



Strategic Advisors in Global Energy

# Upstream Oil and Gas Investment: Impacts of a Weak Global Economy

Prepared for CSIS

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PFC Energy

3 June 2009



# The Big Questions

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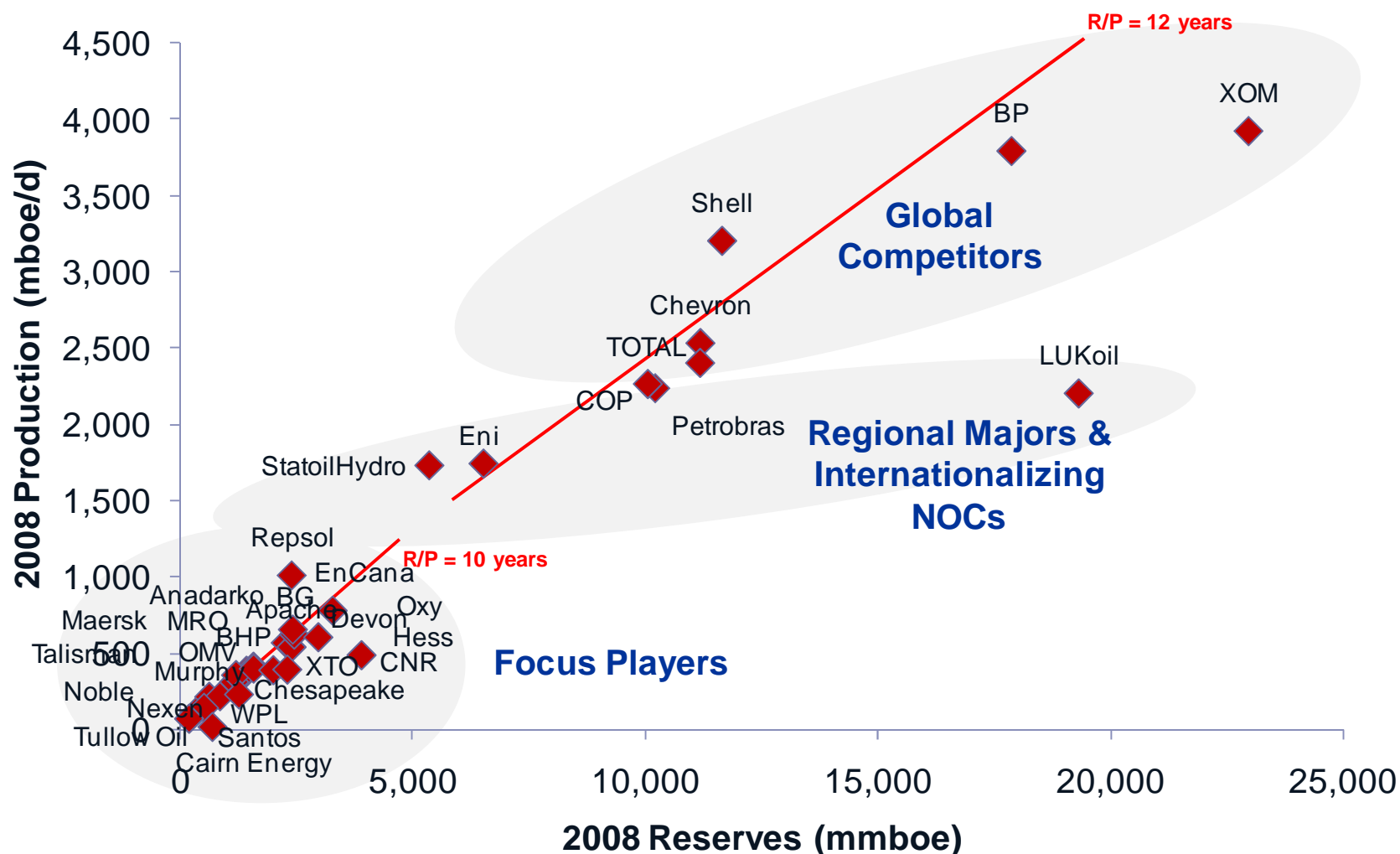


- **Should we invest?**
- **Can we invest?**
- **Where?**
- **Now or later?**

# The Investment Imperative

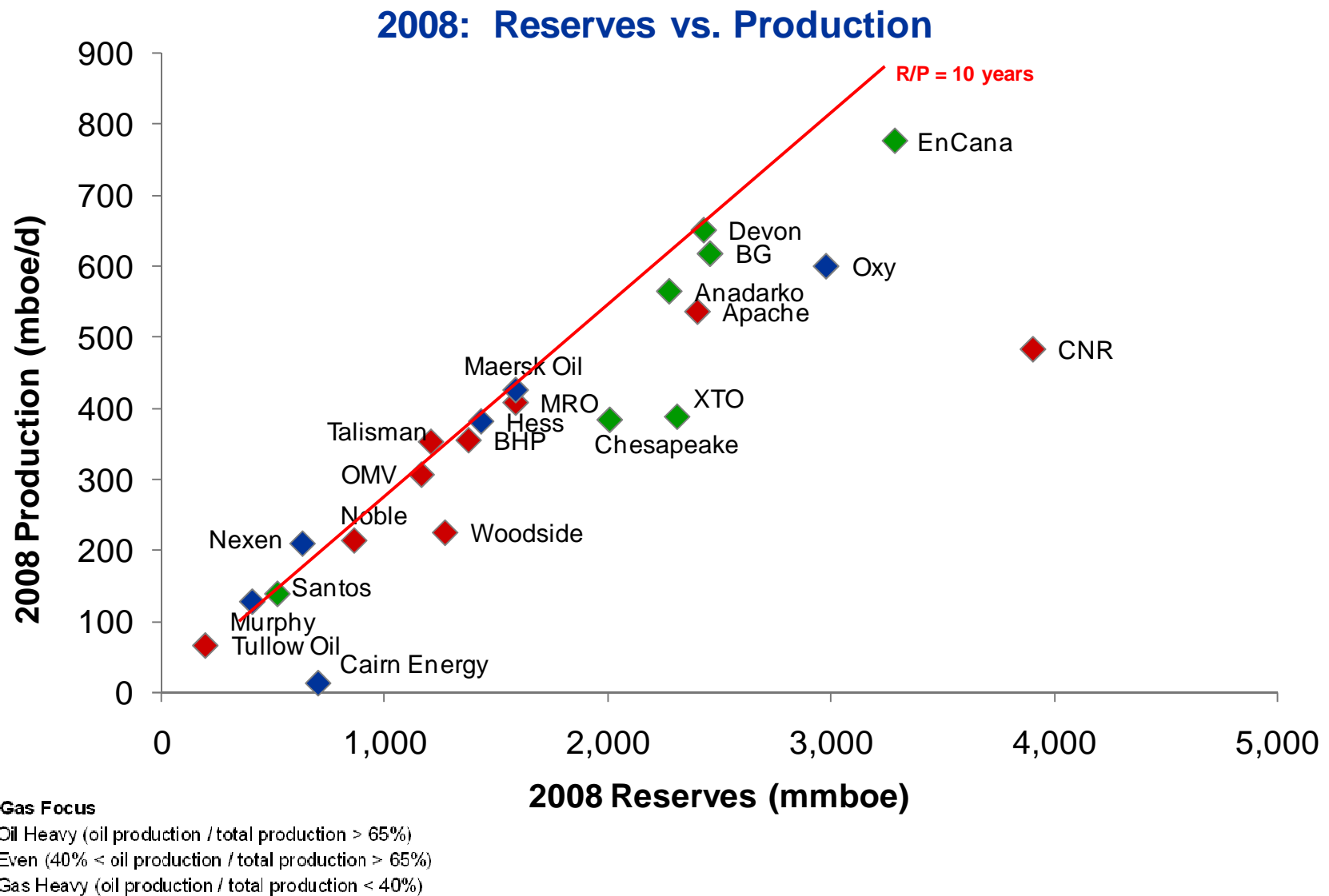
# The Large Global and Regional Players Have Huge Replacement Needs

