

Colorado School of Mines
29th Oil Shale Symposium

***The Impact of Oil Prices on Oil
Shale Development in the
United States***

Khosrow Biglarbigi, President
INTEK Incorporated
Arlington, VA



OIL SHALE
SYMPOSIUM
Tallinn 2009

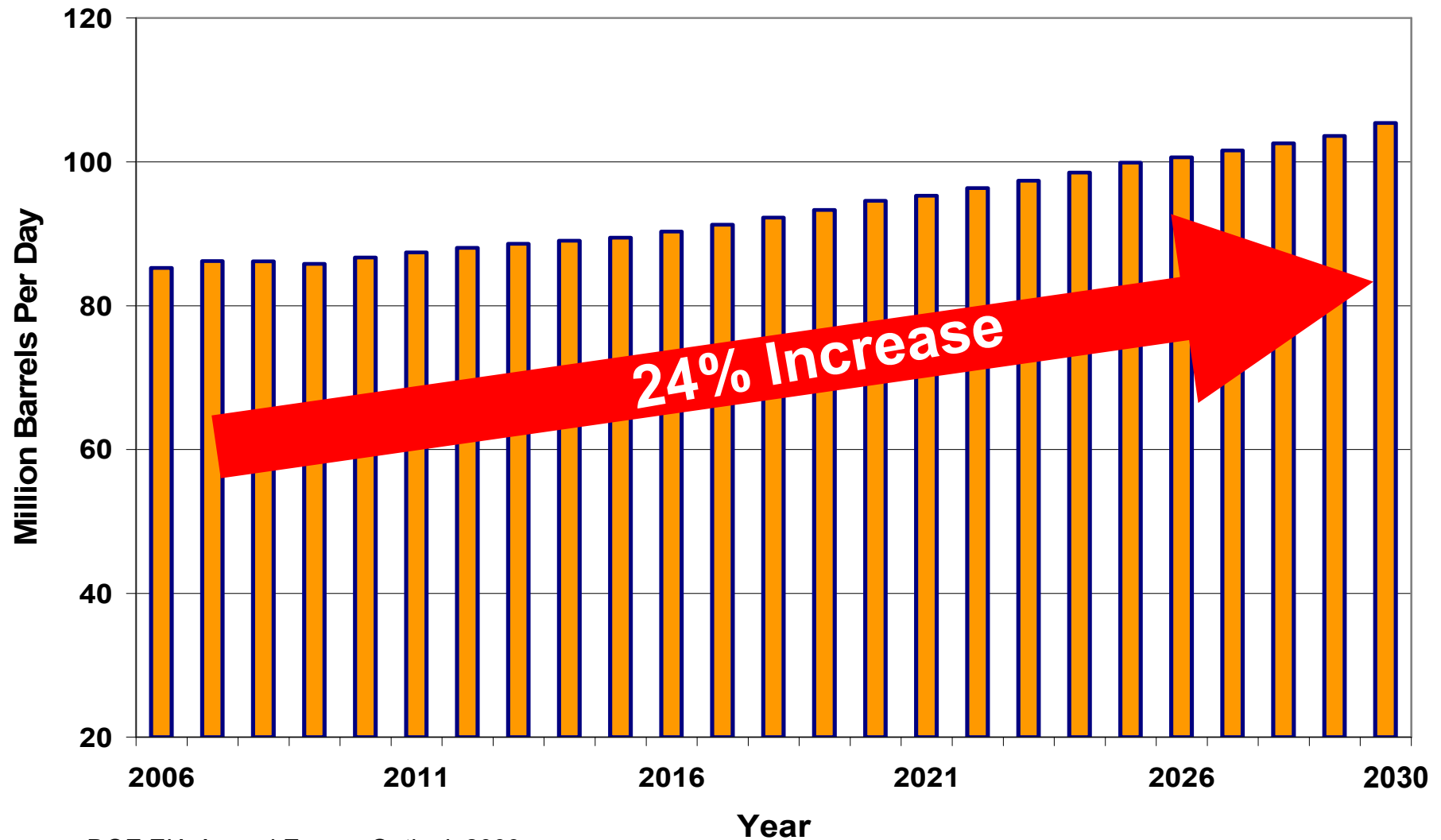


“Oil shale is a local asset with global constraints.”

