

Topics

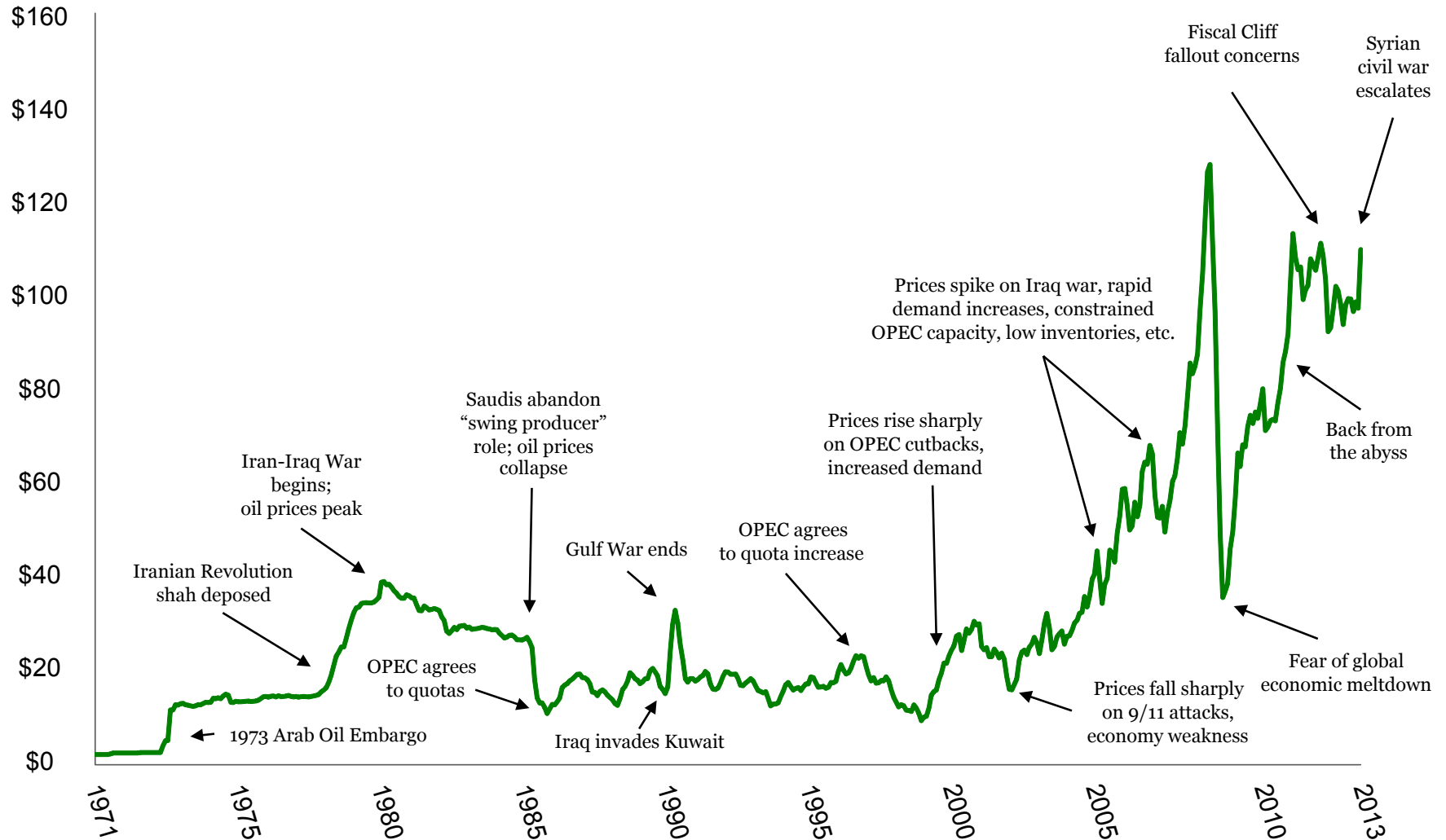
- ❖ How did we get to where we are today
 - The oil price Supercycle
 - Three M&A consolidation waves
 - Evolution of technology

- ❖ Today's Transformed Outlook
 - Natural gas
 - Oil and NGLs
 - Path to petroleum Flexibility