## 2008: Reserves vs. Production

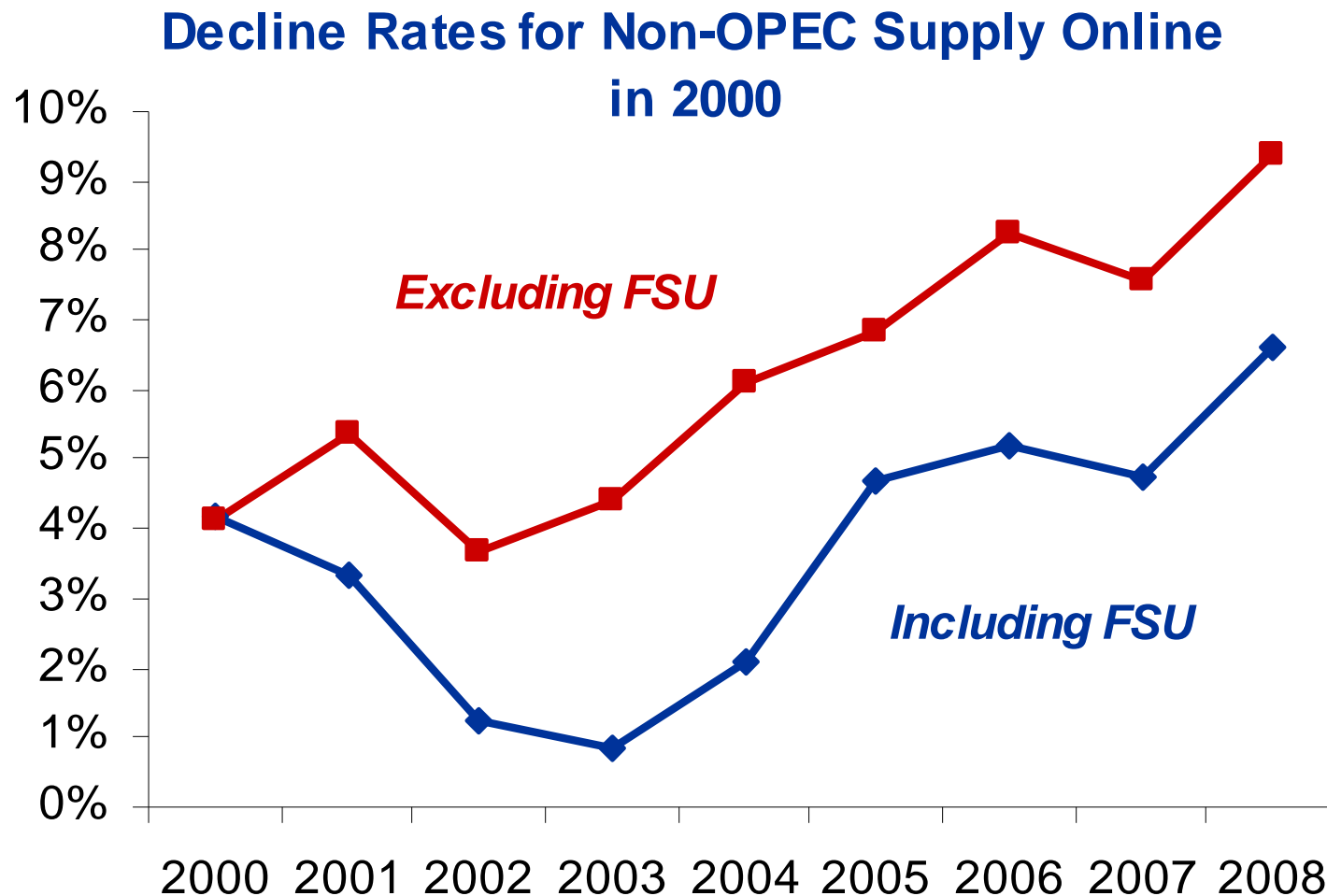


Source: PFC Energy Upstream Competition Service (UCS)

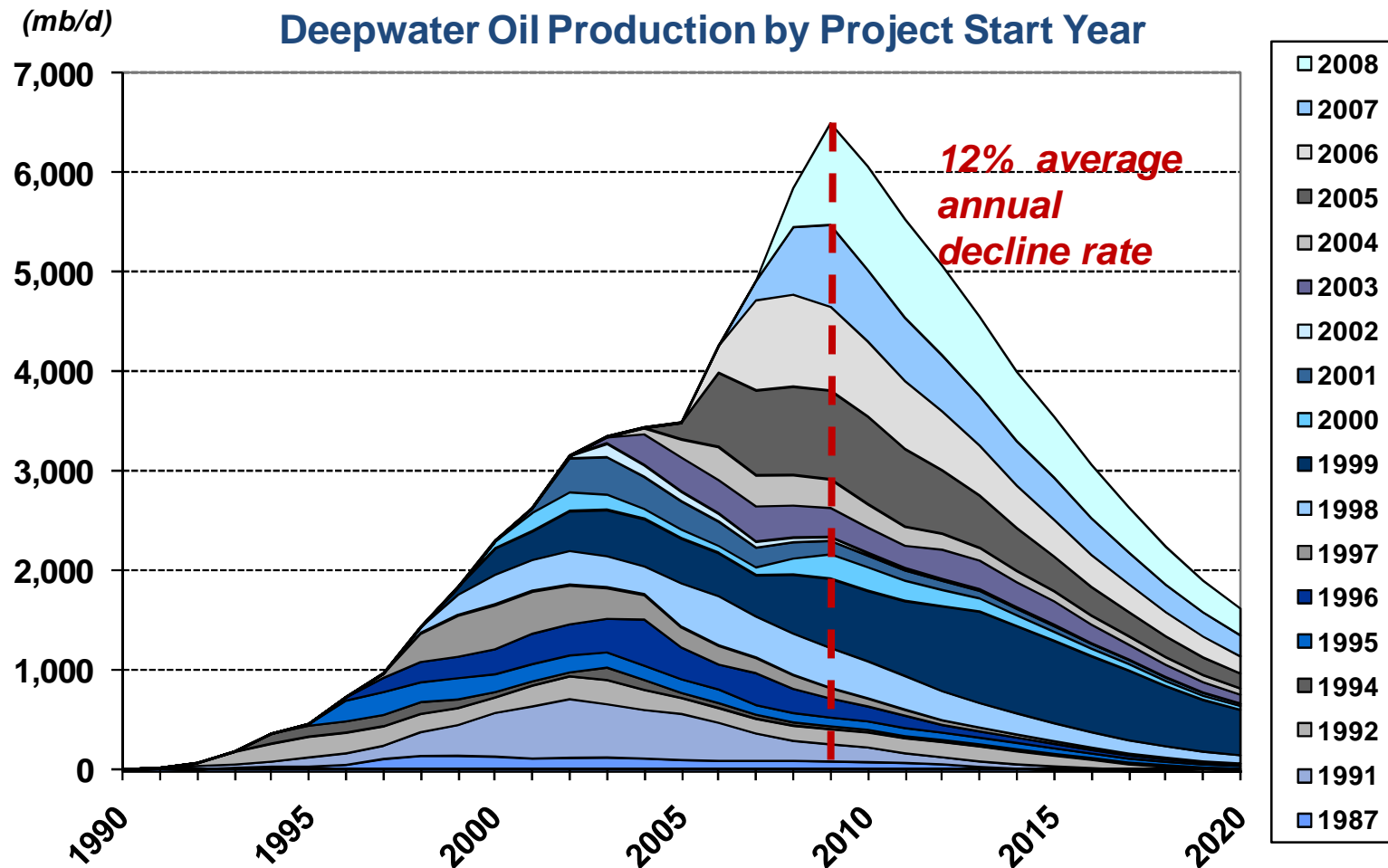
# Independents are Significantly Smaller but with Higher Growth Potential



