PETRIE PARKMAN & Co.

Denver World Oil Conference

The Peak Oil Context

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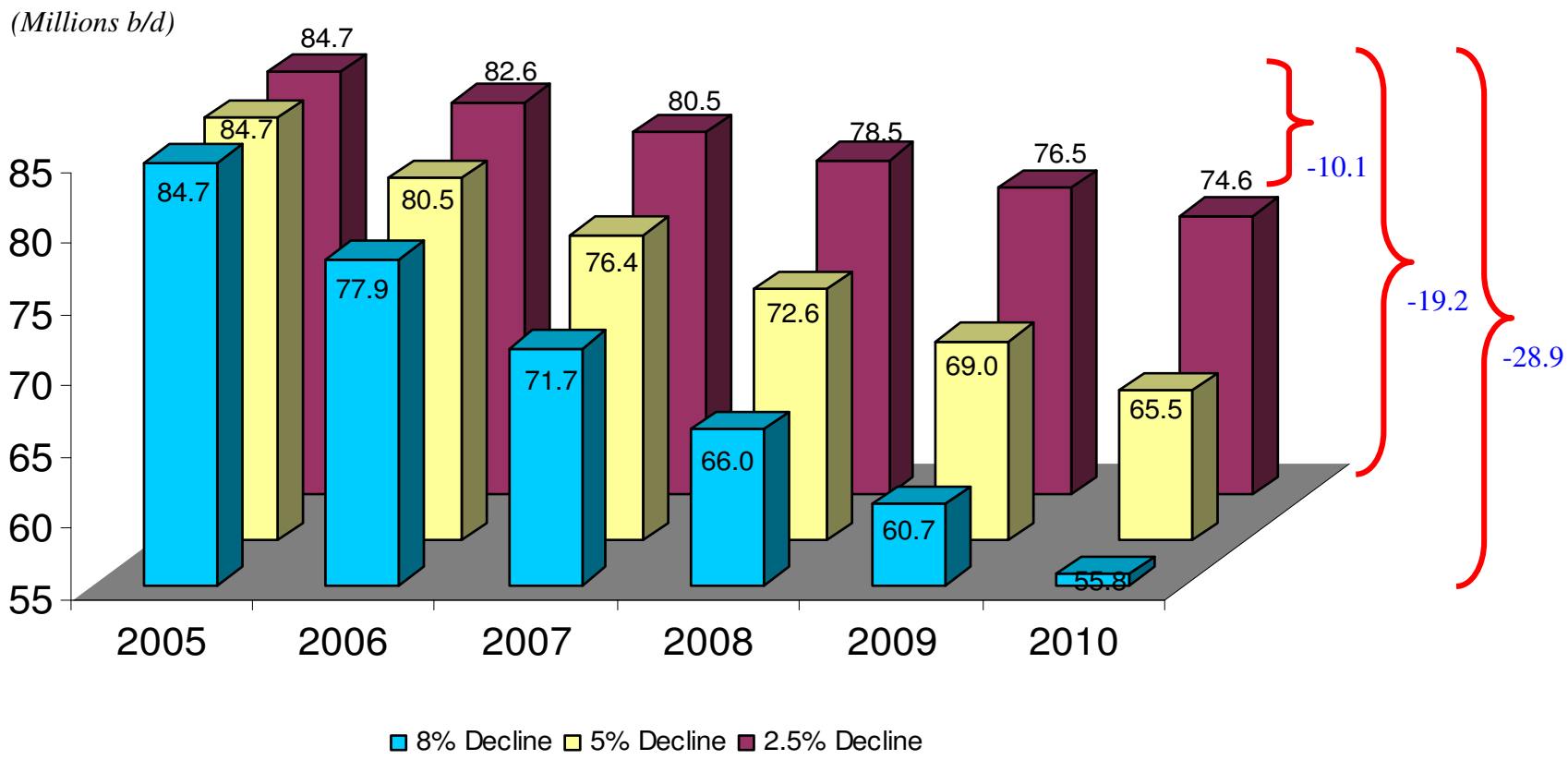
Initial Perspectives and Assertions:

- World daily production: 84 million barrels/day
- World excess capacity: 1-1.5 mmb/d (Refining capacity a determinant of "relevant capacity")
- US daily consumption: 21 mmb/day
- Global annual decline rate: 4% - 6% / year?
- Net Non-OPEC production likely to peak around 2010
- OPEC nations may not reach governmental projections
- Reasonable world peak oil date: 2010-2015?