Klaus Brendow, Senior Advisor
World Energy Council
June 9, 2009

Global Petroleum Liquid Demand

2006 - 2030

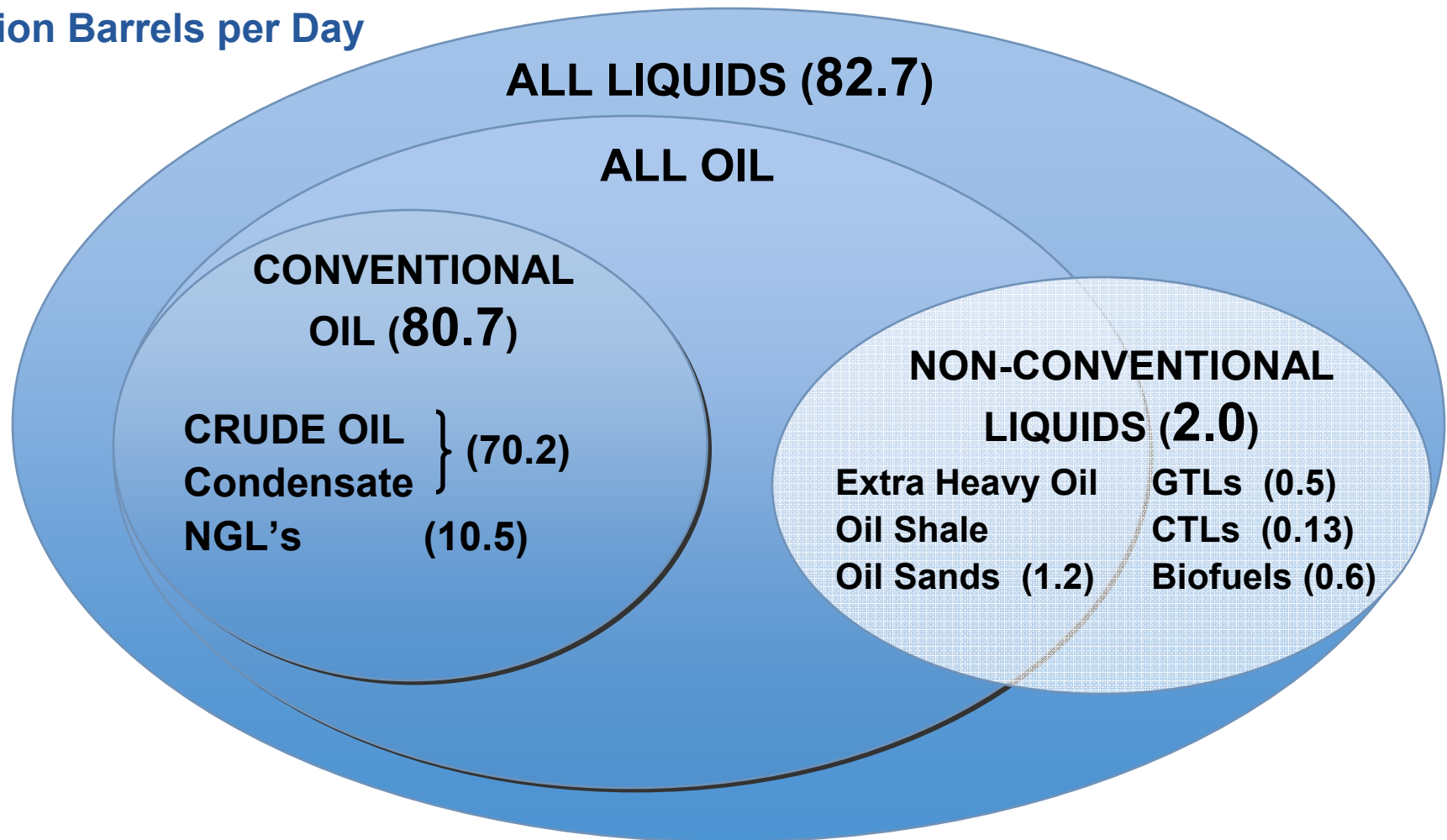


Source: DOE EIA Annual Energy Outlook 2009

Petroleum Liquid Supply Worldwide

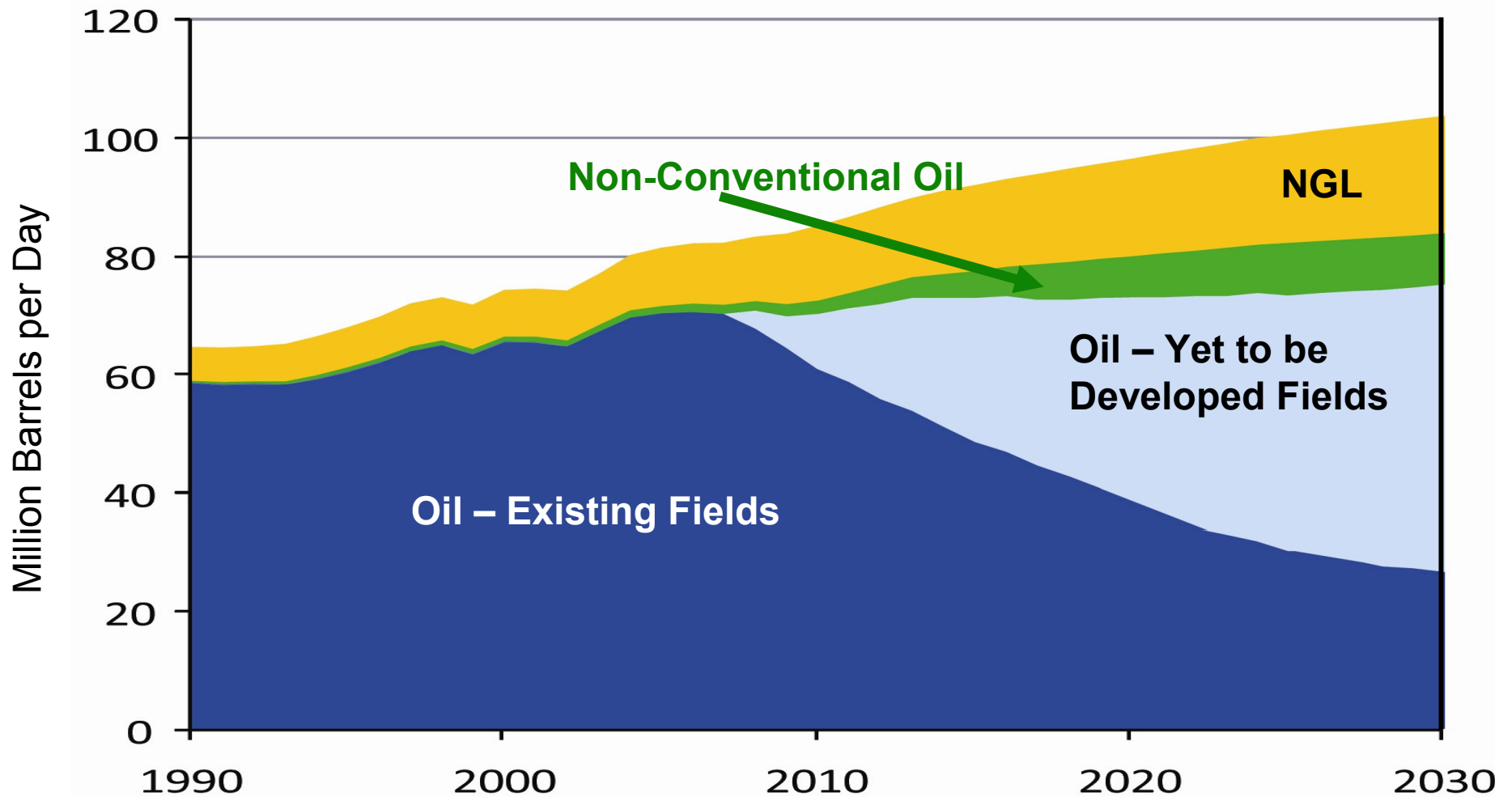
2008

Million Barrels per Day



Source: UK Energy Research Centre, 2009

Projected Global Petroleum Liquid Supply 1990 – 2030



Source: International Energy Agency, World Energy Outlook, 2008

New Report - Peak Oil Earlier Than 2020

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'Significant Risk' Of Oil Production Peaking In Ten Years, Report Finds

Oct 8, 2009 — A new report, launched by the UK Energy Research Centre (UKERC), argues that conventional oil production is likely to peak before 2030, with a significant risk of a peak before 2020. The report concludes that the UK Government is not alone in being unprepared for such an event - despite oil supplying a third of the world's energy.

See also: [The report finds that we are entering an era of slow and expensive oil as](#)