# Decline Rates Have Continued to Climb, Providing an Imperative to Invest



# The Large Deepwater Plays Also Have Increasing Replacement Needs



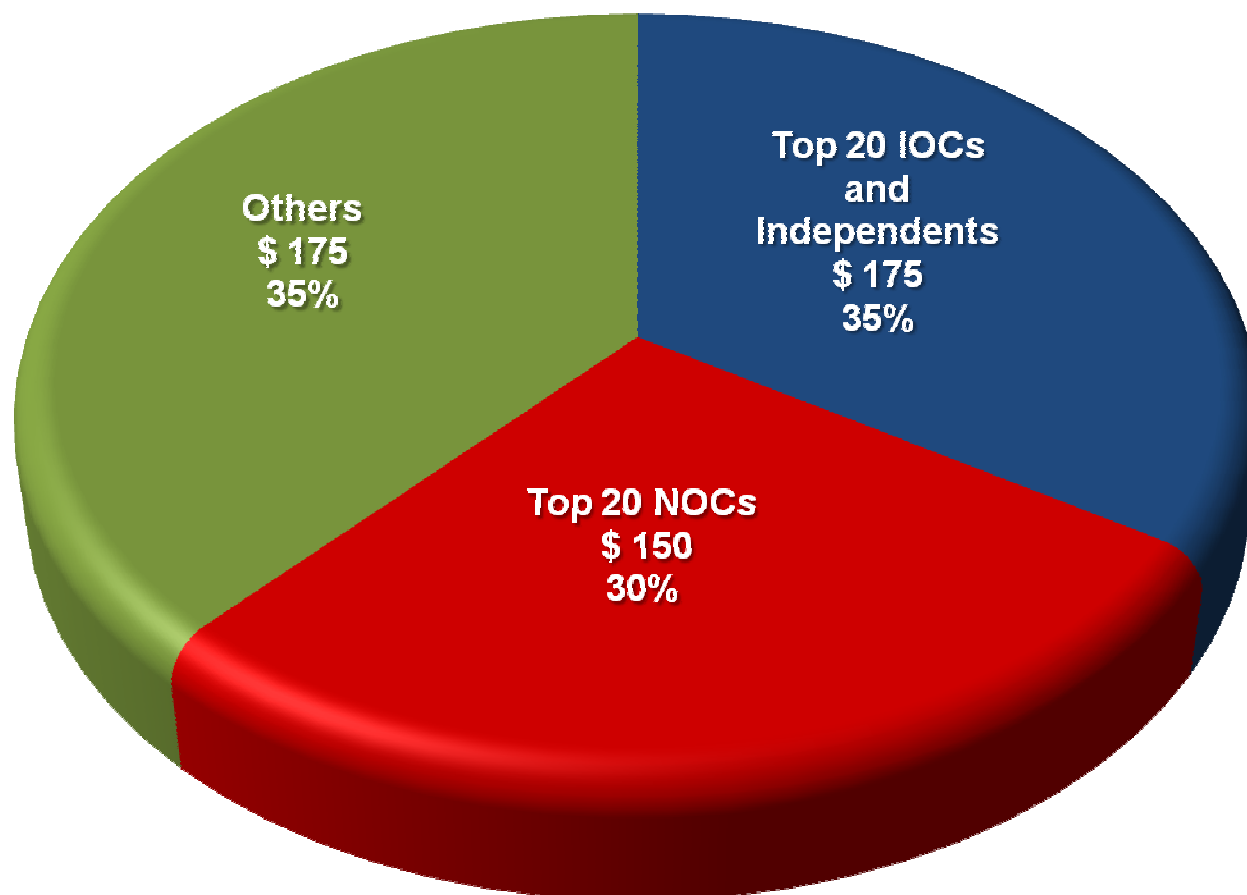
Source: PFC Energy

## Can we Invest?



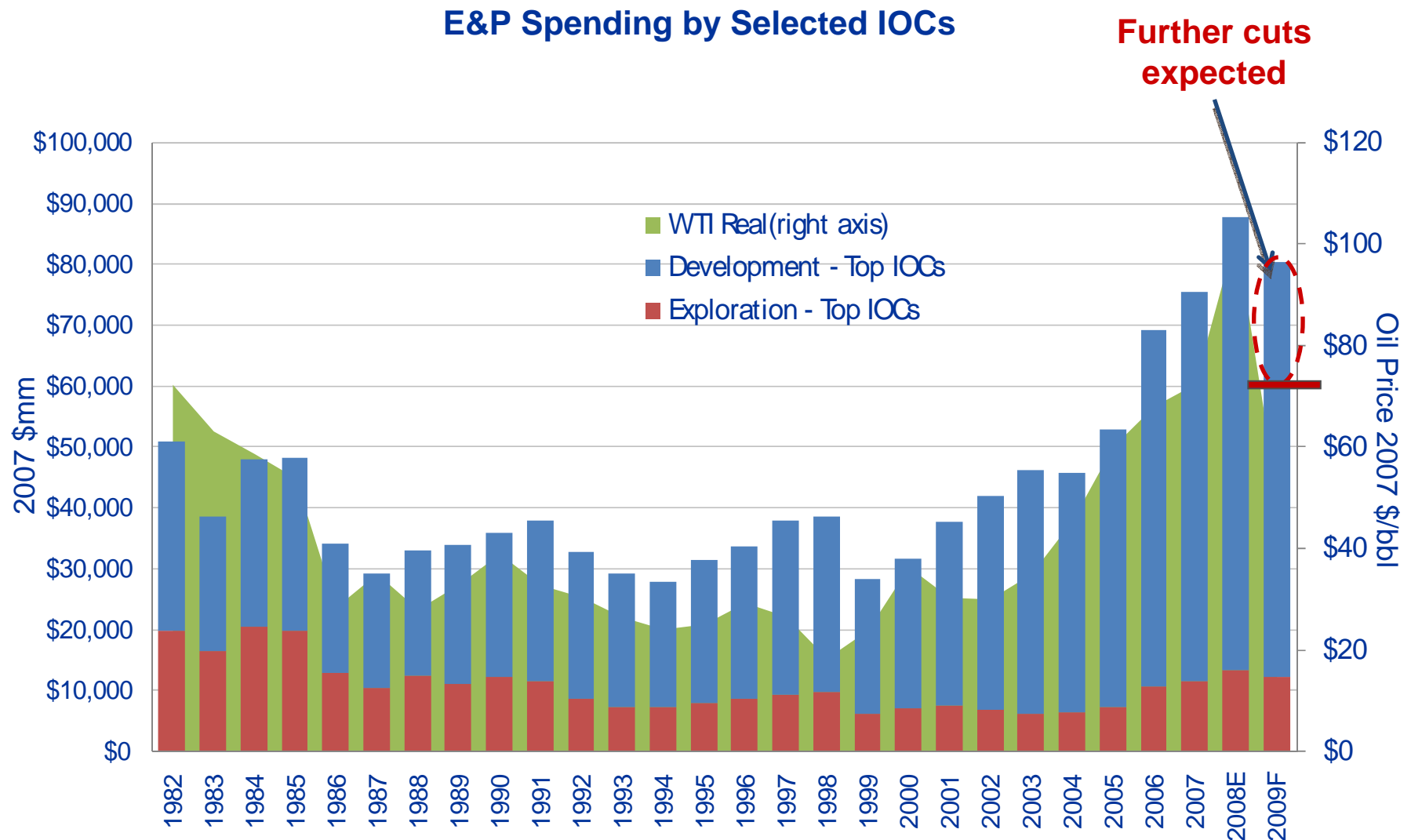
# Who Invests? The Top 20 IOCs and NOCs Account for Over Half of E&P Spend

