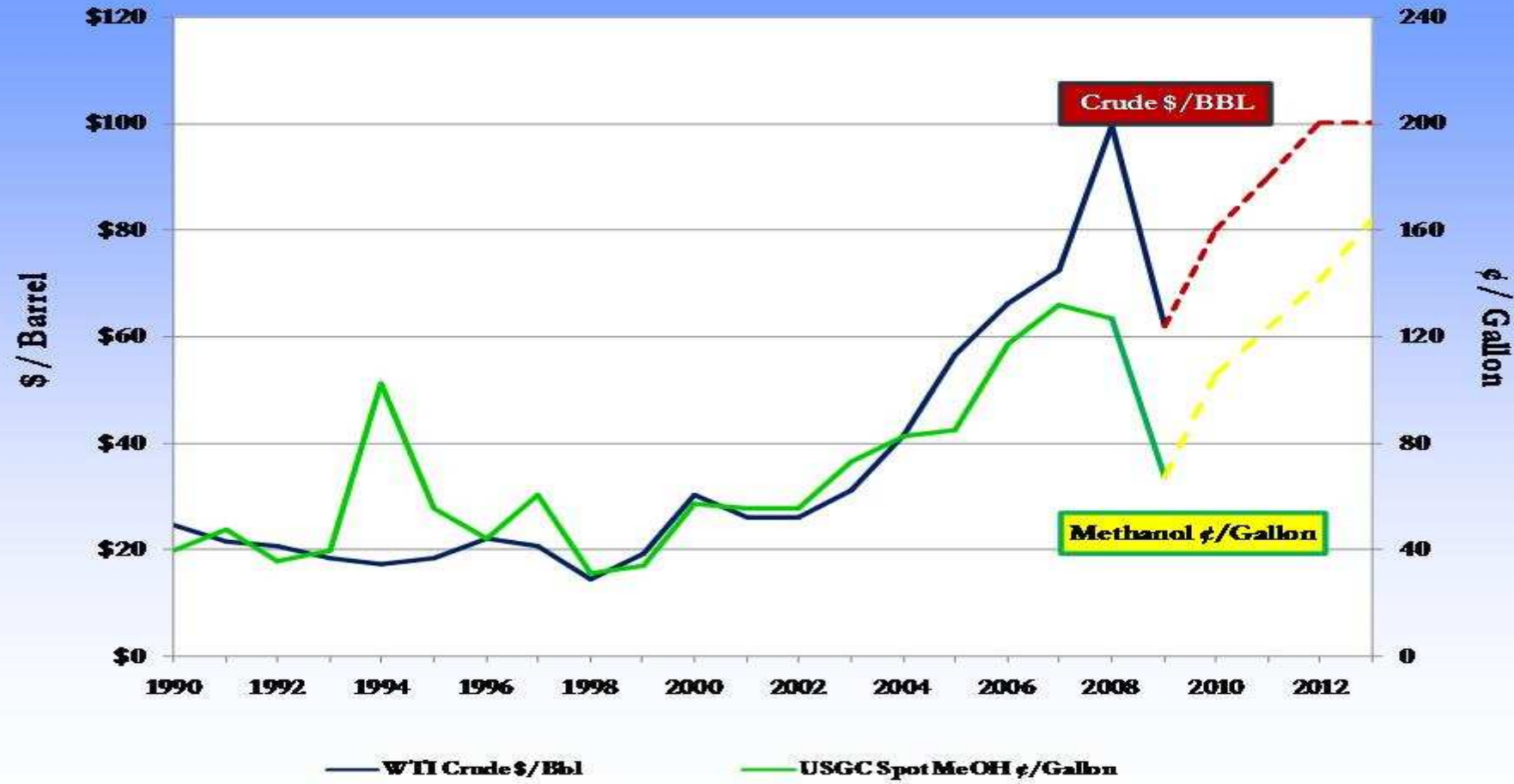
- **Jim Jordan & Associates (JJ&A)**
- **Chemical Market Associates, Inc (CMAI)**
- **Chemical Data (ChemData)**
- **ICIS**

*Third party, unbiased agencies

Energy Factor Relationship



Crude-Methanol Price
2009-2012 Forecast



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US Gulf Coast Estimated Contract in Barges

Methanol Price Forecast

(US Gulf Coast Estimated Actual Contract in Barges)

JJ&A — US Cents per Gallon — 22-Apr-10

	2009	2010	2011	2012	2013	2014	2015
1st Quarter	$0.58	$0.94					
2nd Quarter	$0.54	$0.88					
3rd Quarter	$0.61	$0.70					
4th Quarter	$0.86	$0.60					
AVERAGE FORECAST	$0.65	$0.78	$0.70	$1.10	$1.30	$1.20	$1.10
Upside Forecast		$0.86	$0.77	$1.21	$1.43	$1.32	$1.21
Downside Forecast		$0.70	$0.63	$0.99	$1.17	$1.08	$0.99

Conclusions

- Methanol is a building block for many products
- North American supply controlled by 2-3 suppliers
- Current oversupply of methanol
- Entering extended period of price stability
- Energy applications increasingly important

Urea

Urea Basics

- Synthesized from Ammonia and Carbon Dioxide
- High Nitrogen Content (46%)
- Used as Prills, Granular, or in Solution
- Globally traded (ease of transport)
- Main trading Hubs – The Black Sea and the Middle East
- Long-term Demand Growth
- Energy Intensive Production (energy = approx. 90% of production cash costs)

Urea

- **Feedstock**
  - Natural Gas
- **Primary Markets**
  - 90% of urea is used in the fertilizer industry
  - Used to make melamine and urea formaldehyde resins
  - Used in the reduction of Nitrogen Oxide emissions
- **Primary Cost Driver**
  - Natural Gas
- **Supply and Demand**
  - World production approximately 140 million MT's
  - Traded material approximately 33 million MT's