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Cleaning Up Our Water

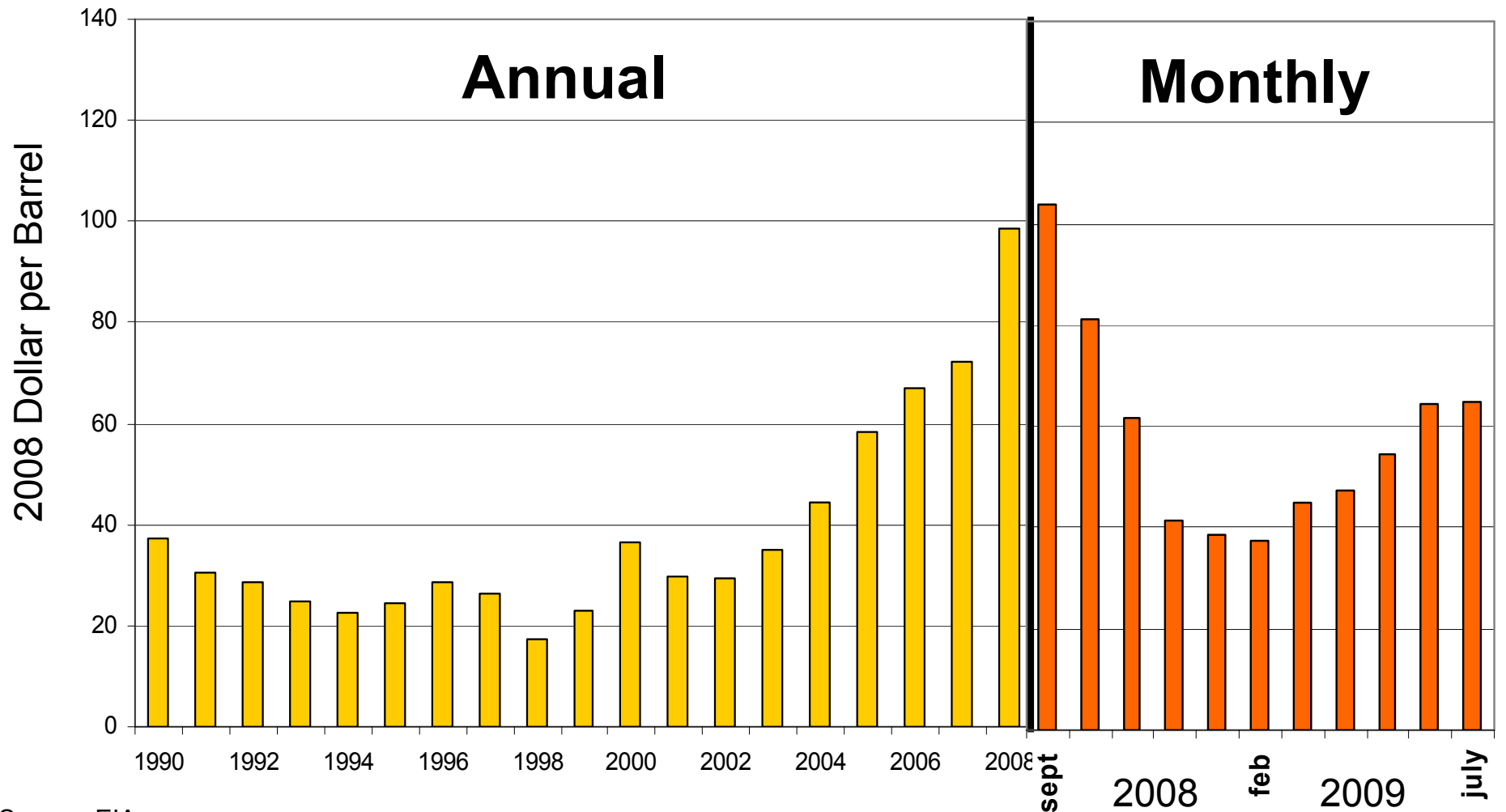
Storm drains fitted with a spongy material -- a synthetic polymer similar to those used in diapers -- can catch household pollutants such as paint. ...