**2008 E&P Spend Approximately \$500 Billion**



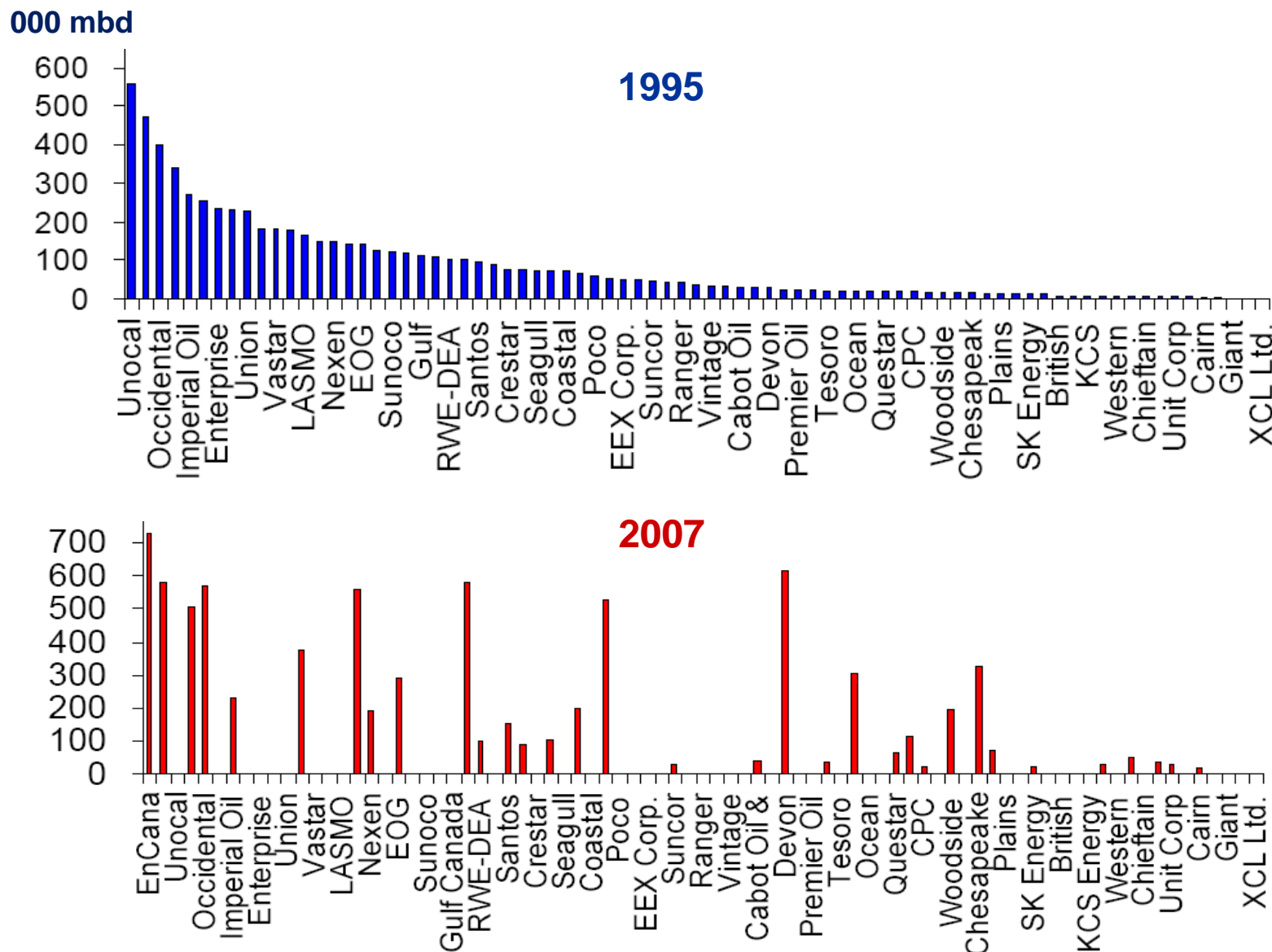
Source: PFC Energy, Global E&P Surveys

# Near-term Spending Cuts by IOCs Could be Significant



Source: PFC Energy, Global E&P surveys

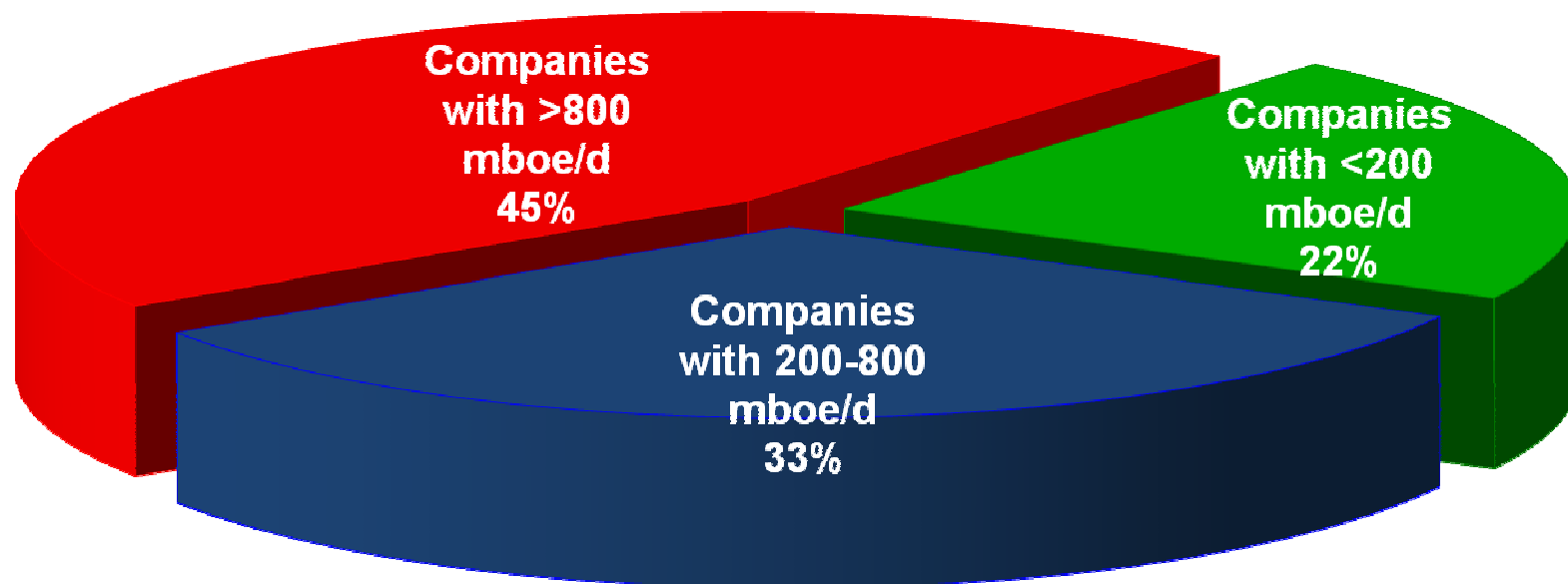
# Some Companies will Disappear - 46 of 79 Independents from 1995 No Longer Exist



Source: PFC Energy

## But Independents Account for 55% of Exploration

**Total Exploration Capex 83 Companies  
\$115 billion 2003-07**



- Independents are “Explorers” and grow through the drill bit much more than larger companies
- These spending reductions will likely exacerbate the continued lack of exploration

# Majors' Offshore Projects are Also Slipping

## Example – Angola Project Timing and Projected Real Start Up

Operator	Project	Country	Current Announced Onstream	PFC Base Case	PFC Low Case	2009				2010				2011				2012				2013				2014			
						Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Total	Block 17 (Pazflor)	Angola	2011.Q3	2011.Q4	2012.Q2																								
Total	Block 17 CLOV	Angola	2012.Q2	2013.Q1	2013.Q4																								
BP	Block 18 (Cesio, Chumbo, Platina)	Angola	2009.Q4																										
BP	Block 31 MID (Ceres, Hebe, Titania)	Angola	2012.Q2	2013.Q4	2014.Q3																								
BP	Block 31 NEDA (Marte, Pluto, Saturno, Venus)	Angola	2011.Q2	2011.Q4	2012.Q4																								
BP	Block 31 SEDA (Palas, Juno, Astrea, Terra, Urano)	Angola	2012.Q4	2013.Q1	2014.Q1																								
Total	Block 32 (Canela, Gindungo, Gengibre)	Angola	2012.Q4	2013.Q2	2014.Q2																								
ChevronTexaco	Gabela	Angola	2012.Q1	2012.Q3	2013.Q2																								
Norsk Hydro	Gimboa Extension	Angola	2008.Q3	2009.Q2	2009.Q4																								
Norsk Hydro	Gimboa Extension Ph 2	Angola	2009.Q4	2010.Q1	2010.Q3																								
ExxonMobil	Kizomba D Mavacola (Block 15)	Angola	2011.Q4	2012.Q1	2012.Q3																								
Chevron	Landana-Tombua	Angola	2009.Q2	2009.Q4	2010.Q2																								
ChevronTexaco	Negage - Block 14	Angola	2012.Q1	2013.Q2	2014.Q4																								



Operator start up estimate (end of bar)