Nitrogen Fertilizer/Urea Market Drivers

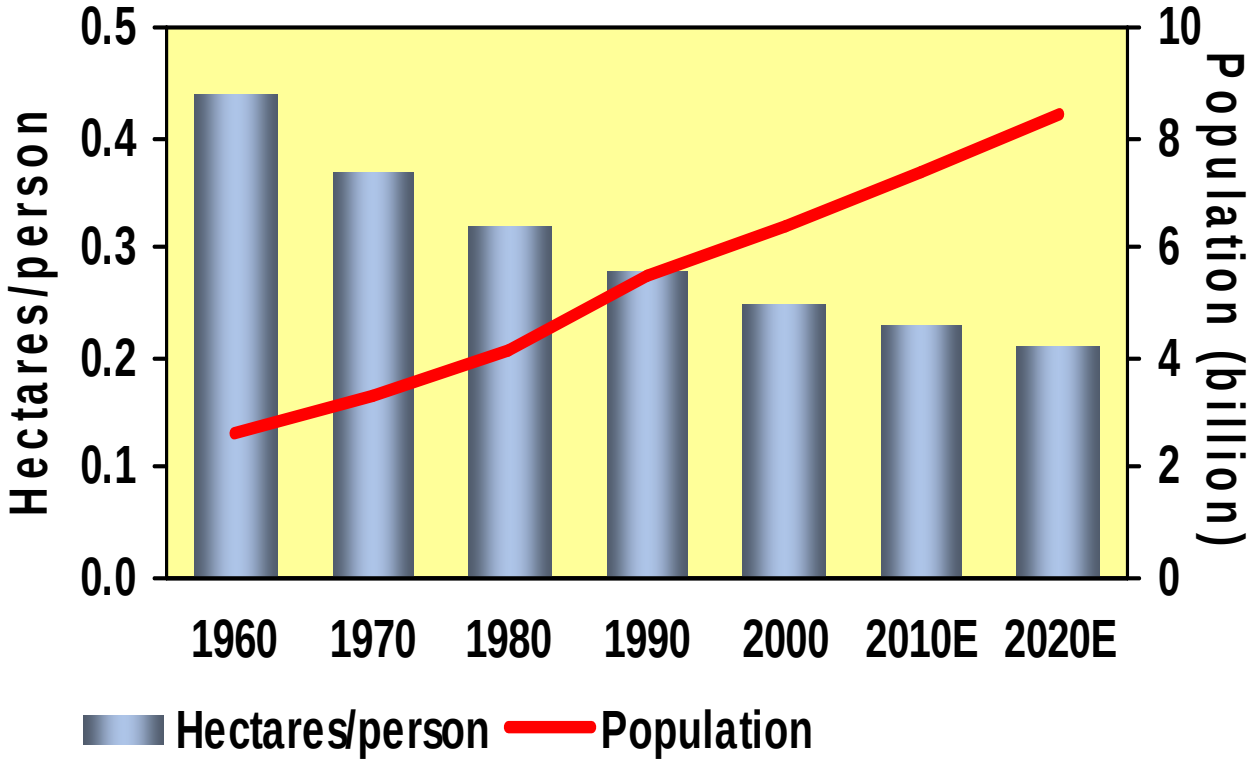
	Drivers		Effect on
Revenue Drivers	US / European gas prices	→	Supply-driven price for urea
	Grain inventories/prices	→	Urea demand
	New urea capacity vs. closures	→	Urea supply
	Global urea demand vs. supply	→	Urea price (above floor)
	Urea price	→	Most other nitrogen fertilizer prices
Cost Drivers	Oil product prices	→	Gas cost in Europe
	Manning and maintenance	→	Fixed cost
	Productivity and economies of scale	→	Unit cost

Urea Demand

Drivers for Increased Nitrogen/Urea Consumption

- Fertilizer consumption
  - Population growth
  - Economic growth
    - More meat consumption in developing countries
    - Focus on diets rich in proteins
    - More fruit and vegetables
    - Reduce hunger
  - Biofuels (continues to grow)

Increasing population and reduced land available for food production per capita



Very limited potential to increase farmable land

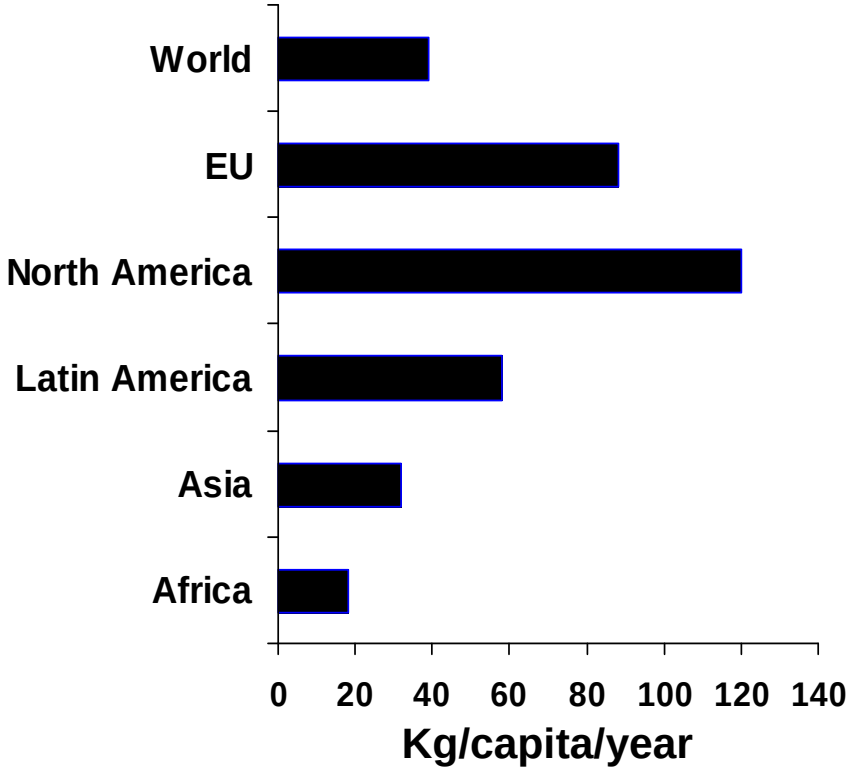
Improved living standards increase protein consumption per person, requiring more grain for animal feed