Current World Production in Serious Decline



Conclusion: Depletion Matters

End of Decade "Potential" New Production Sources

(millions b/d)

U.S. (Alaska / Deepwater GOM)	0.5 - 1.0
South America	1.0 - 2.0
West Africa	2.0 - 3.0
Caspian Sea	1.5 - 3.0
Russia	1.0 - 2.0
Asia	1.5 - 3.0
Canada	1.0 - 2.0
Middle East	4.5 - 6.0
Total	13.0 - 22.0

Conclusion: Project Timing will be Critical

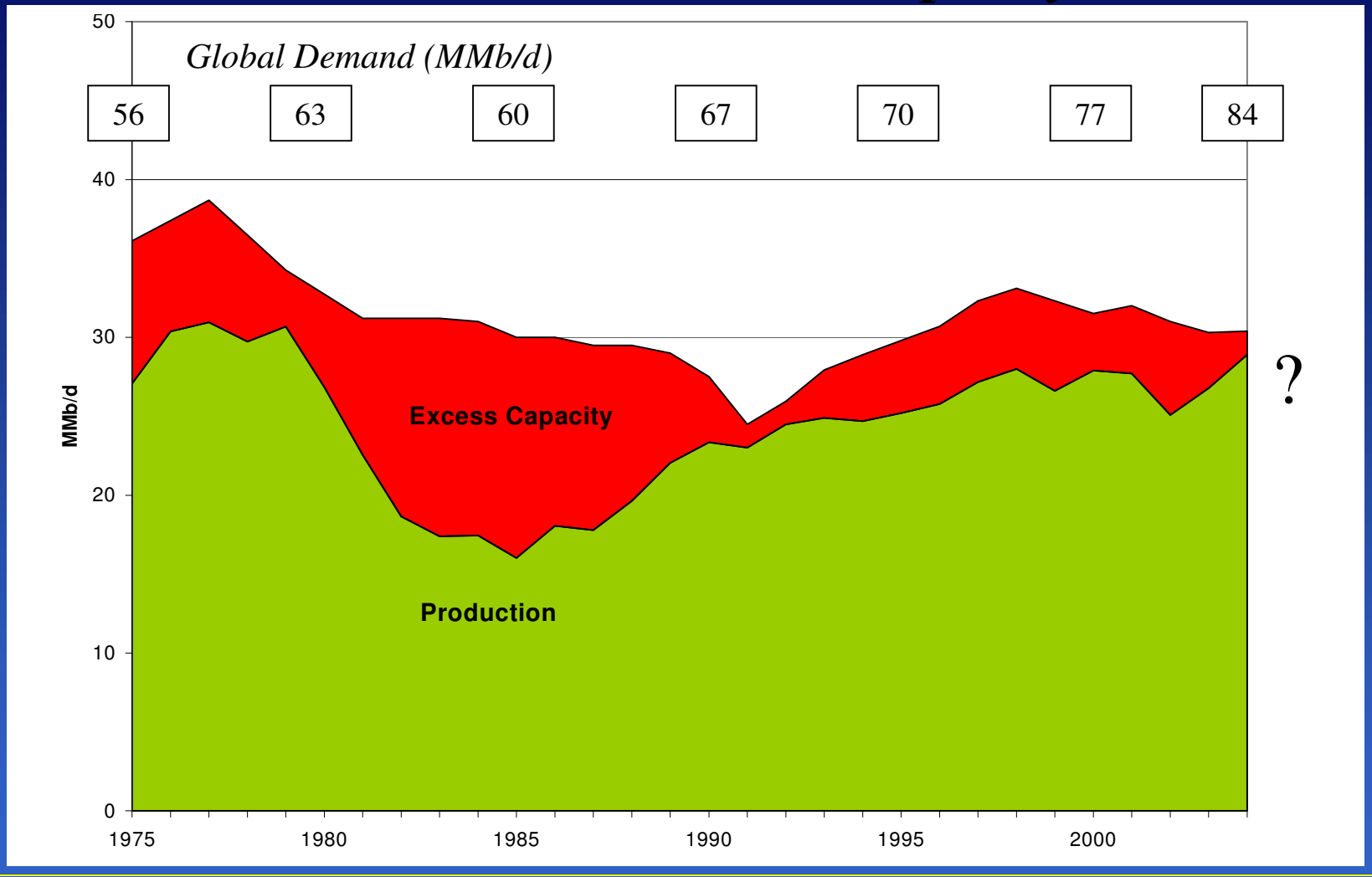
Morphing Toward Peak Oil?