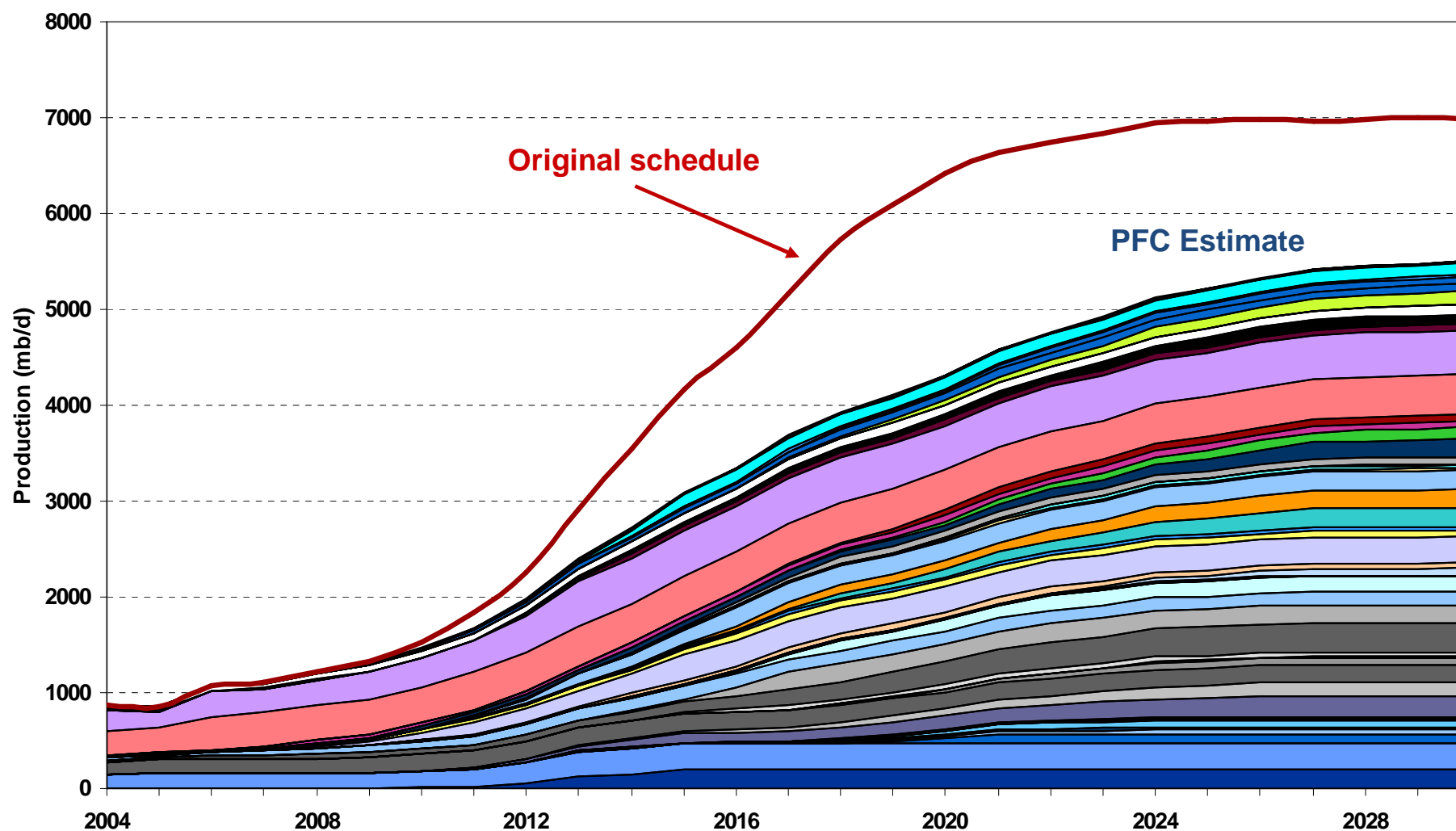


PFC additional range of potential delay



PFC P50 start-up

# As are High Cost Canadian Oil Sands Projects



# National Oil Companies Have Different Drivers than Large IOCs and Independents

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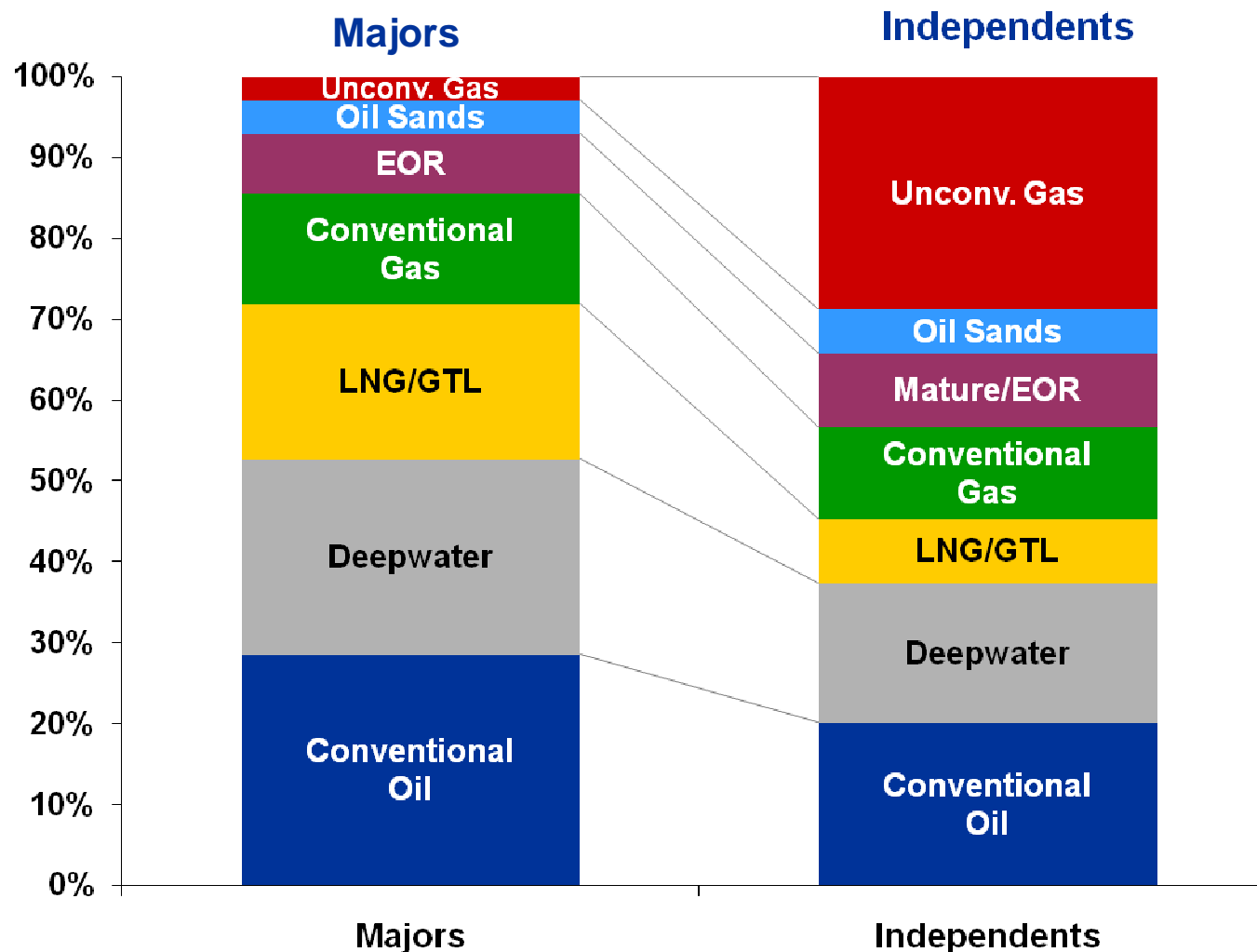
- NOCs' capital expenditure plans show, on average, a slight increase in 2009
  
- There are three groups of NOCs:
  - NOCs that **will increase growth objectives** though higher spending and acquisitions in the economic downturn.
  - NOCs that will **need various types of assistance** and could be open to partnerships
  - NOCs that largely **maintain planned objectives**