- ❖ Conclusions: Implications for Private Capital

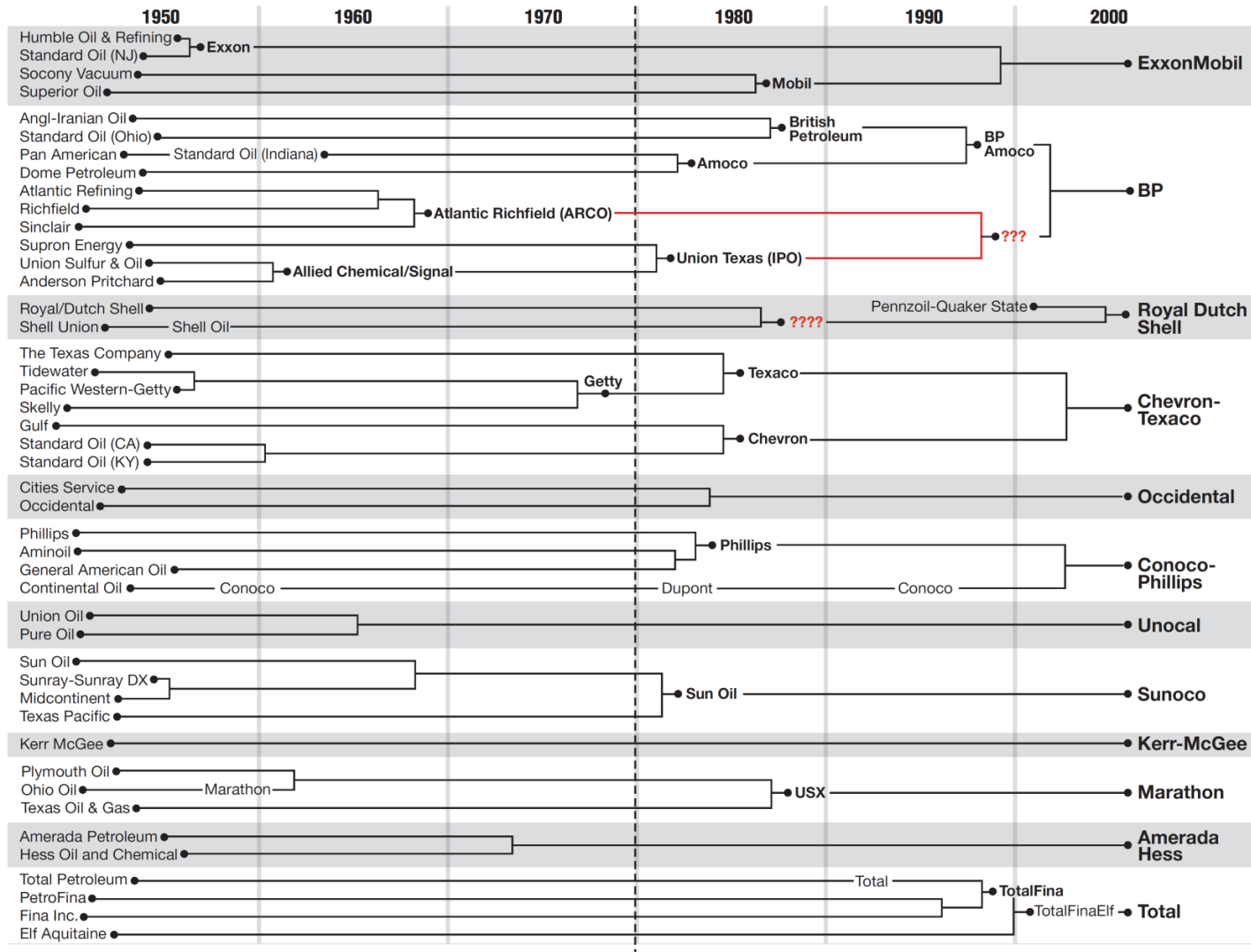
The Oil Price Supercycle

WORLD EVENTS AND OIL PRICES – NOMINAL PRICING (1971 – 2013)



M&A Consolidation Waves

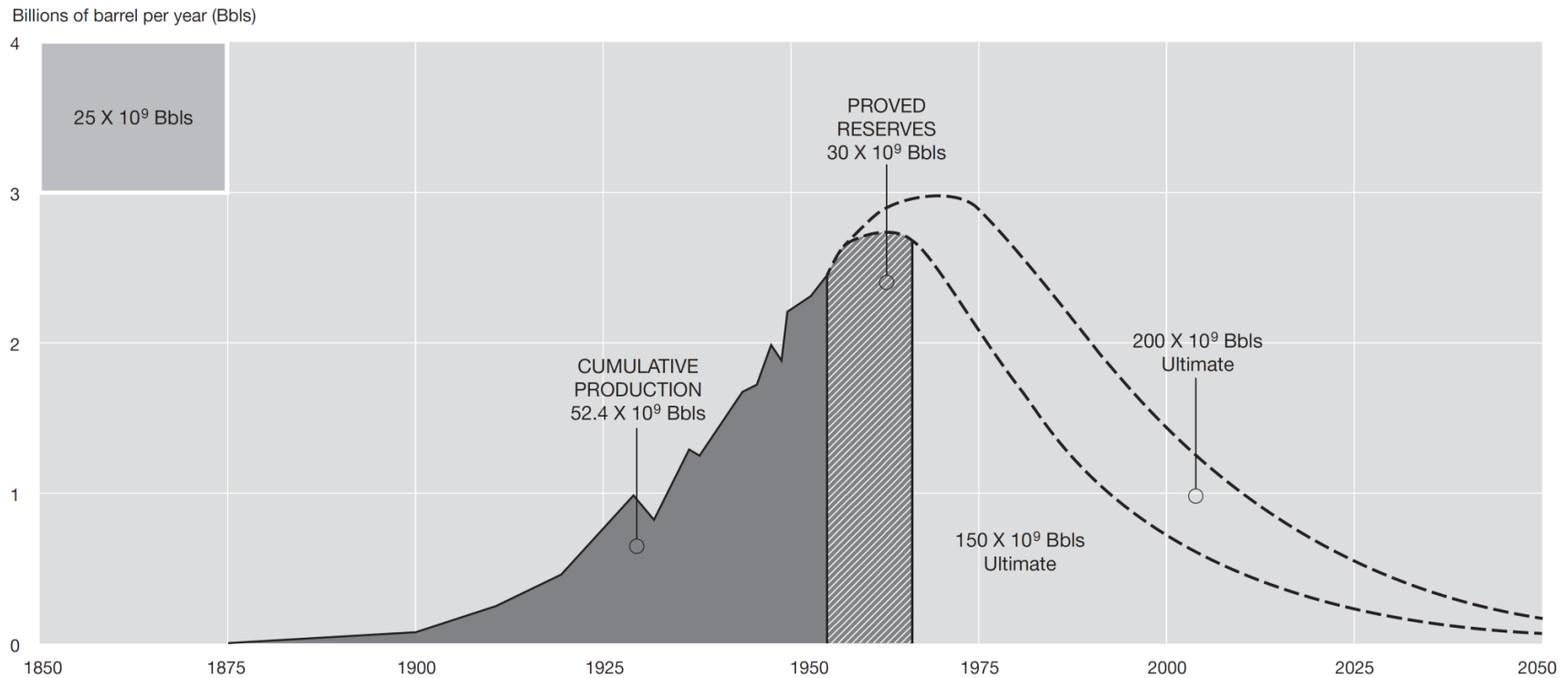
THE ACQUISITIONS OF COMPANIES THAT HAVE CREATED BIG OIL



Source: Thomas A. Petrie's *Following Oil*.