The only solution is to increase agricultural productivity

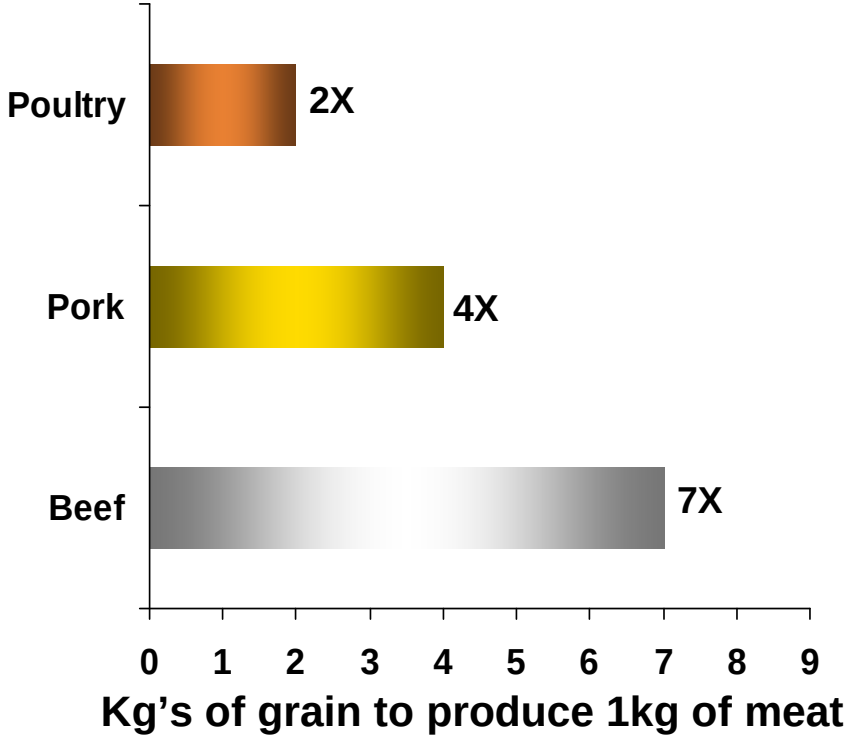
Source: IFA, Worldmarkets.com

Higher demand for meat requires more feed grain

Significant potential for increasing meat consumption in emerging countries



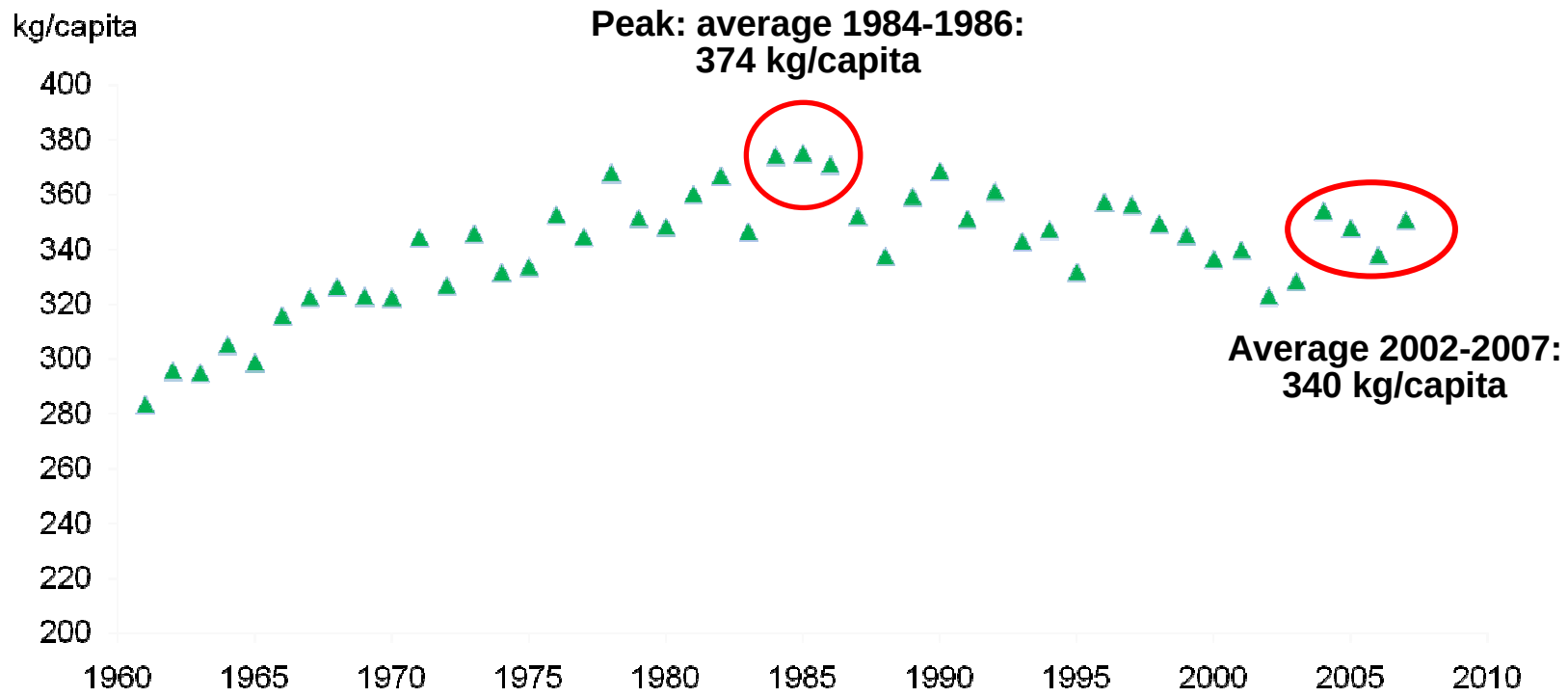
Feed grain multipliers for meat production



Source: FAO

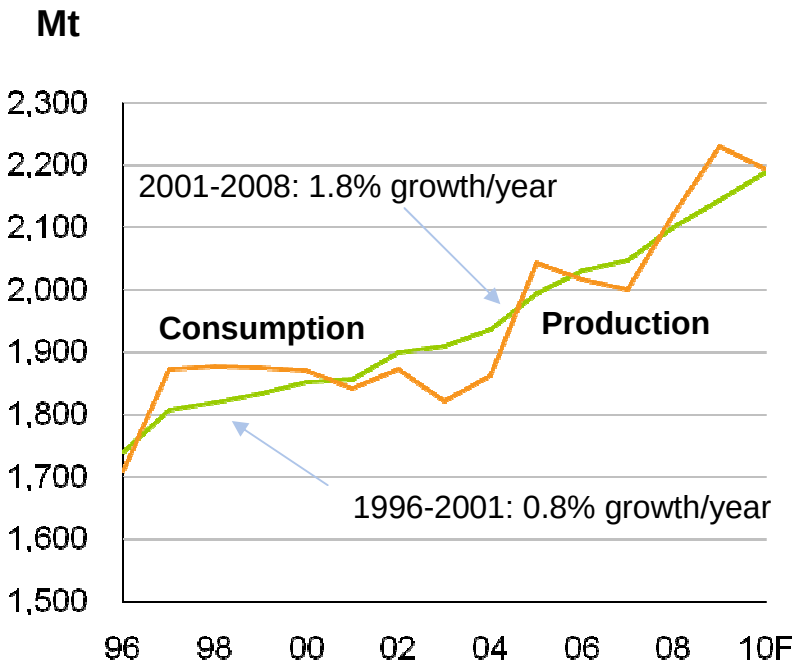
Solution (as I see it)

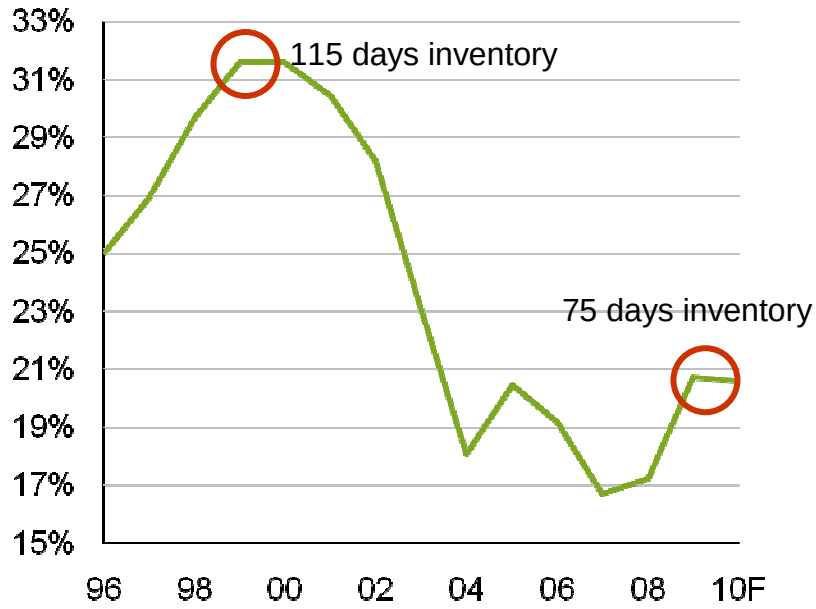
Cereal grain production per capita lower today compared to the 80s



Source: FAO (cereal production) and UN (population)