# Where?

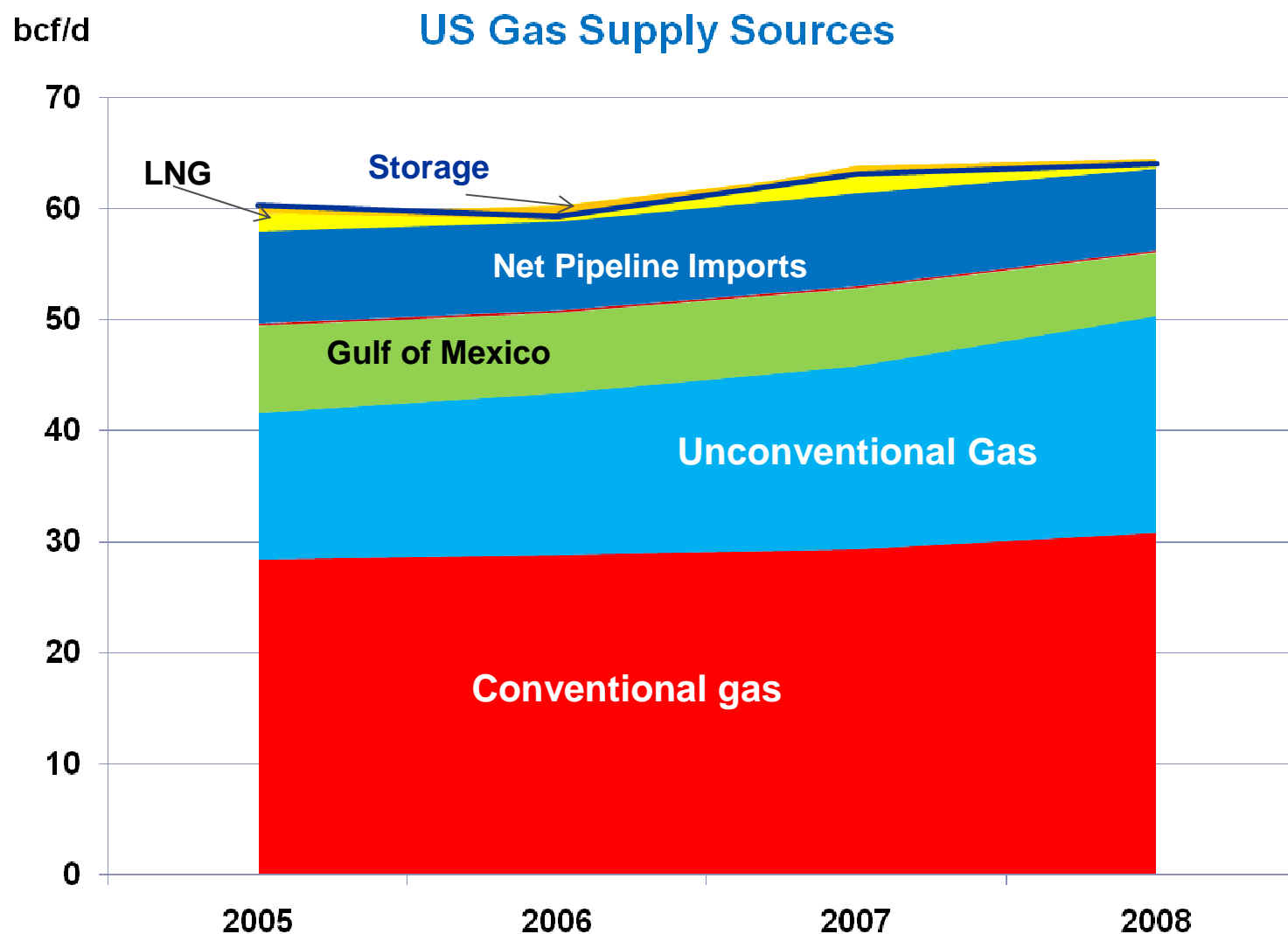


# Majors and Independents are Making Very Different Portfolio Choices

New production online 2009 - 2013

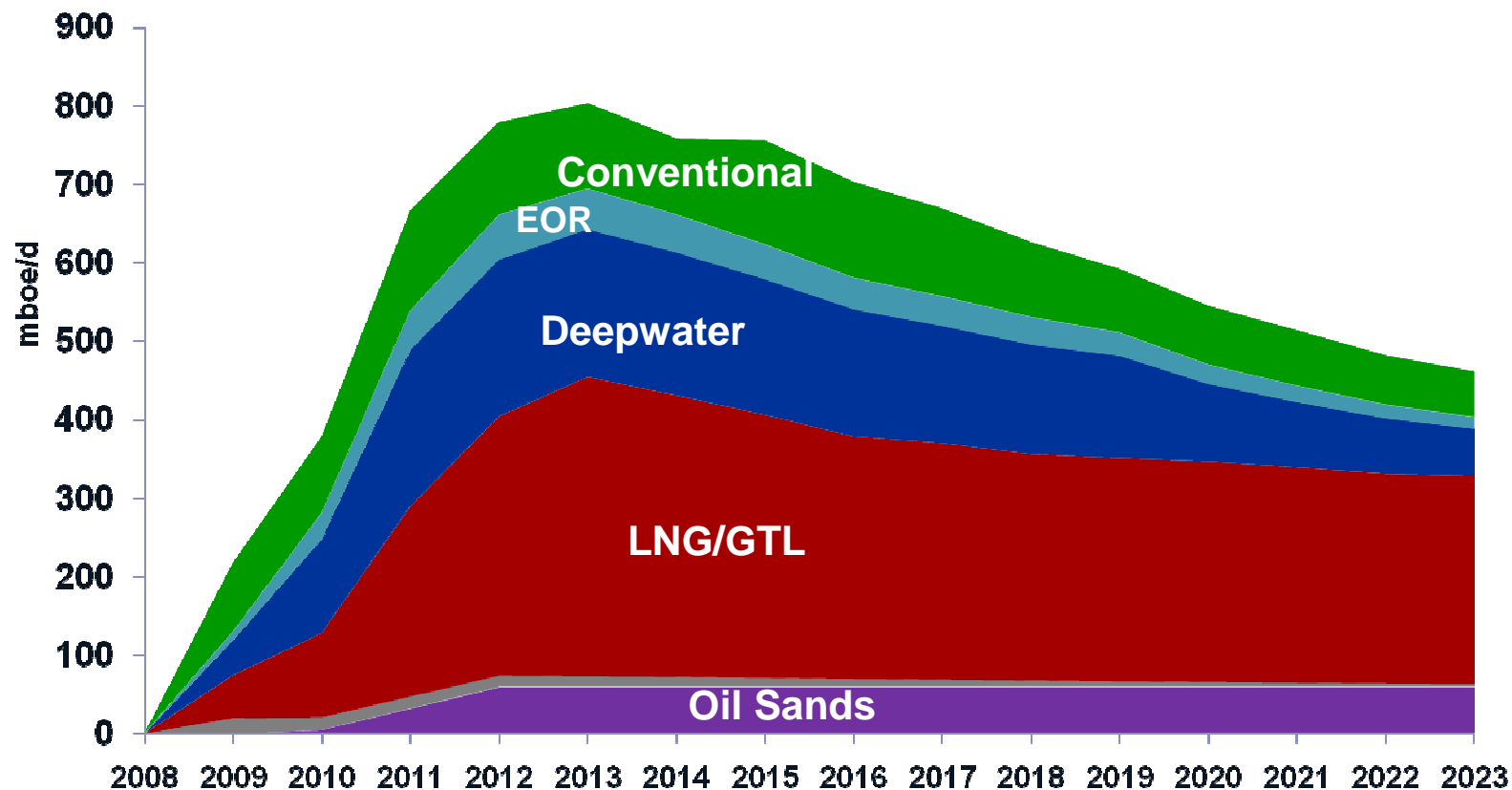


# Unconventional Gas has Provided US Growth



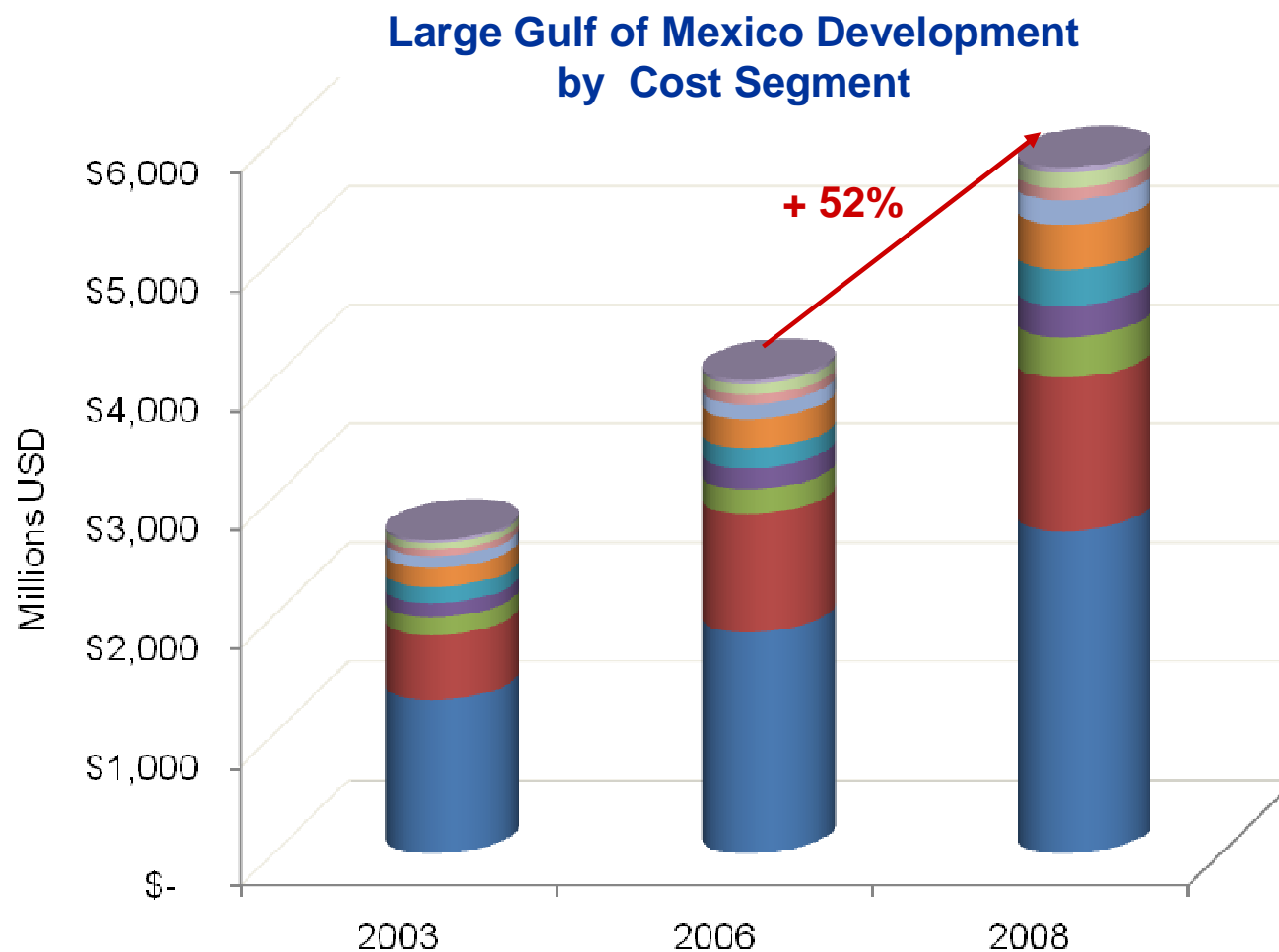
# LNG and Oil Sands Provide Long, Steady Production Profiles