Evolution of Technology

HUBBERT'S 1956 PREDICTION OF FUTURE U.S. PRODUCTION OF CRUDE OIL

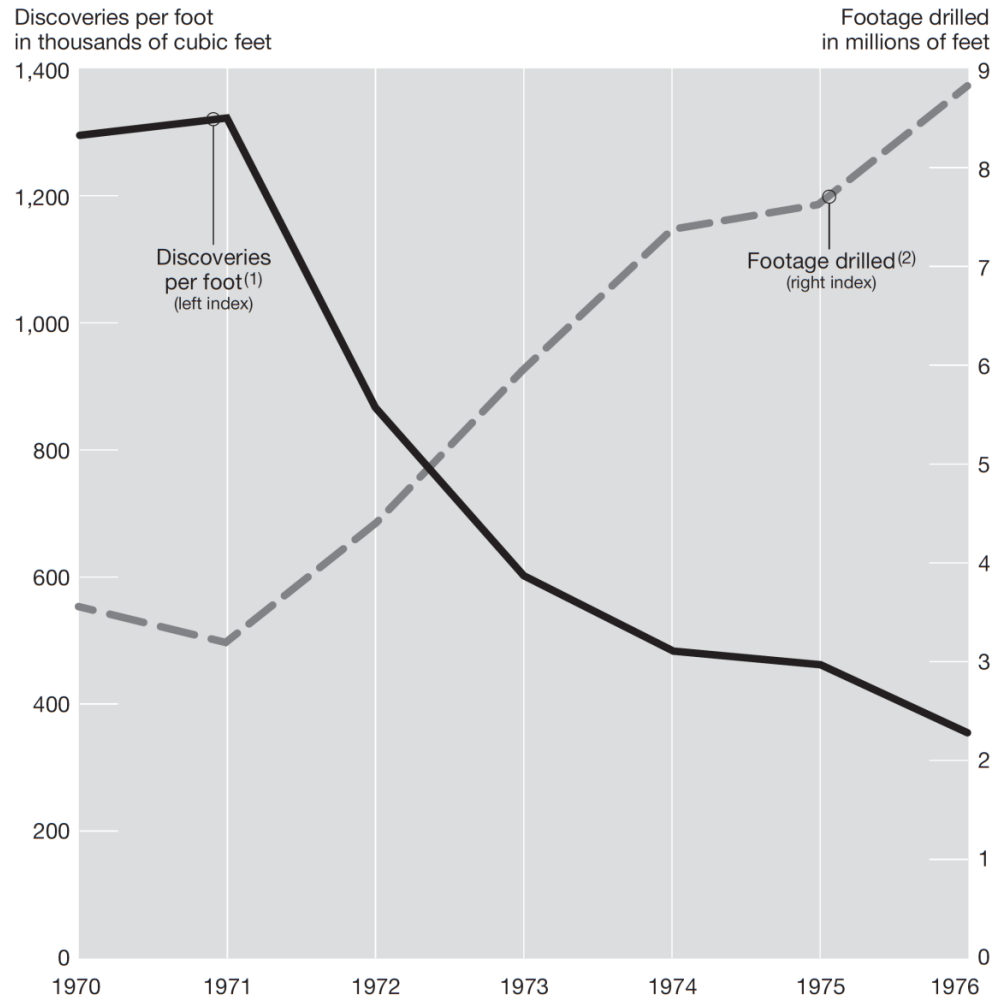


Premised on the old exploration model

Source: Hubbert prediction of 1956 of future production of crude oil in the conterminous United States and adjacent continental shelves. (Hubbert, 1956, fig. 21. Reproduced with the permission of American Petroleum Institute).

Evolution of Technology

U.S. FOOTAGE DRILLED AND DISCOVERIES PER FOOT (1970 – 1976)



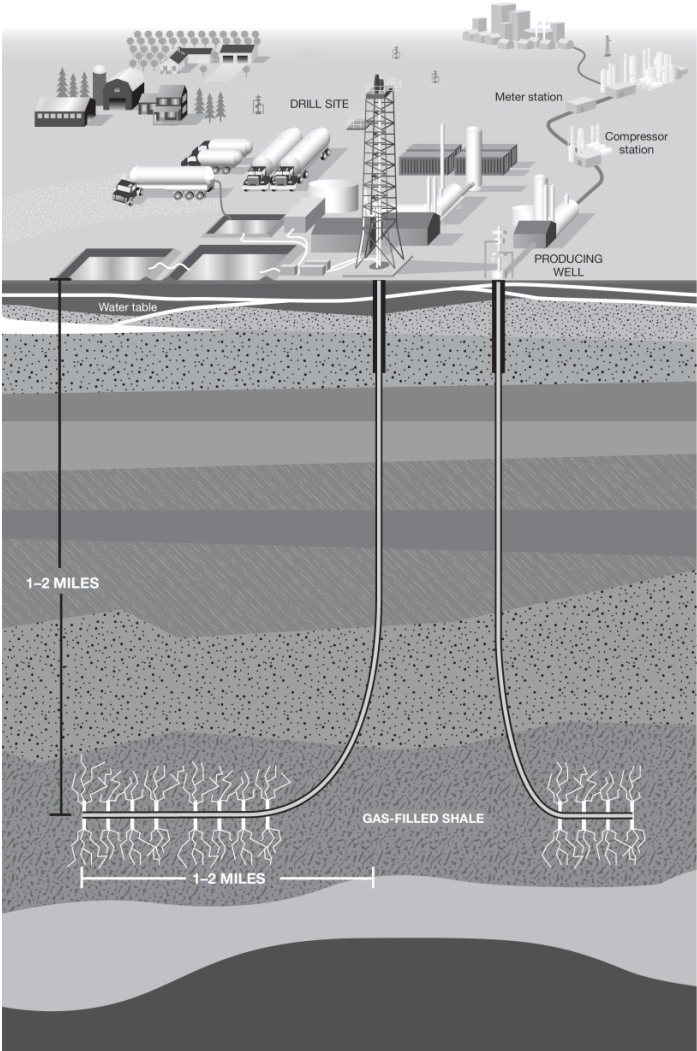
Sources: Discoveries from AGI-API Reserve Report, American Petroleum Institute, May 1977. Footage drilled from API Quarterly Review of Drilling Statistics.