Current grain stocks up last two years, but still low

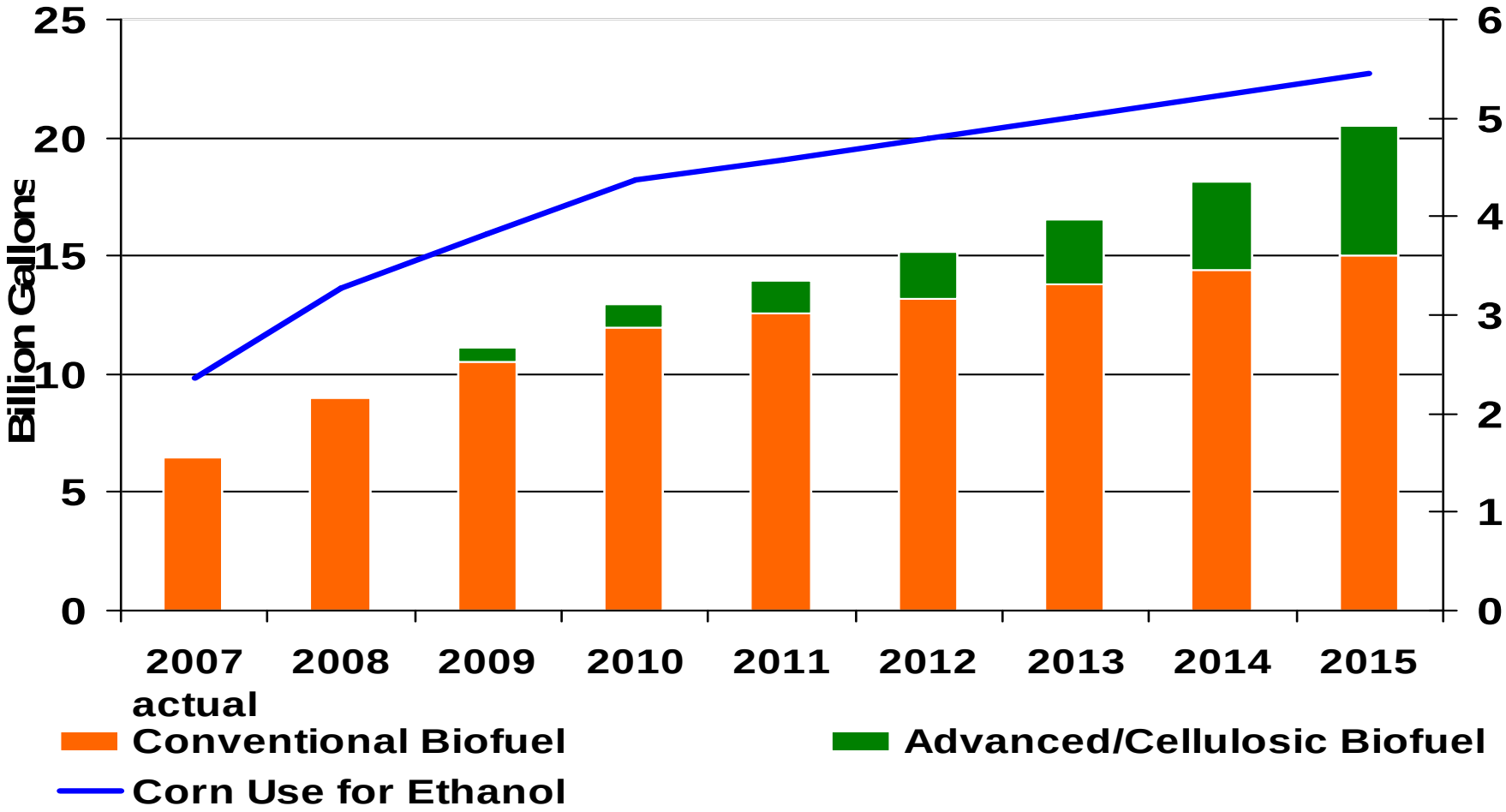




Source: USDA, September 2009

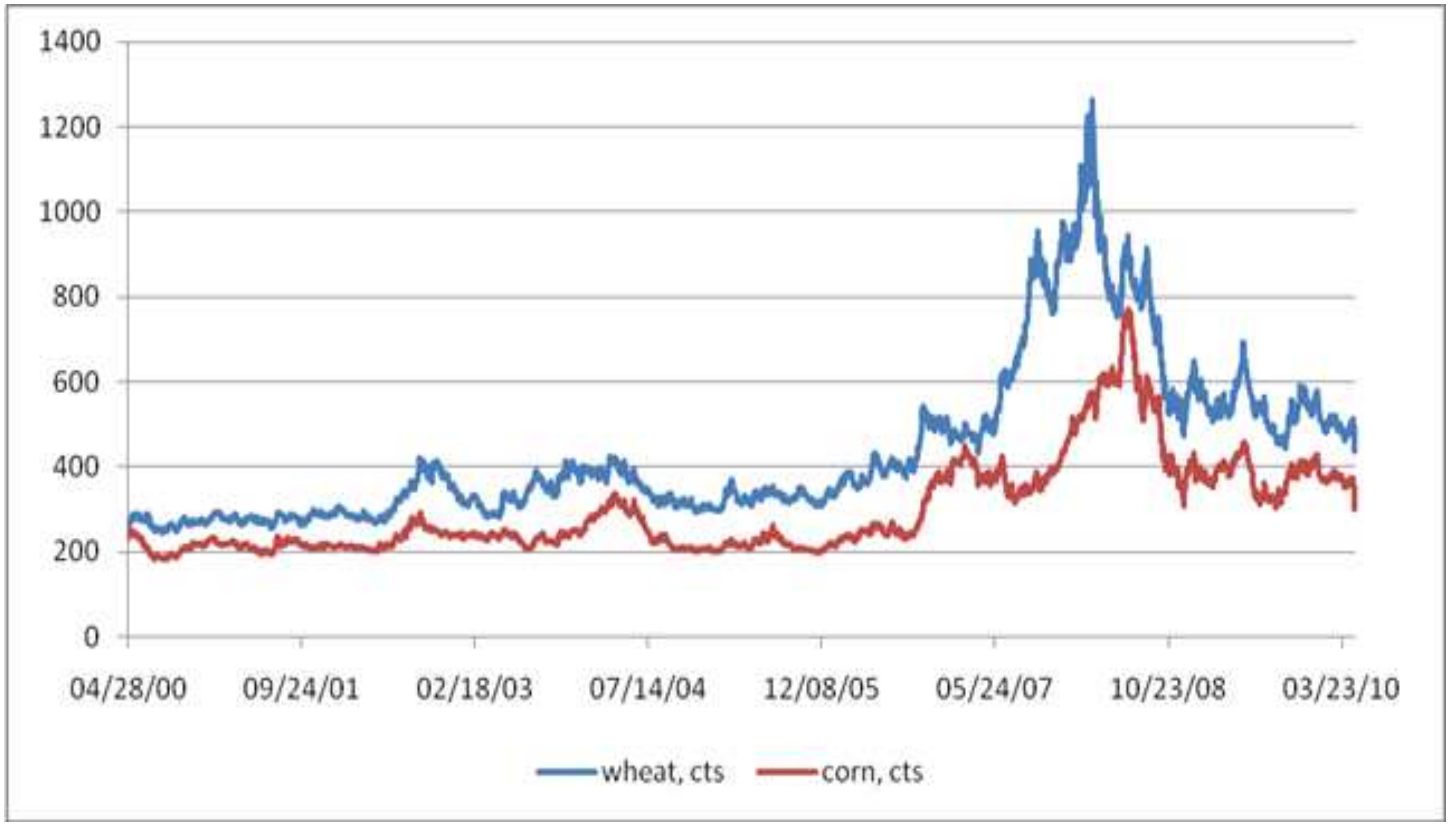
U.S. Renewable Fuels Standard

- Corn used for ethanol in 2010/2011 crop year, 4.3 billion bu. vs. 3.63 billion bu. In 2009/2010 crop year (per U.S.D.A.)