(millions b/d)

	Optimistic Case			Downside Case
2005 Production level	85	85	85	85
Natural decline	(10)	(19)	(10)	(19)
	75	66	75	66
New Projects	22	22	13	13
	97	88	88	79
Net gain - 2010	12	3	3	(6)

Conclusion: Ex the Optimistic Case, There Remains Limited Supply to Accommodate Economic Growth

OPEC Excess Crude Production Capacity



Conclusion: Absent a Global Recession, the Margin for Error is Small

Source: International Energy Agency

Maturing of Non-OPEC Production

In Decline:

- United States
- United Kingdom
- Egypt
- Pakistan
- Congo
- Norway
- Australia
- Oman
- Columbia
- Argentina
- Gabon
- New Zealand
- Syria
- Peru
- Tunisia

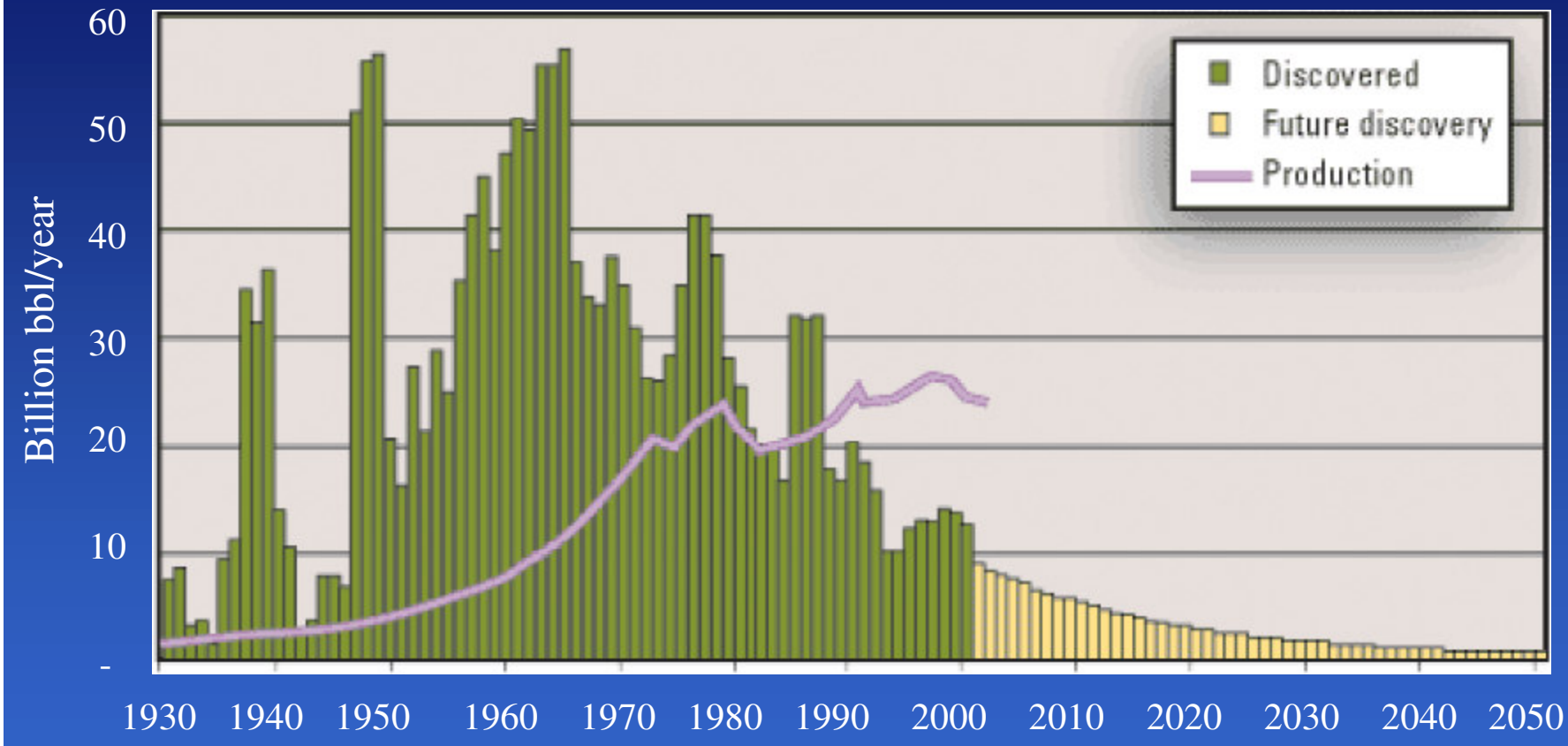
At Plateau:

- Mexico
- Brunei
- Malaysia
- China
- India (?)
- Denmark
- Yemen
- Canada (conventional and non-Arctic only)

Conclusion: Ex Caspian Sea, West Africa, and Unconventional and Arctic North American Sources, Non-OPEC Production Probably is Close to Irreversible Decline

- **Discoveries precede extraction; a peaking in discoveries precedes a peaking in production**
- **World oil discoveries peaked in 1964**
- **In fields, basins, "provinces," and the world: we tend to find the biggest oil structures early on**
- **Today, we find 1 barrel for every 3-4 consumed**
  - **This concept is not disputed**
  - ***Technology hasn't changed this reality***

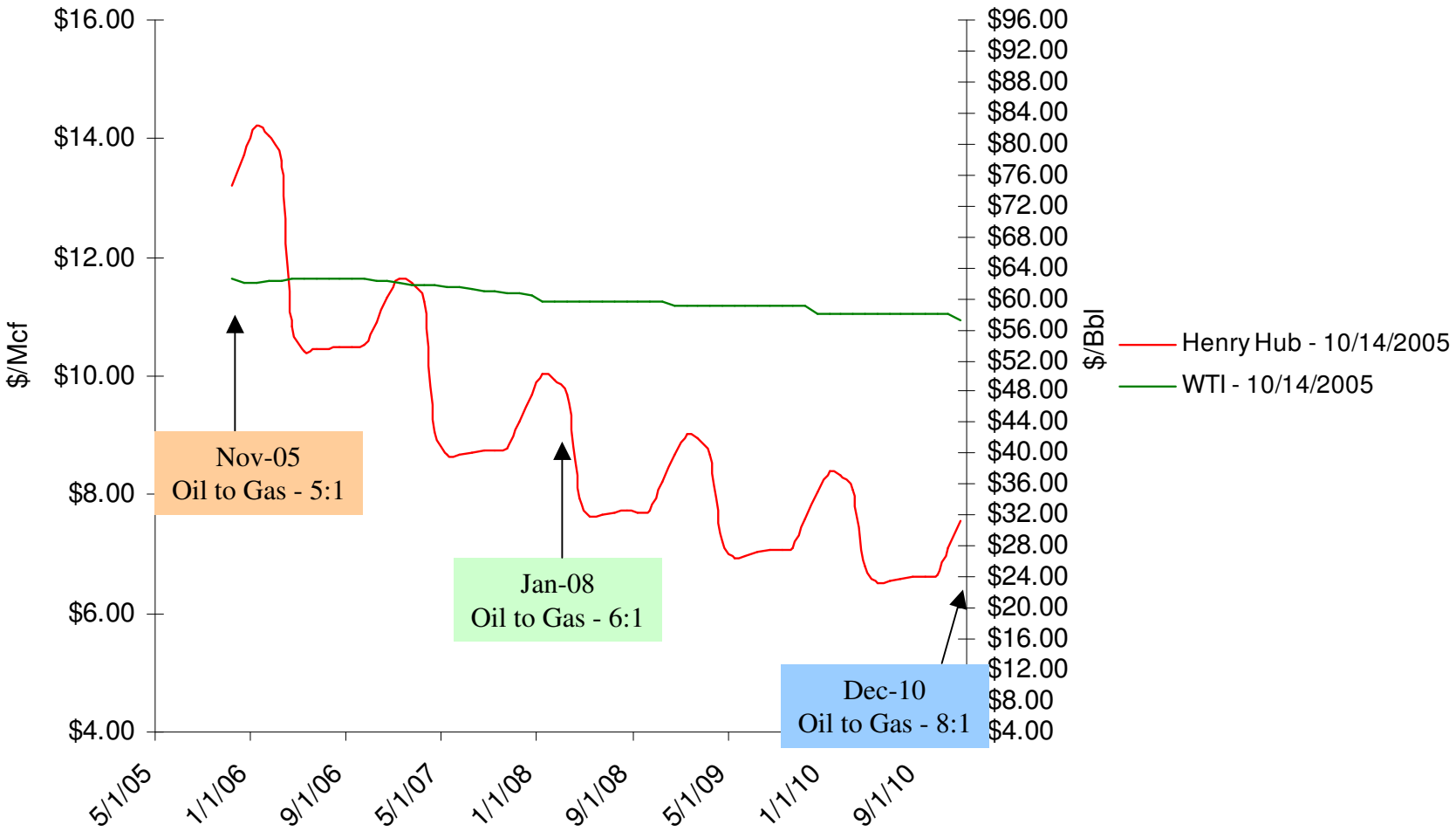
We found the most oil during the 1960s; production follows discoveries; technology hasn't helped much