(1) Successful gas exploratory drilling footage.

(2) Total new fields discovered and new reservoir discoveries divided by successful exploratory drilling footage.

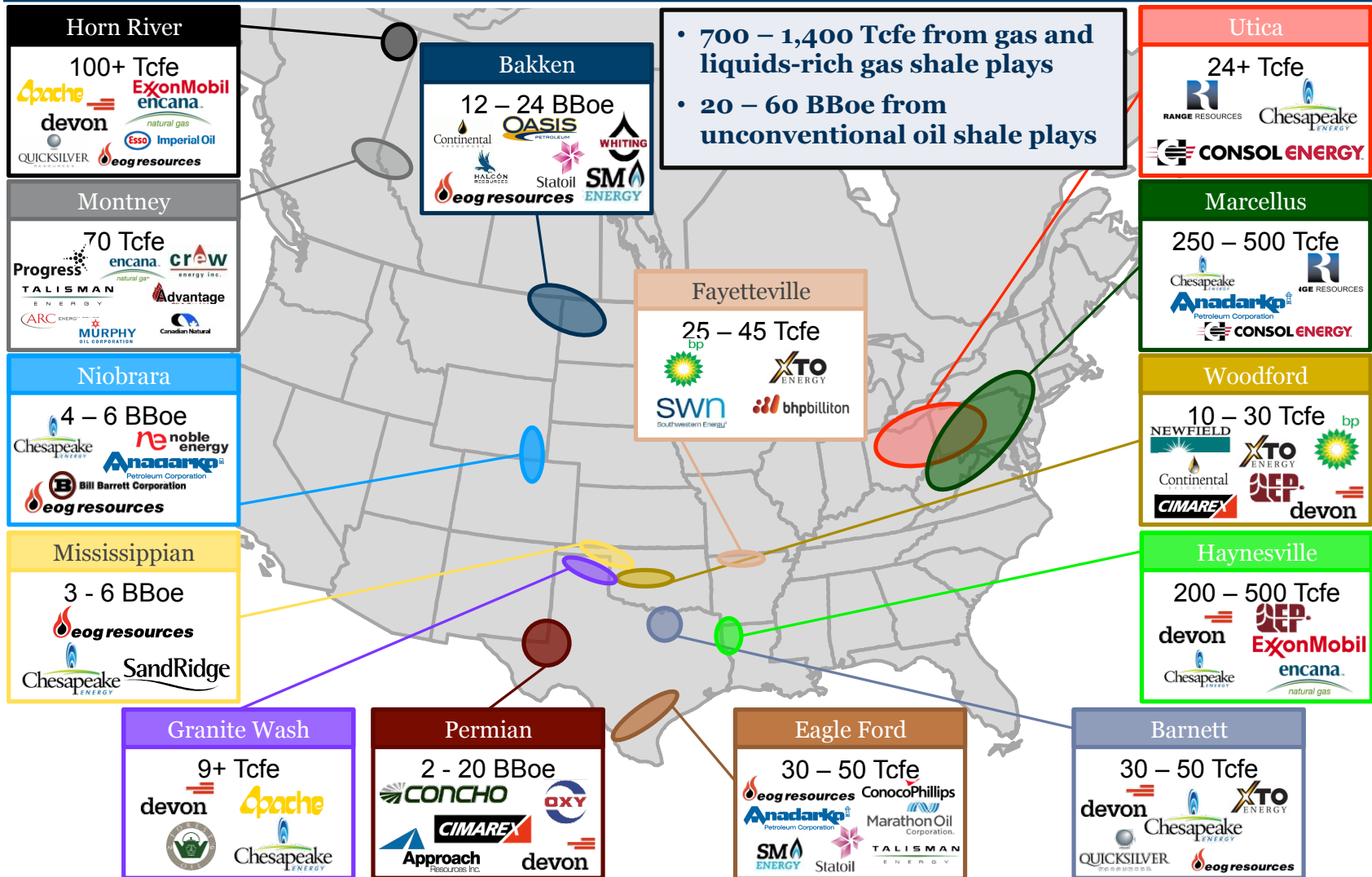
Evolution of Technology

HORIZONTAL WELLS – THE NEW EXPLOITATION MODEL



Evolution of Technology

CONFIRMED SOURCES OF UNCONVENTIONAL SHALE GAS AND OIL SHALE PRODUCTION



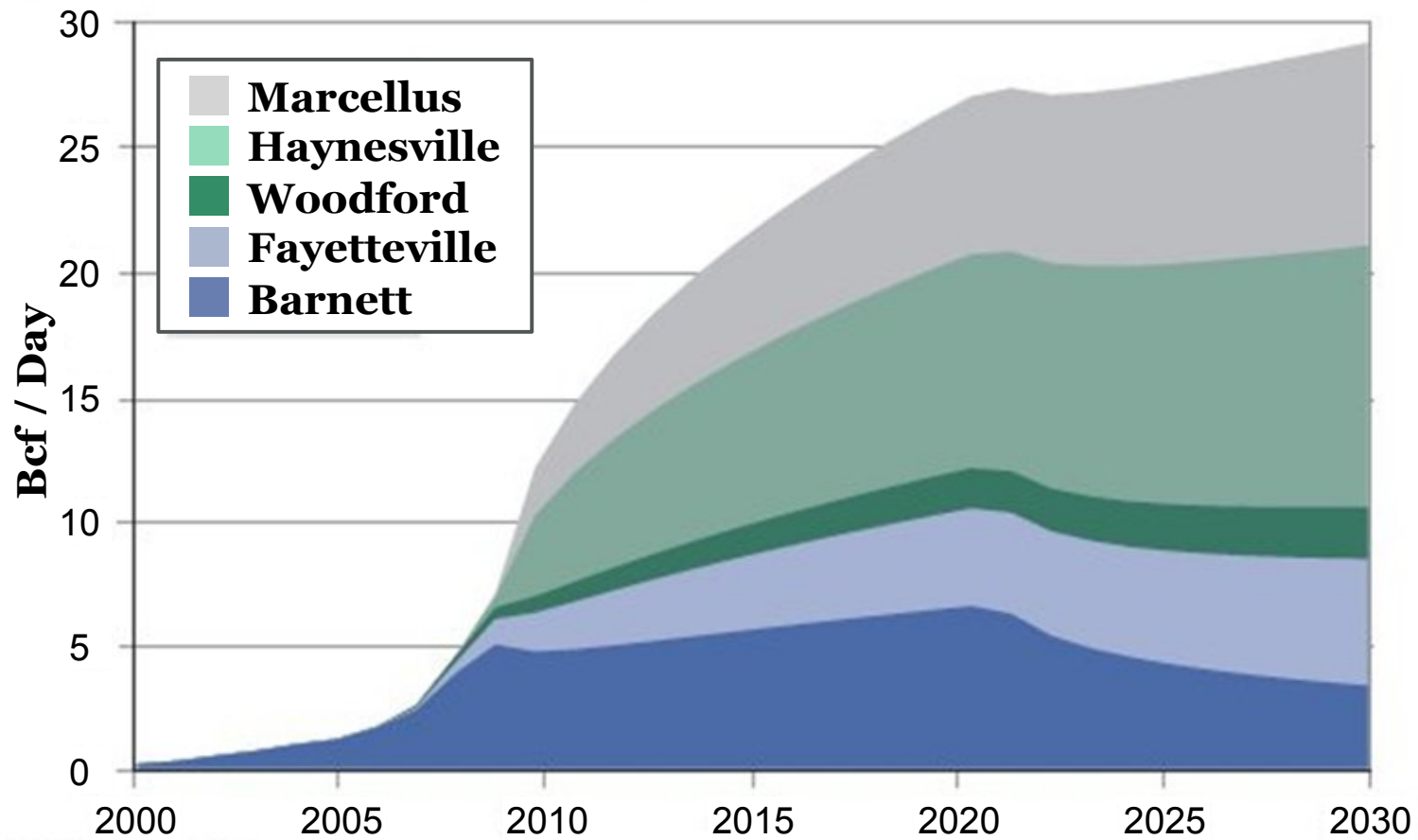
Source: United States Geological Survey, EIA and Select Wall Street research.

Today's Transformed Outlook

- ❖ Powerful production increases are resulting from application of well-incentivized capital focused on unconventional fossil fuel resources