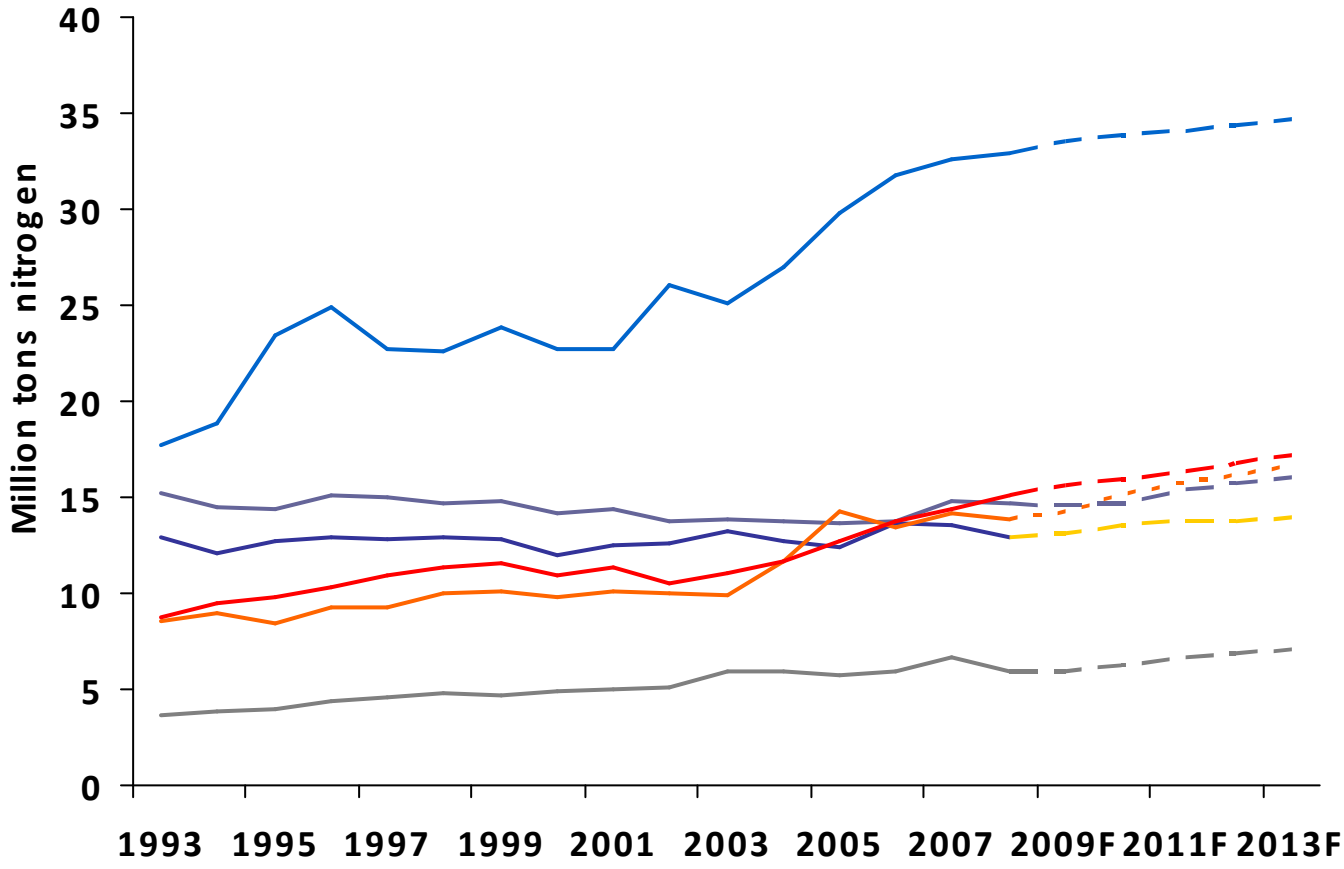


Source: Renewable Fuels Association

U.S. Historic Grain Prices



Nitrogen consumption in key regions



China: 1.1% per year

India: 2.6% per year

Rest of Asia: 3.8% per year

Europe: 1.8% per year

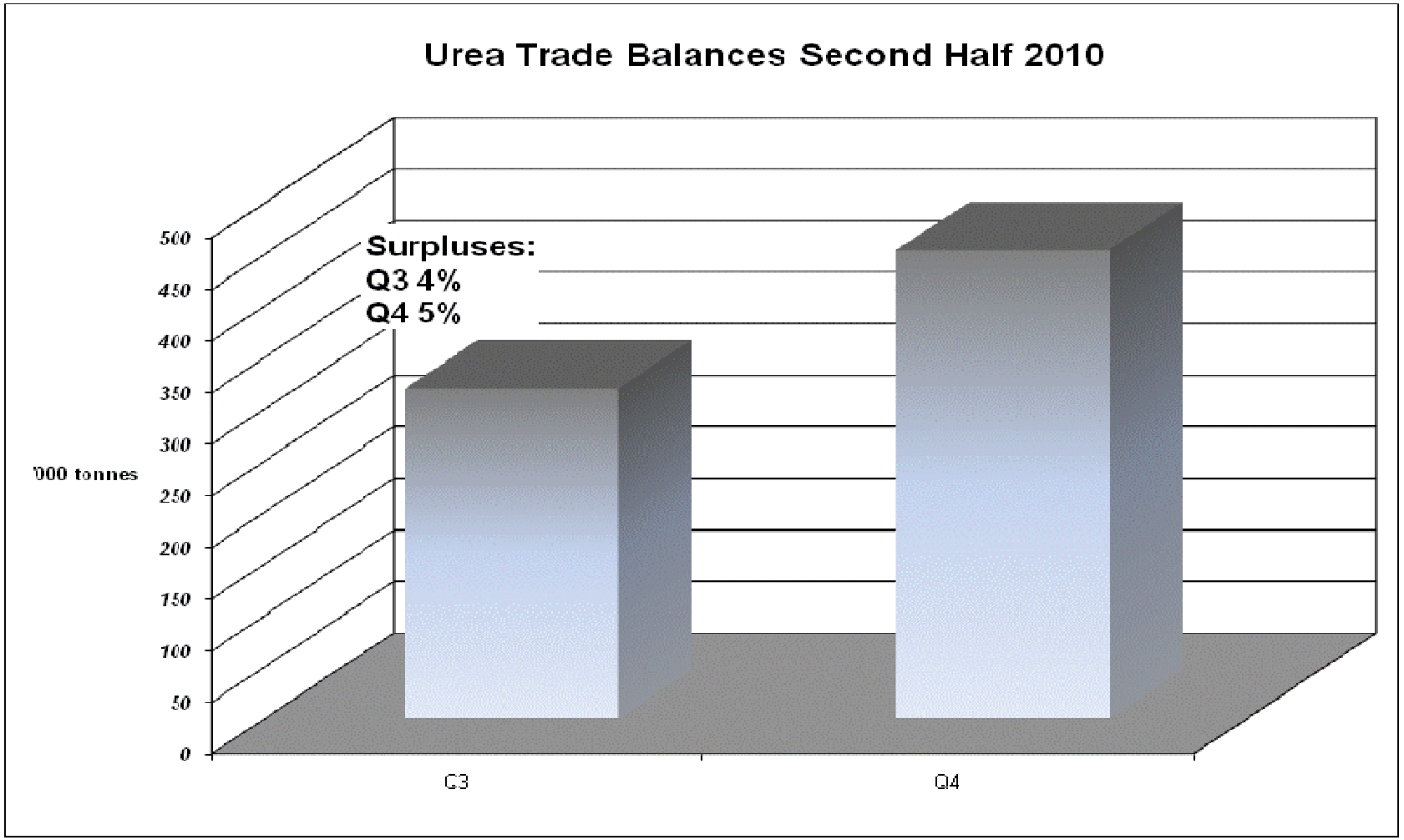
North America: 1.7% per year

Latin America: 3.0% per year

Source: IFA

Urea Supply

2H 2010 – Trade Balance

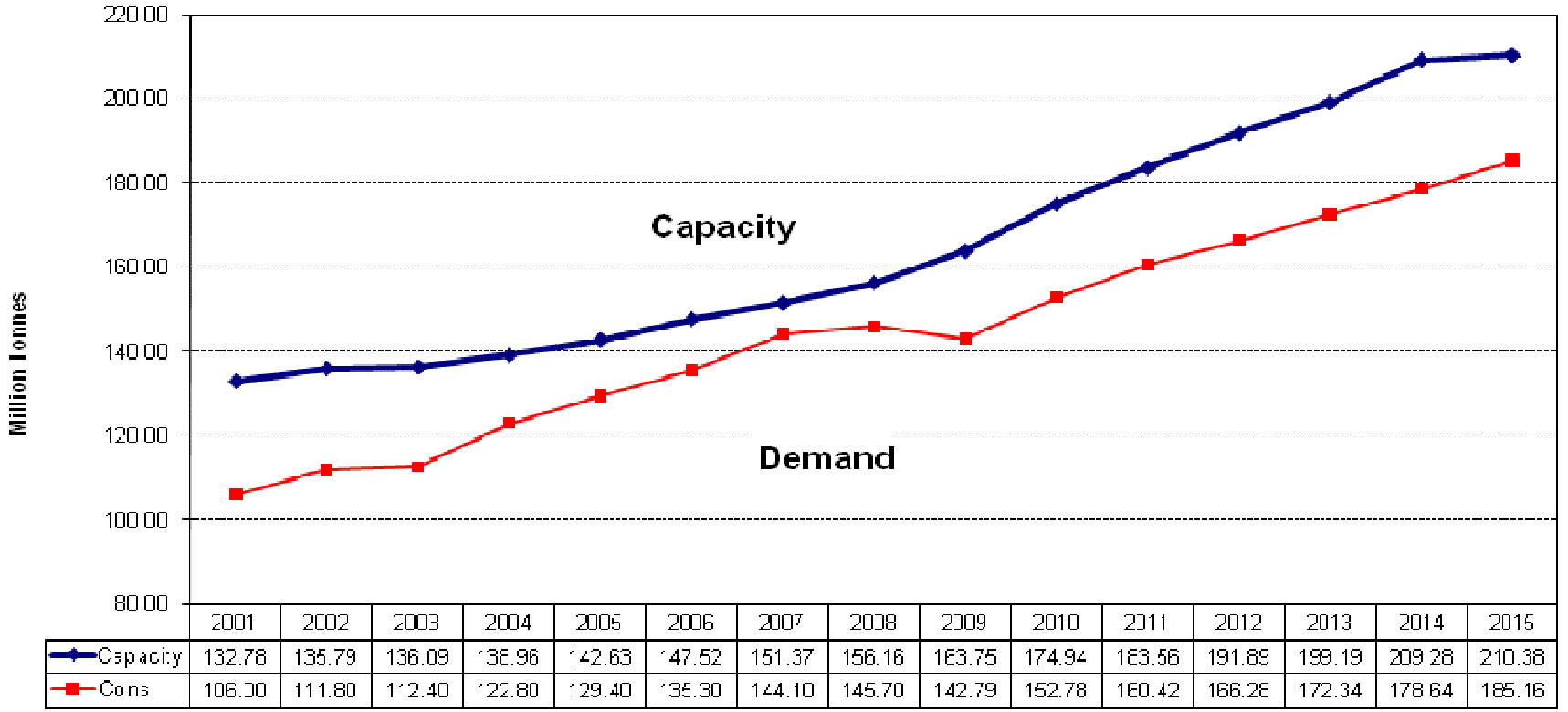


Expected New Capacity

Year	Global Urea Capacity Growth Estimate*		Driving Regions	
	World	Excluding China	World	Ex. China
2008	2.2%	1.6%	China 55% Iran 25%	Iran 56% Egypt 26%
2009	5.9%	2.2%	China 77% Oman 7%	Oman 30% Turkmen. 17%
2010	7.6%	4.5%	China 65% Iran 8%	Iran 23% Pakistan 21%
2011	5.0%	2.8%	China 68% Qatar 12%	Qatar 37% Pakistan 21%
2012	3.9%	4.7%	China 32% Algeria 22%	Algeria 32% Vietnam 27%