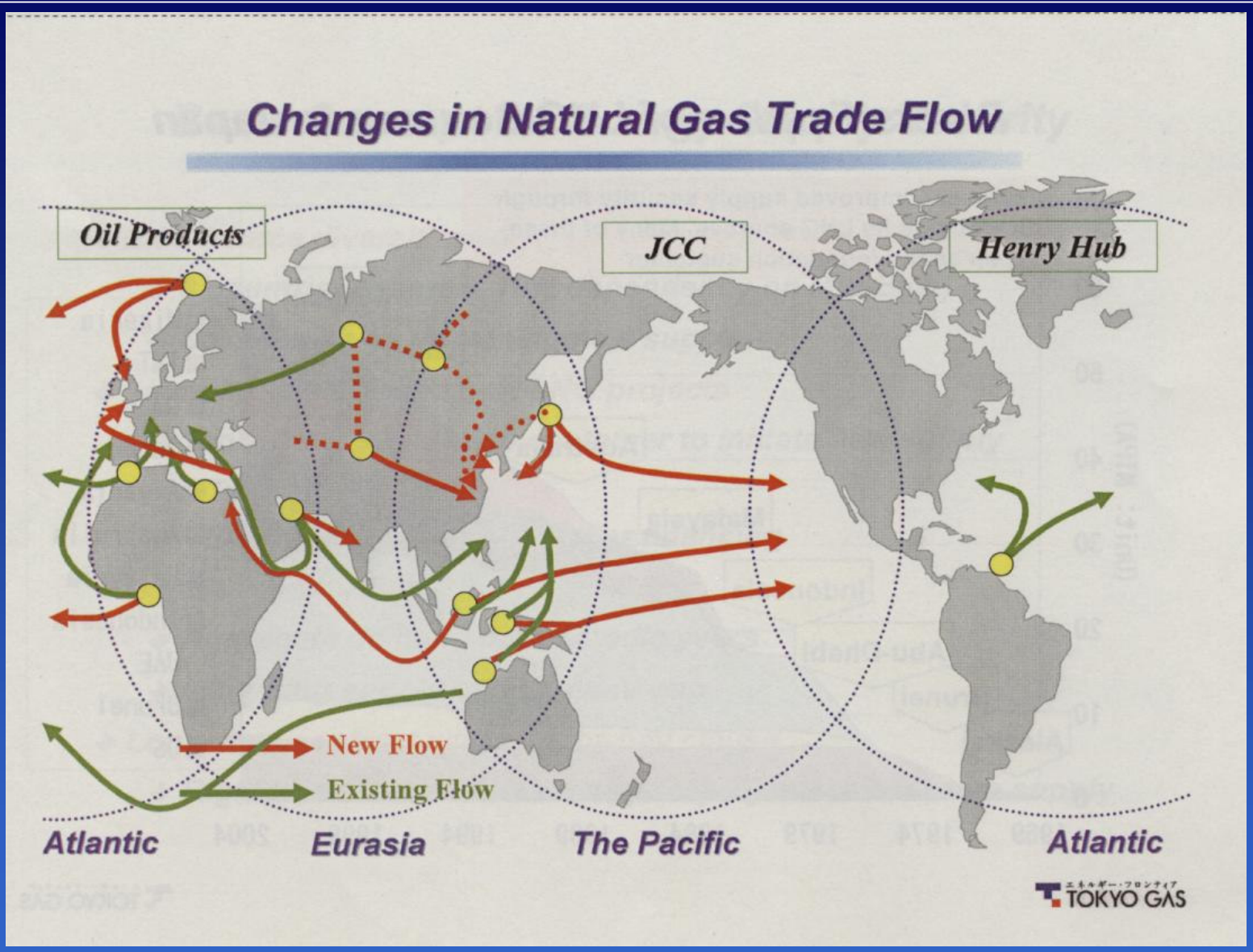
Global Natural Gas: Where are we headed?