- ❖ The land rush is largely over
- ❖ High-grading of validated development projects is the new priority
- ❖ Efficiency of execution is now critical
- ❖ Avoidance of pitfalls still matters (capital destruction is still possible)
- ❖ Oil and NGL resource potential has expanded possibly four-fold
- ❖ Natural gas resource potential is probably at least 10-fold higher

Today's Transformed Outlook

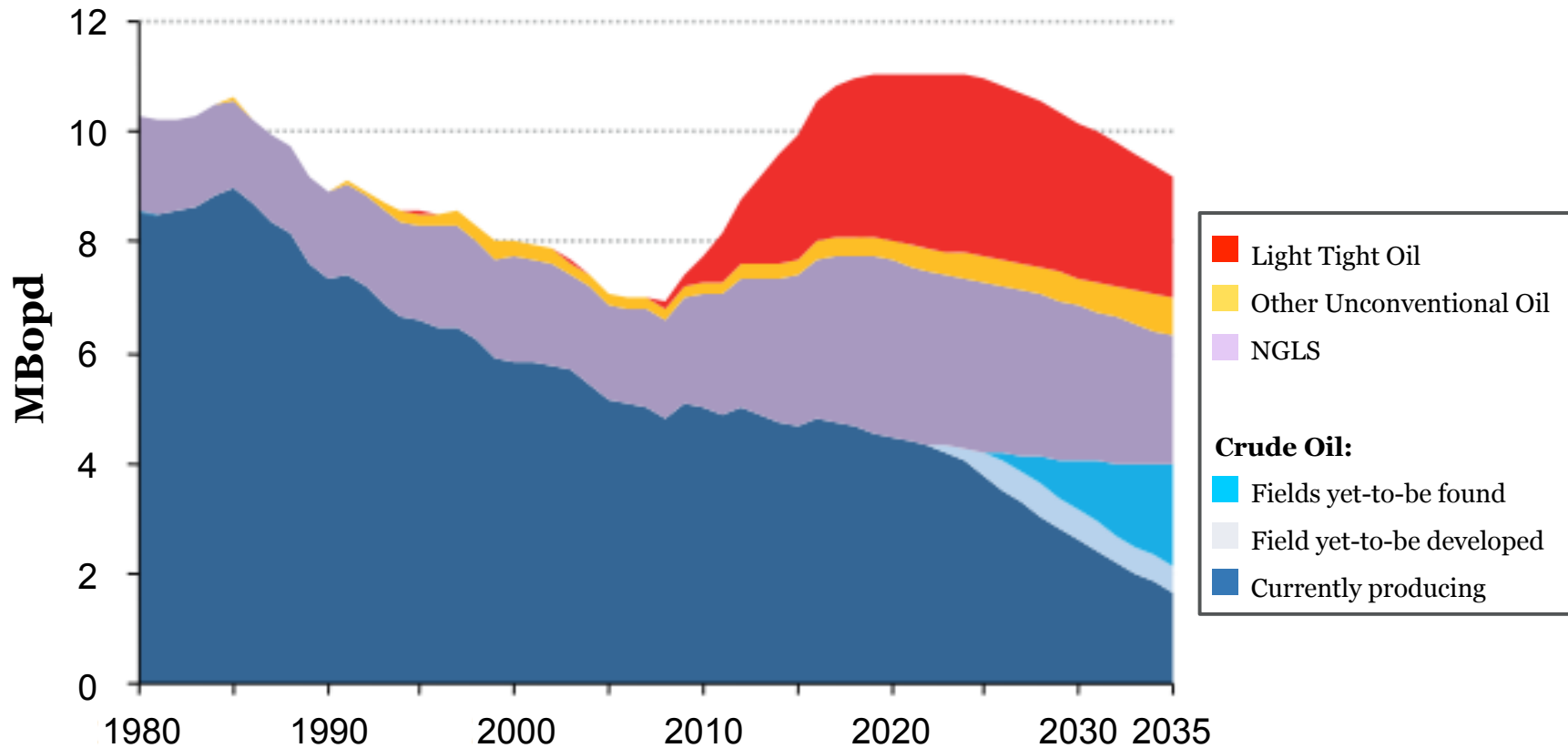
POTENTIAL GAS PRODUCTION RATE THAT COULD BE DELIVERED BY THE MAJOR U.S. SHALE PLAYS UP TO 2030