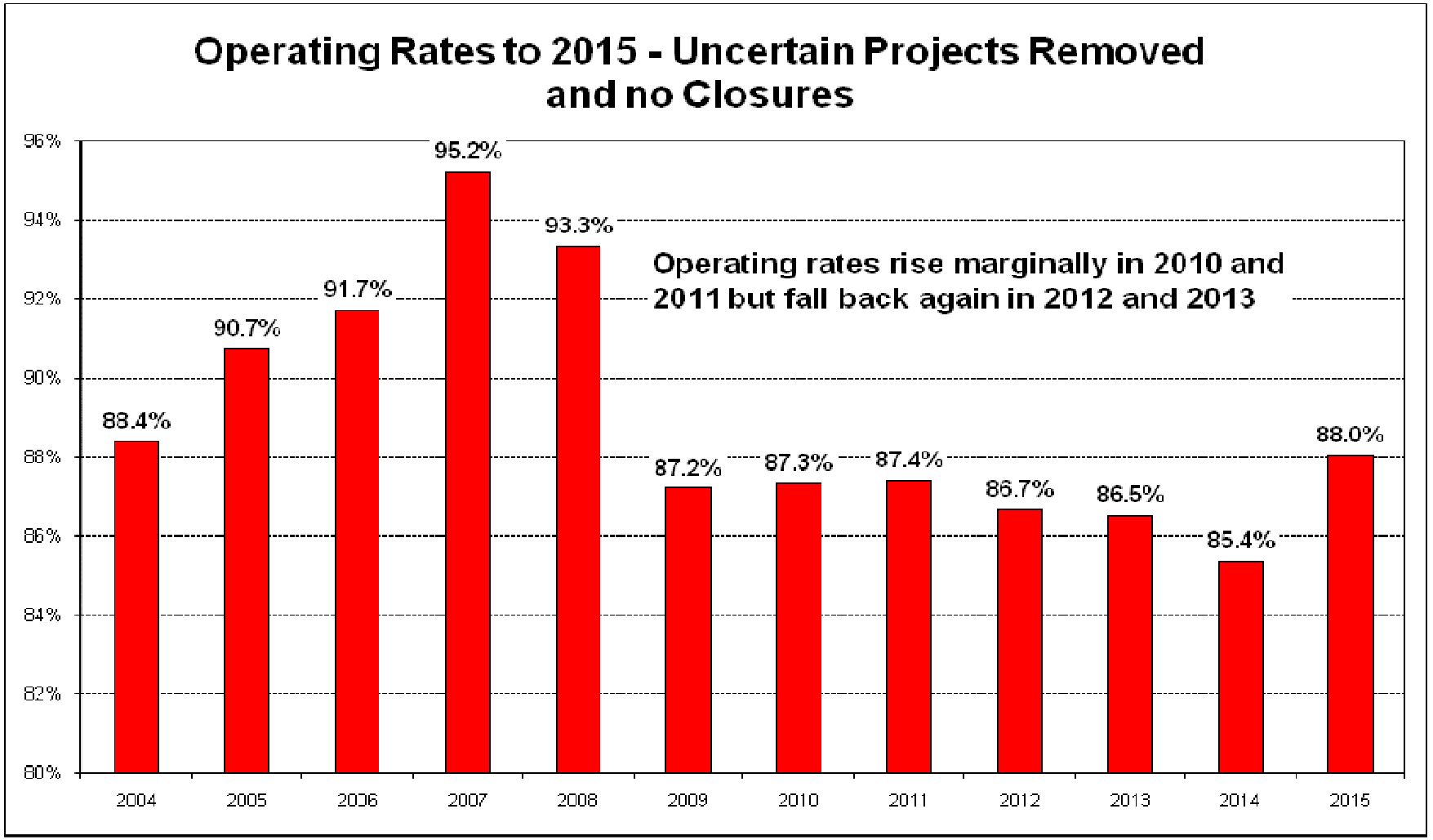
Long-term S/D Outlook

World Urea Position with Uncertain Projects Removed and No Closures



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Capacity	132.78	135.79	136.09	136.96	142.63	147.52	151.37	156.16	163.75	174.94	183.56	191.85	199.19	209.28	210.38
Cons	106.30	111.80	112.40	122.80	129.40	135.30	144.10	145.70	142.79	152.78	160.42	166.28	172.34	178.64	185.16

Plant Operating Rates

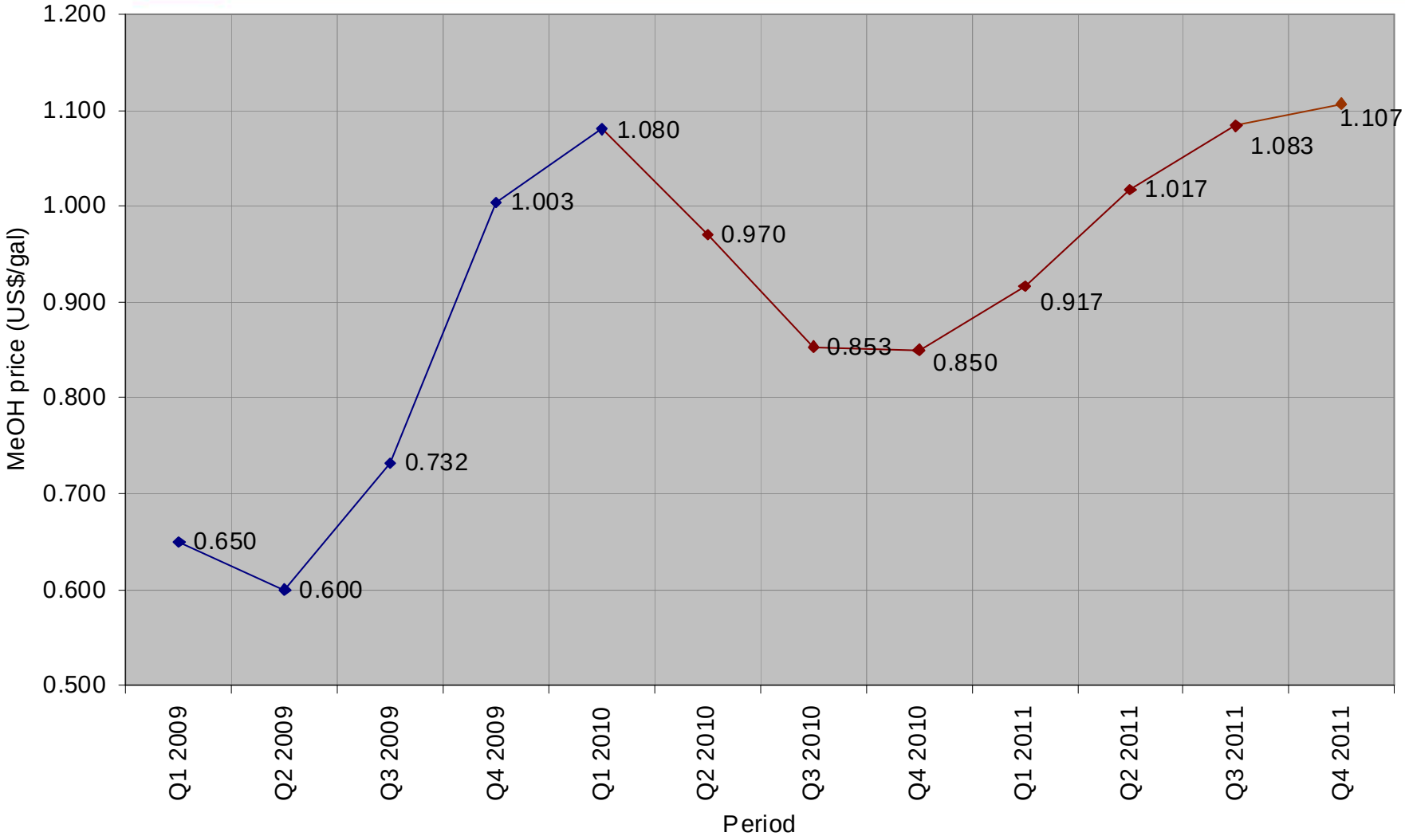


Forecast

Methanol Forecast Comments

- **Supply**
  - Spot prices are falling globally as Supply overcomes Demand.
  - Over 11mm mt of new capacity is expected in 2010; 7mm mt in China and 4mm mt outside China. China is expected to absorb its domestic supply, leaving a signficant excess supply in other regions.
  - Three new plants (Brunei, Egypt, and Venezuela) are scheduled to start-up by mid 2010.
  - There is no significant new capacity scheduled to start from 2011 through 2012
- **Demand**
  - Demand continues to increase in most markets.
  - Demand is expected to steadily increase through the forecast period.

Methanol forecast
(FOB US Gulf Coast)



Urea
Short Term Market Factors

Bullish

- **Current Black Sea prices ($ 235/MT FOB) are already near low of past 2 years ($ 225/MT FOB). Can they go much lower before production curtailed?**

- **2010 U.S. corn plantings to increase 3% from levels of past 2 years. Rice up 9% from 2009. Rice is a large consumer of urea.**

Urea
Short Term Market Factors

Bearish

- **Chinese urea stocks high.**
  - **Q110 exports up 95% from Q109**
- **Chinese export tax to revert down to 7% effective July 1st. Given high stocks and domestic weather problems cutting into demand, exports are expected to remain strong.**
- **New capacity (Iran, Pakistan, China) to come on-stream.**
- **Second half 2010 trade balance is showing a slight urea surplus.**
- **Early Midwest field activity may have favored other nitrogen products (ammonia, UAN) at expense of urea demand.**
- **Current NOLA values above current international levels.**
- **Forward paper market trading at a price discount.**

Urea
Short Term Market Factors

Uncertainties

- **Chinese export volumes could be negatively impacted should China allow the Yuan to appreciate against the dollar.**
- **Will recently negotiated lower Ukrainian gas import prices from Russia flow through to nitrogen producers? Ukraine is under pressure to remove gas subsidies to industrials.**

Urea Market Forecast

Short-term Outlook (12 months)