Source: China Newsphoto/Reuters/Corbis.

Oil to Gas Convertibility per Futures Strip



Conclusion: Fear of LNG, Unconventional Gas, Demand Destruction Lives!

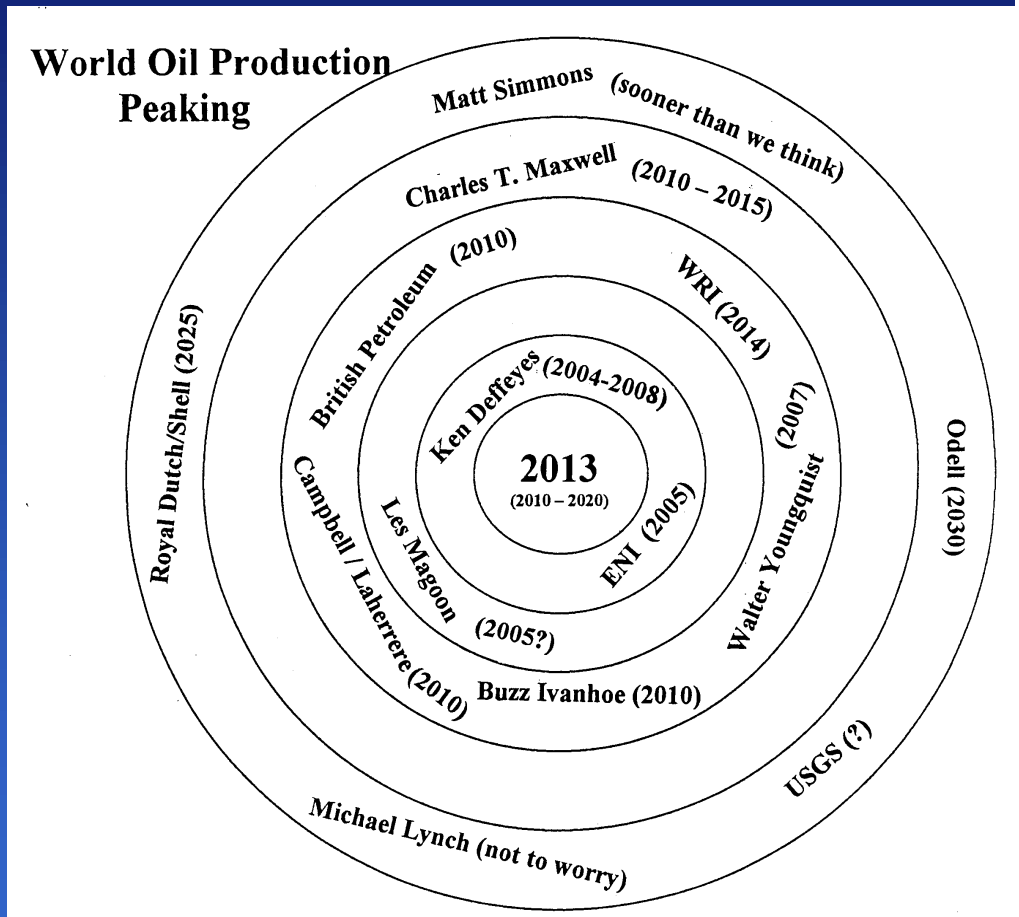


Conclusion: Dynamic Market Shifts in the Offing

World oil peak: range is broad by well-informed estimators; *most* by 2015

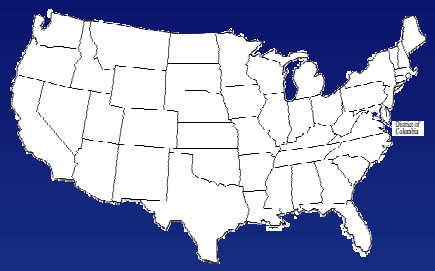
Since 2000:

- **BP – 2010-2015**
- **Hirsch et al: 2016**
- ***Matt Simmons: 2006 – 2008 (Bush team advisor/insider)***
- **Campbell: 2007 – 2010**
- **Deffeyes: Thanksgiving day 2005**
- **Walter Youngquist: 2007 – 08**



My Young Analyst Perceptions

U.S. Oil Production



Big, New Discoveries &

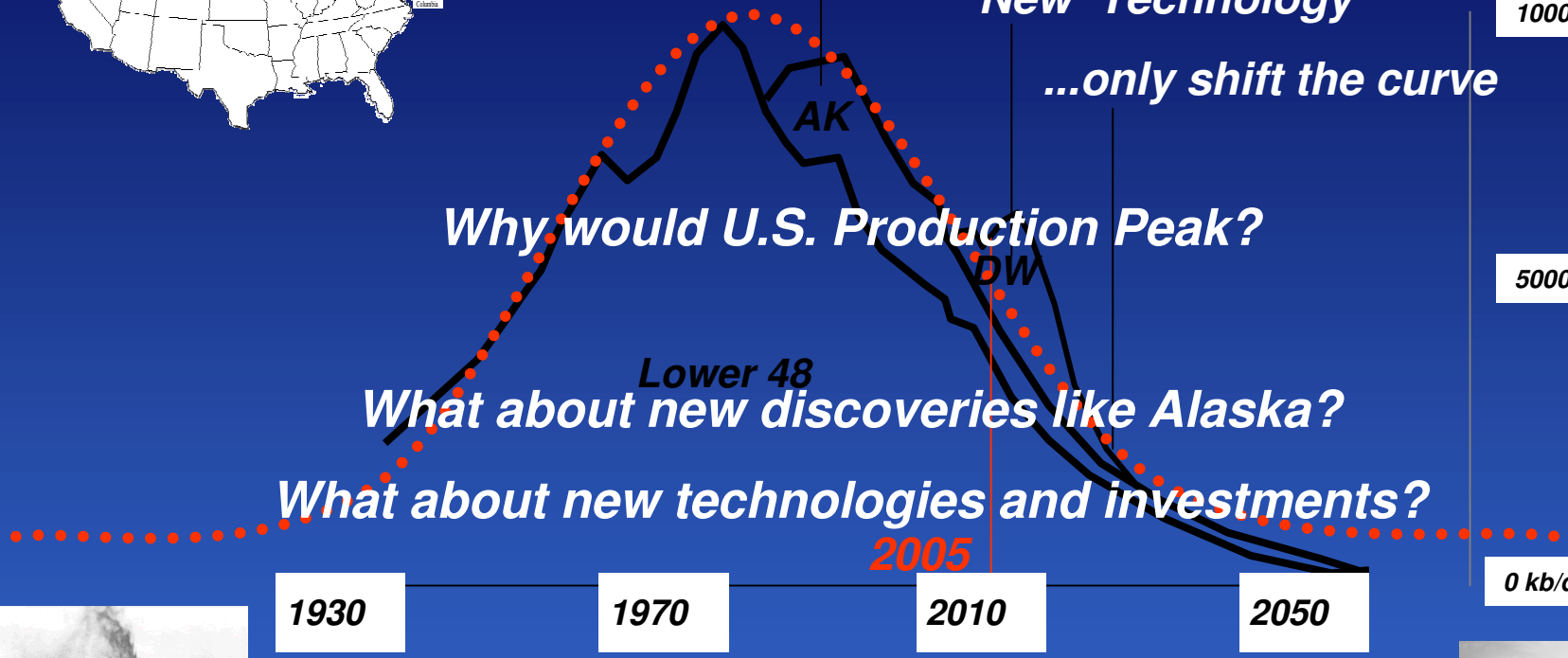
New 'Technology'

...only shift the curve

Why would U.S. Production Peak?

What about new discoveries like Alaska?

What about new technologies and investments?



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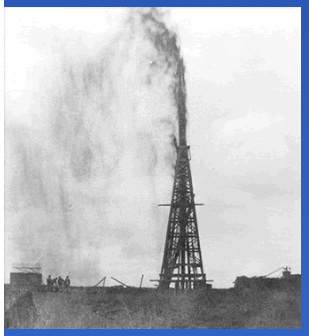
1930 *1970* *2010* *2050*



Lower 48

Alaska

Deepwater

Source: rao-D cityworks


Budweiser
KING OF BEERS
Budweiser
Budweiser
Budweiser
Budweiser