## Example – One Major's new source production



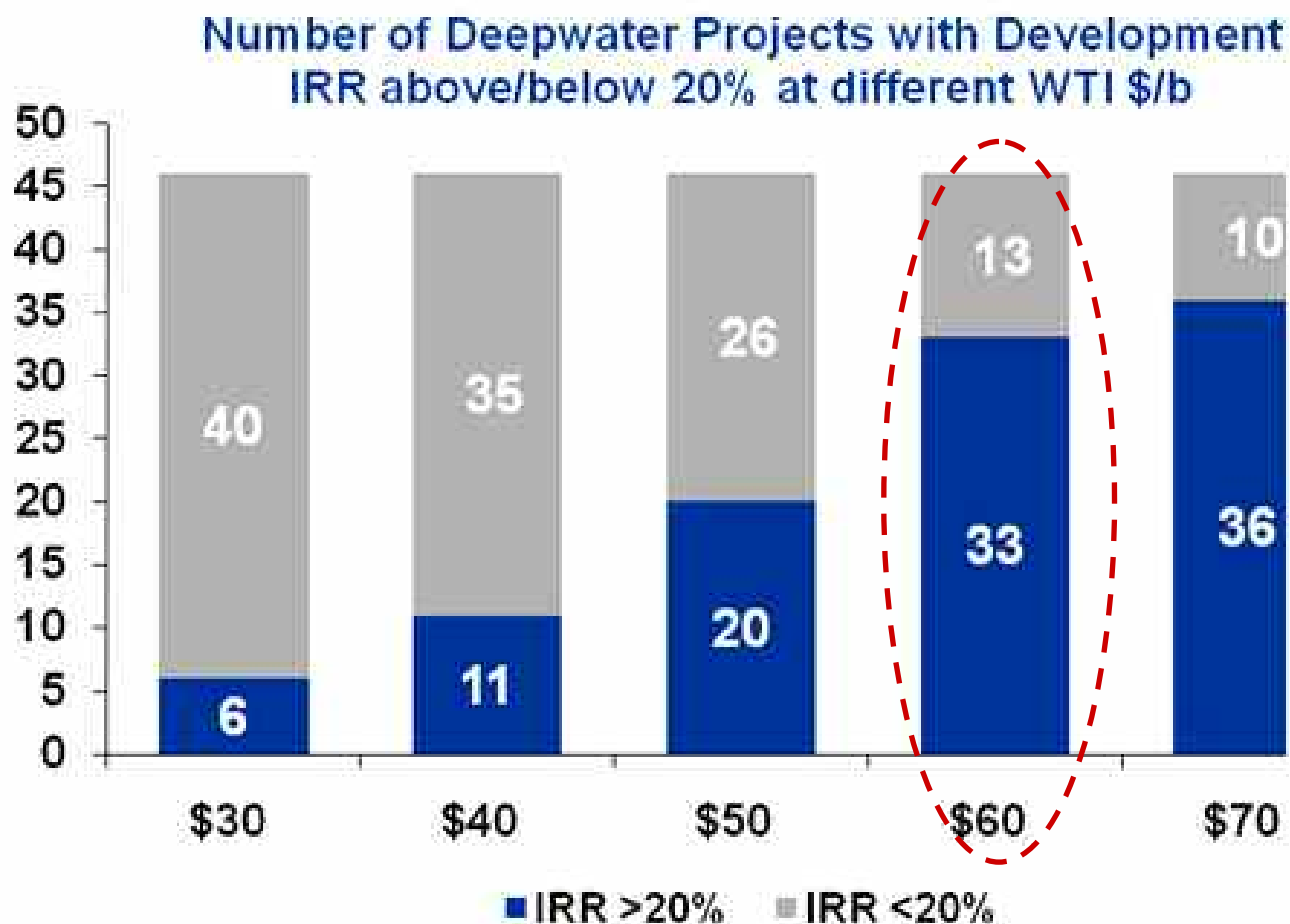
**Now....or later?**

# Oil Prices Rose, But So Did Costs



Source: PFC Energy

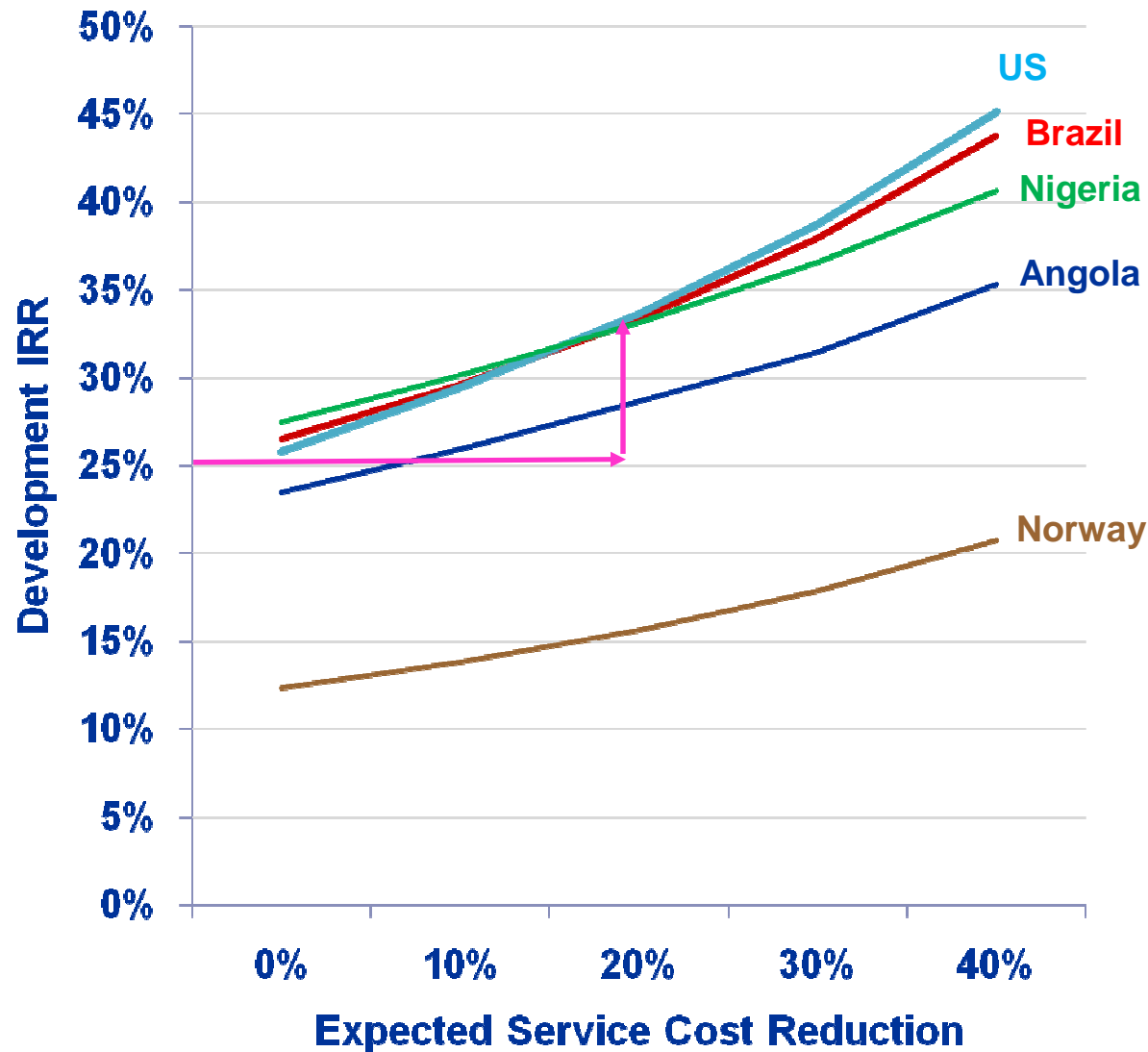
## \$60 WTI is a Break Point for Deepwater Development IRR of 20%



- Global sample of 46 deepwater projects

# Costs Matter: a Reduction of 20% Has a Significant Impact on Internal Rate of Return

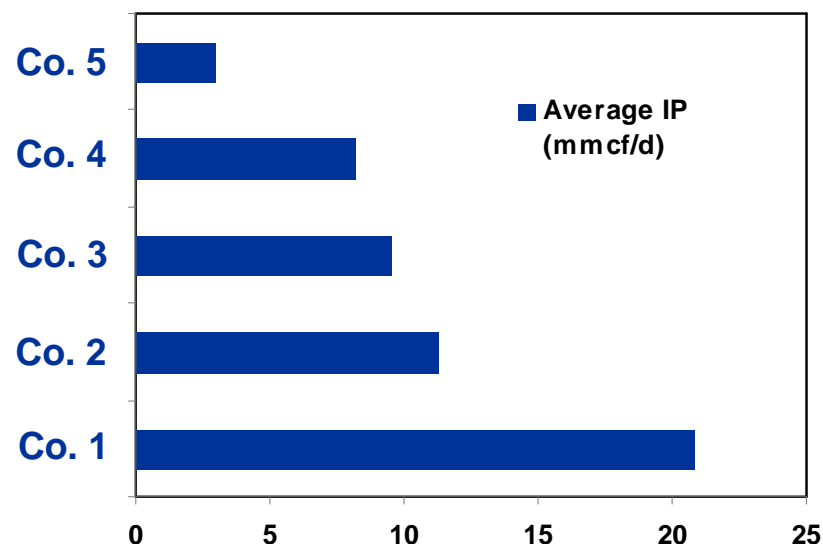
At \$60/b WTI



# Experience Matters: the Best Unconventional Players are Significantly Better Off



Haynesville Shale: Average Initial Production by Operator (mmcf/d)