Source: *The Future of Natural Gas, An Interdisciplinary MIT Study, page 35.*

Today's Transformed Outlook

U.S. OIL PRODUCTION BY TYPE IN NEW POLICIES SCENARIO

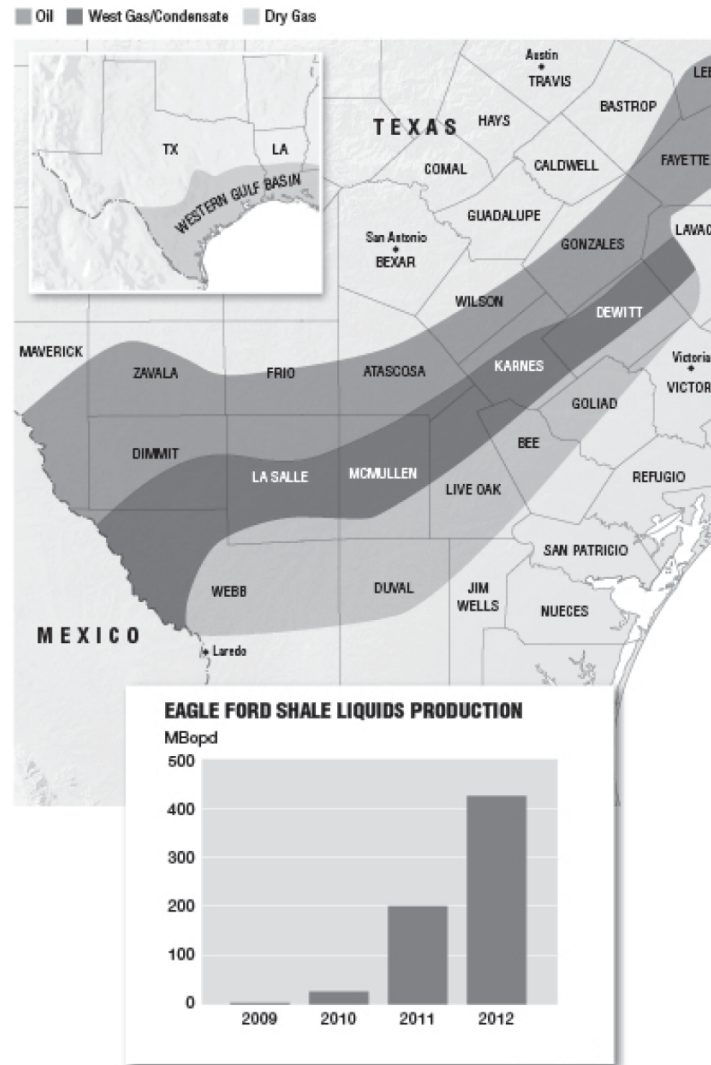


Note: The World Energy Model supply model starts producing yet-to-find oil after it has put all yet-to-develop fields into production. In reality, some yet-to-find fields would start production earlier than shown in the figure.

Source: IEA, World Energy Outlook 2012.