- **Prices declining through spring and summer before stabilizing and moving higher through fall and winter.**
- **Overall, expect prices to trade in a relatively narrow range (+/- $ 30/ST) from current NOLA value of US$ 270 per ST, as global supply/demand fundamentals are relatively balanced.**

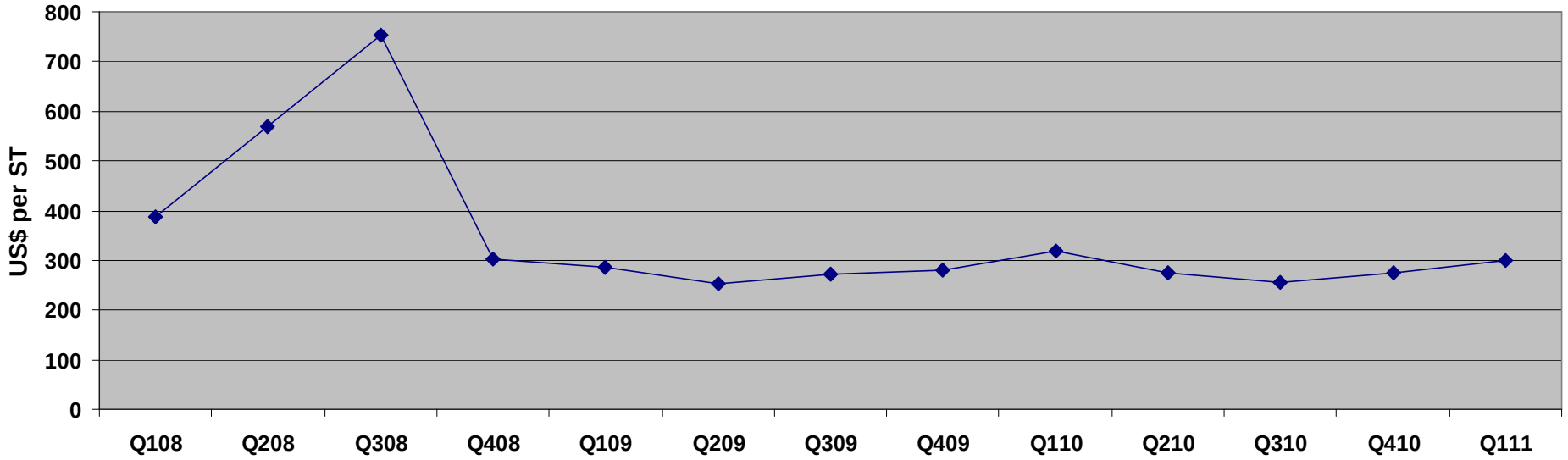
Urea Market Forecast

Longer Term (2-3 years)

- **Agricultural fundamentals to support continued increase in urea demand.**
- **Agricultural demand and higher energy costs resulting from the economic recovery will keep prices from falling to levels experienced in the early 2000's.**
- **Investments in capacity should result in moderate surplus capacity in 2012/2013 and limit any strong upward price movement.**
- **Prices should remain above long-term (10 year) average ($ 240/ST), and relatively close to the past 5 year average of $ 320 per ST (basis NOLA).**

UREA

NOLA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US$ per ST
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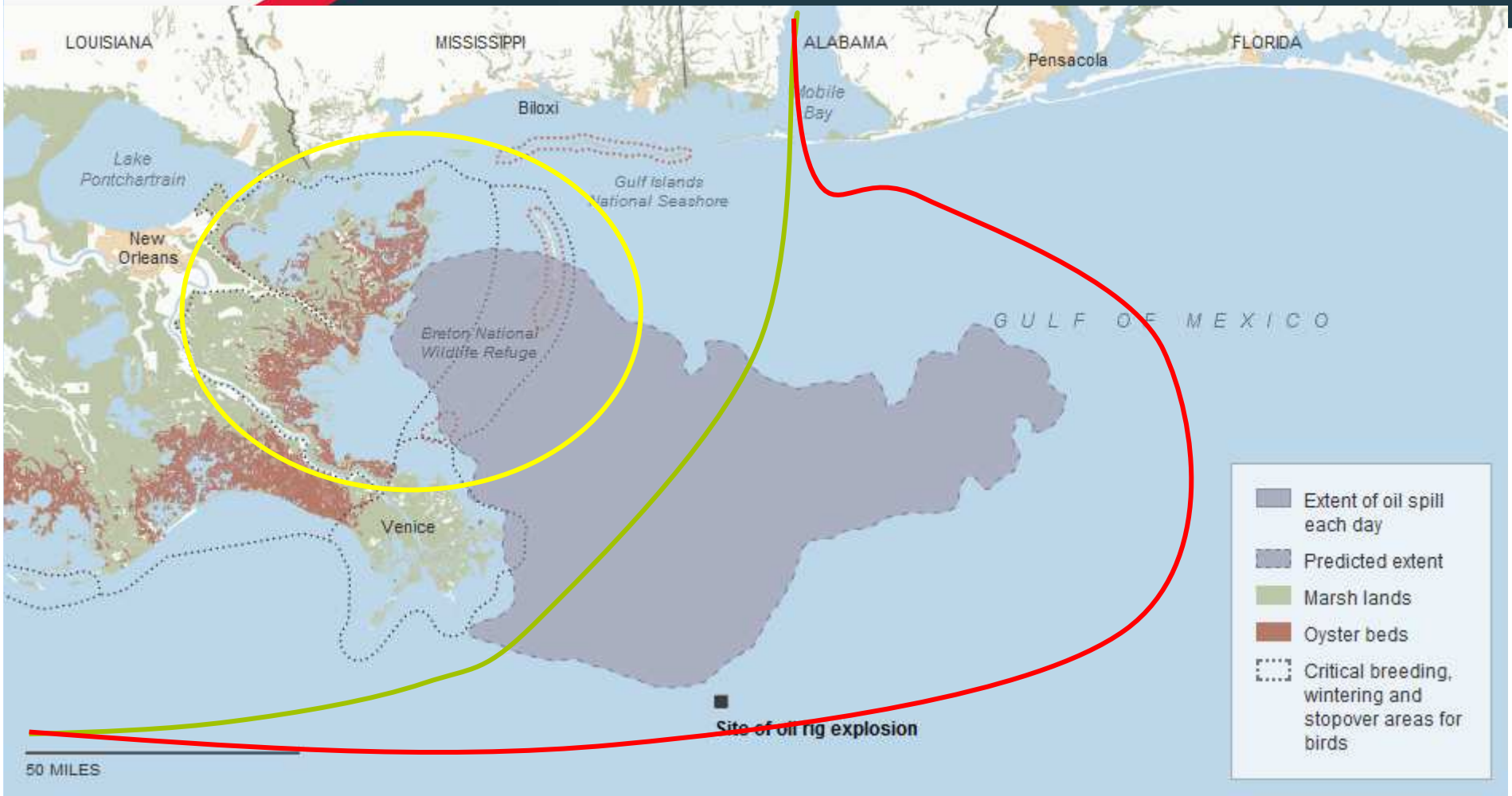
Impact from Horizon Oil Rig Explosion

April 20, 2010



Normal route **New route to navigate around oil spill** **Area of concern for inland barge traffic**

Special Thanks

- To YOU, for your attention!!
- To Ralf Yobp & Michael Curtin

…of the Arclin Procurement Team for their personal insights and help gathering information for this presentation.