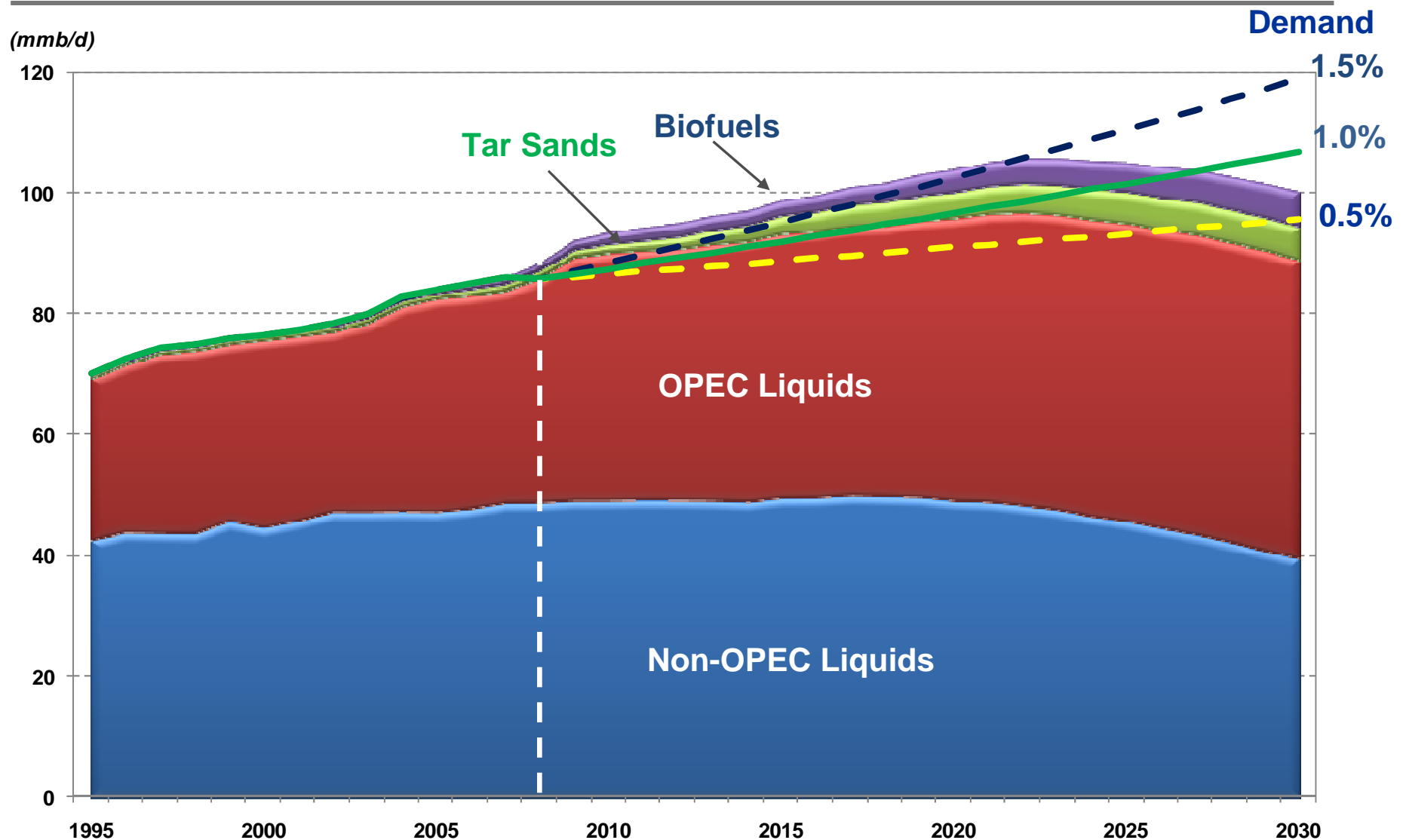


## Haynesville Economics for two type-wells

Initial Production (mmcf/d)	5	10
Acreage (\$ mm)	2.5	2.5
Well Cost (\$ mm)	7.5	7.5
OPEX (\$/mcf)	0.1	0.1
Discount (%)	10%	10%
Break-even (\$/mcf)	\$5.75	\$3.10



# In the Long Term, Investors Know that a Supply Tightening is Still on the Horizon



Source: PFC Energy



## Strategic Advisors in Global Energy

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*Main regional offices are shown in blue.*

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