Today's Transformed Outlook

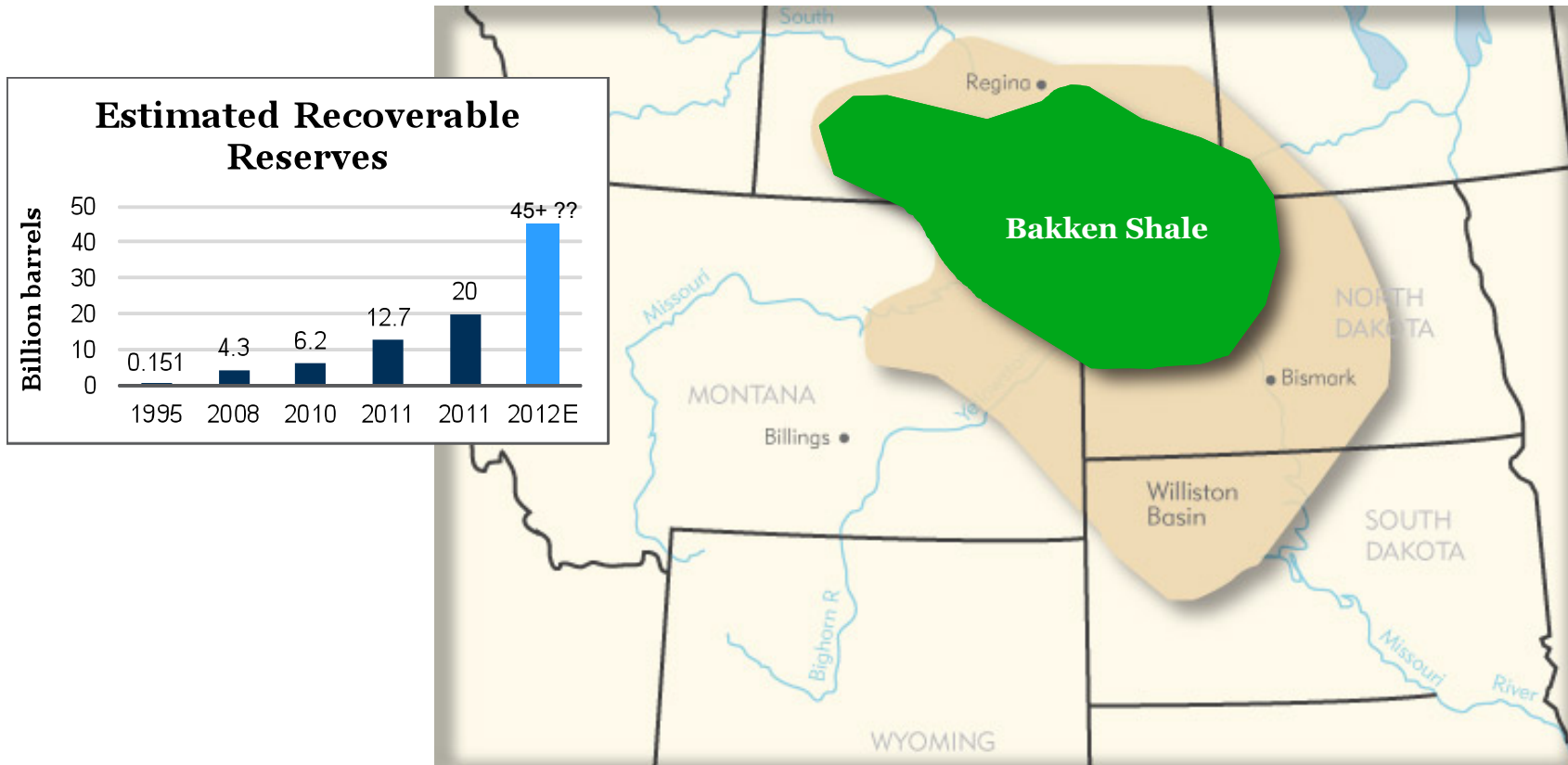
EAGLE FORD SHALE PENETRATION WINDOWS



Source: Railroad Commission of Texas Production Data Query System (PDQ).

Today's Transformed Outlook

BAKKEN SHALE OIL FIELD

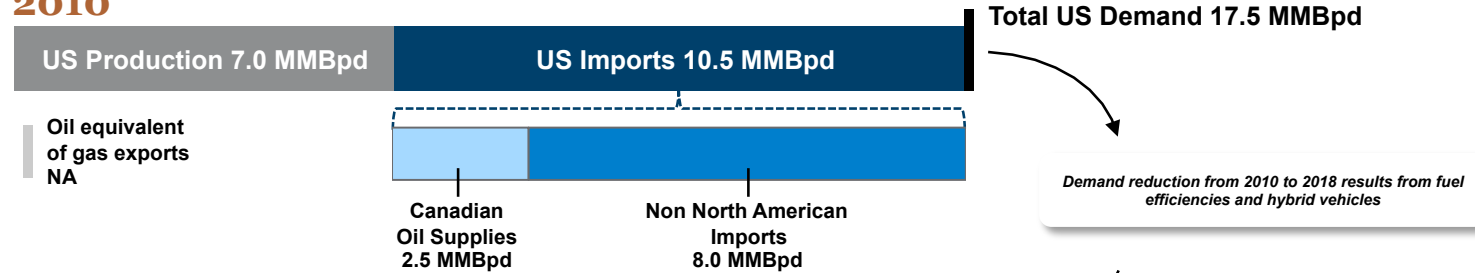


Source: Continental Resources.

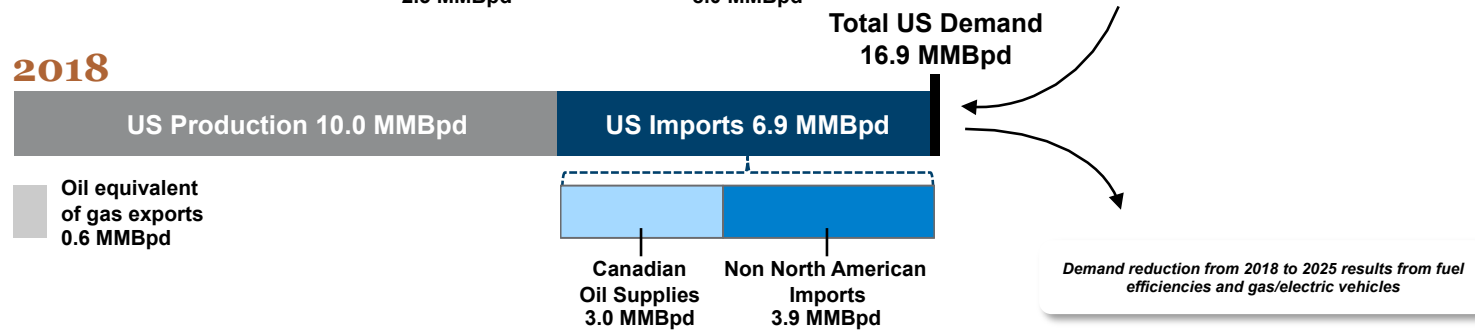
Today's Transformed Outlook

A PATH TO PETROLEUM FLEXIBILITY

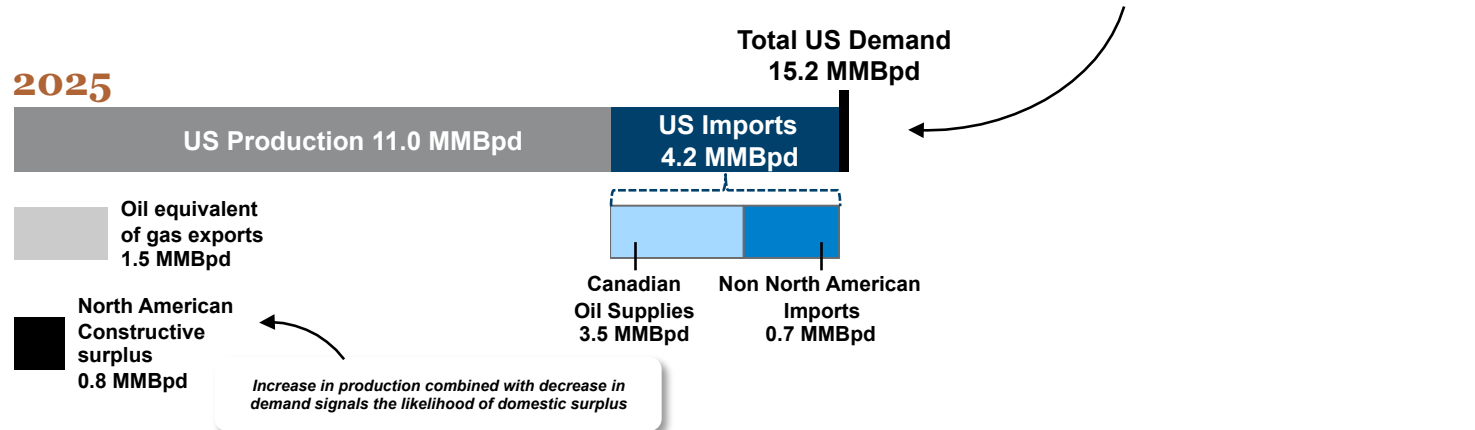
2010



2018



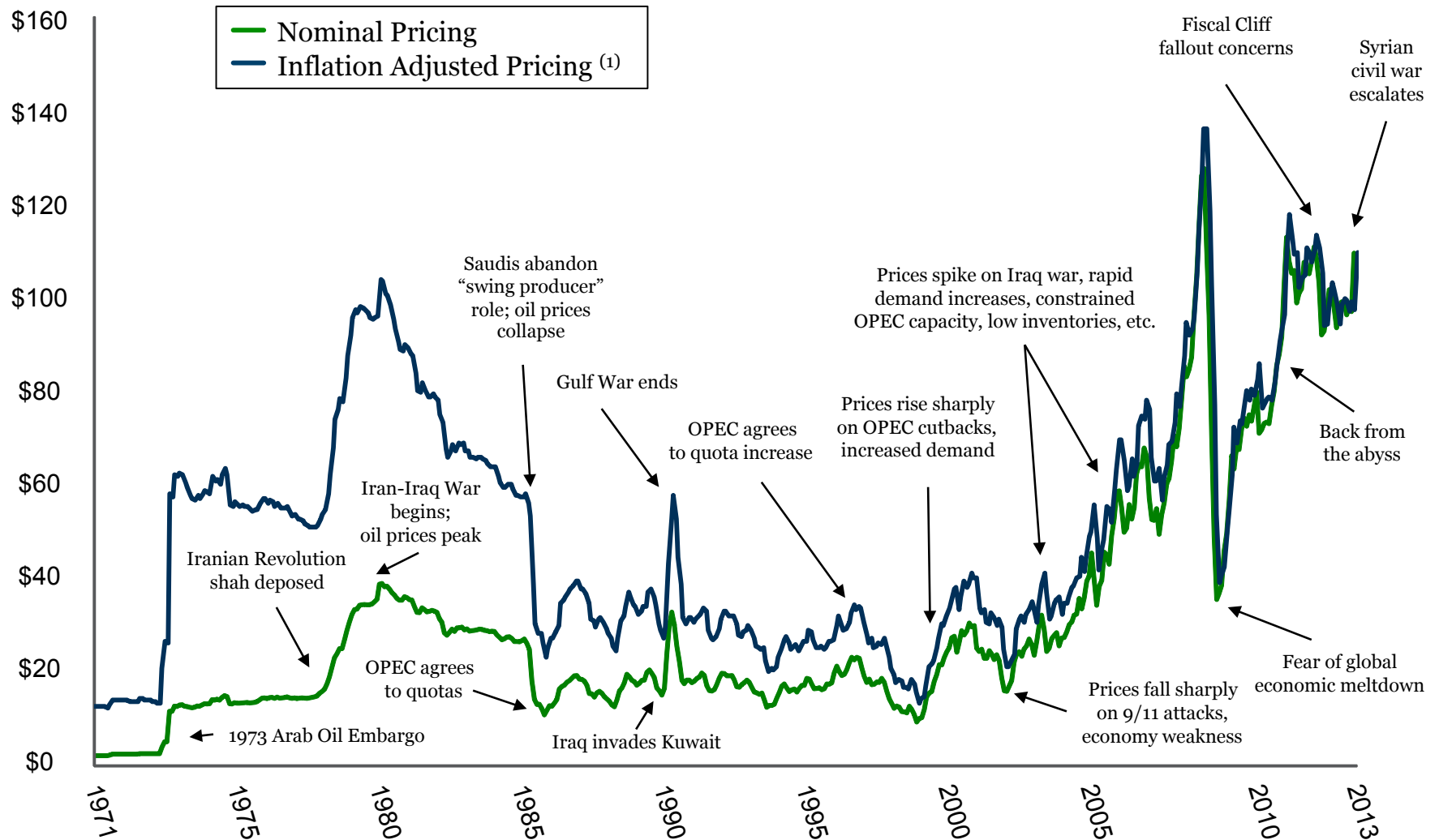
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Source: IEA, World Energy Outlook 2012 and Thomas A. Petrie's Following Oil.

Today's Transformed Outlook

WORLD EVENTS AND OIL PRICES – NOMINAL AND INFLATION ADJUSTED PRICING (1971 – 2013)



(1) Prices are adjusted for inflation to July 2013 prices using the Consumer Price Index (CPI-U) as presented by the Bureau of Labor Statistics.

Conclusion: Implications for Private Equity

- ❖ Markets continuously endeavor to work but do so in their own time and at their own pace
- ❖ Flawed economic and policy initiatives ultimately cause (or at least exacerbate) supply shortfalls, and sometimes even surpluses
- ❖ Whether supply is in surplus or deficit, both conditions present ripe candidates to be capitalized upon by private equity
- ❖ Periodic consolidation and reorganization (via mergers and sales) are integral to the natural order of the petroleum sector economy

Conclusion: Implications for Private Equity (cont'd)

- ❖ Enormous reconfiguration of infrastructure is called for basin by basin
- ❖ Fossil fuel price volatility requires continuous management efforts
- ❖ New demand needs to be created
- ❖ Exports are required (the pressure relief valve)