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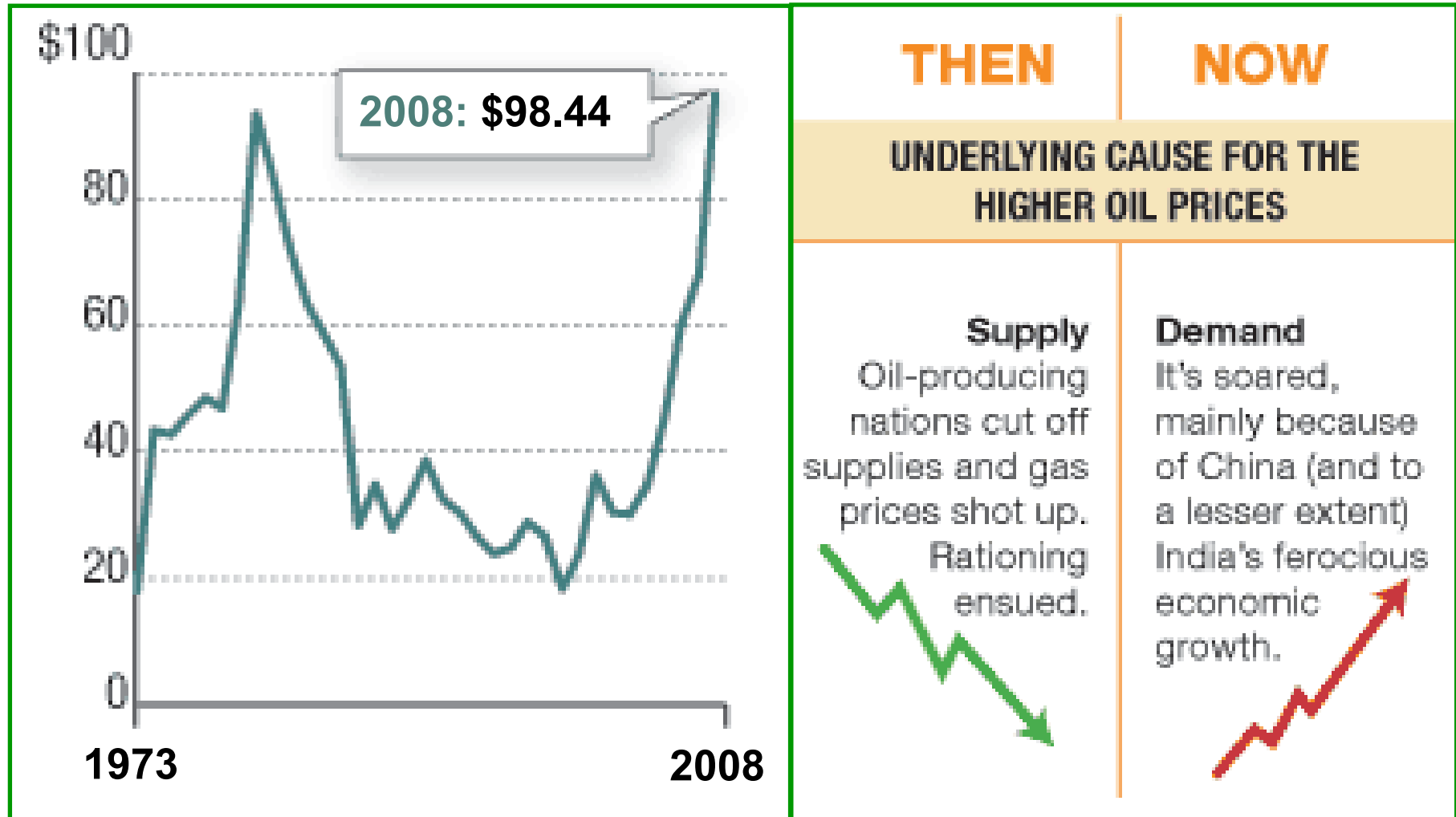
▶ [Engineering Students Build Next-Generation Bathyscaphe](#)

Historical World Oil Prices



Source: EIA

Time Warp: Oil Shocks 1973 and 2008



Source: NPR, 2009

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International Energy next year as the

By Ben Rooney, CNNMoney.com
Last Updated: October 6, 2009

NEW YORK (CNNMoney.com) — Oil prices rebound next year after a deep slump, according to a report from the Paris-based International Energy Agency (IEA).

The Paris-based IEA said global oil demand will rise by 1.5 million barrels per day from its peak in 2008 to 2010.

Crude for November 2009 is \$71.77 a barrel, compared with \$70.40 as the U.S. dollar fell to a low against the Federal Reserve's target.

Pickens predicts oil prices to soar

Oil tycoon increases his oil and natural gas exposure with prices set to rise with economic recovery.

October 6, 2009: 4:52 PM ET

NEW YORK (Reuters) -- Texas oil tycoon T. Boone Pickens said Tuesday he has increased his long oil and natural gas position in recent weeks.

"It's not my personality to be short," said the billionaire who has made his fortune investing in the oil sector.

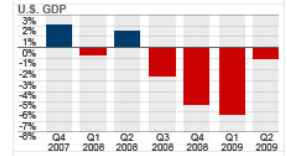
Oil prices are likely to be around \$75 a barrel by the end of 2009 and \$85 by the end of 2010, Pickens said, but added that an economic recovery could boost prices much higher.

"If you have a global recovery, then you could easily be \$90 a barrel next year, you could be \$100 a barrel," he said.

0:00 / 2:57 'Dropping' the dollar for oil

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G-20 summit: 6 countries in recovery



The G-20's six largest economies took a big hit during the global recession in the past year and a half. Challenges remain but most appear on the path to recovery. [View Photos](#)

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Do you expect to be better off financially in 2010?

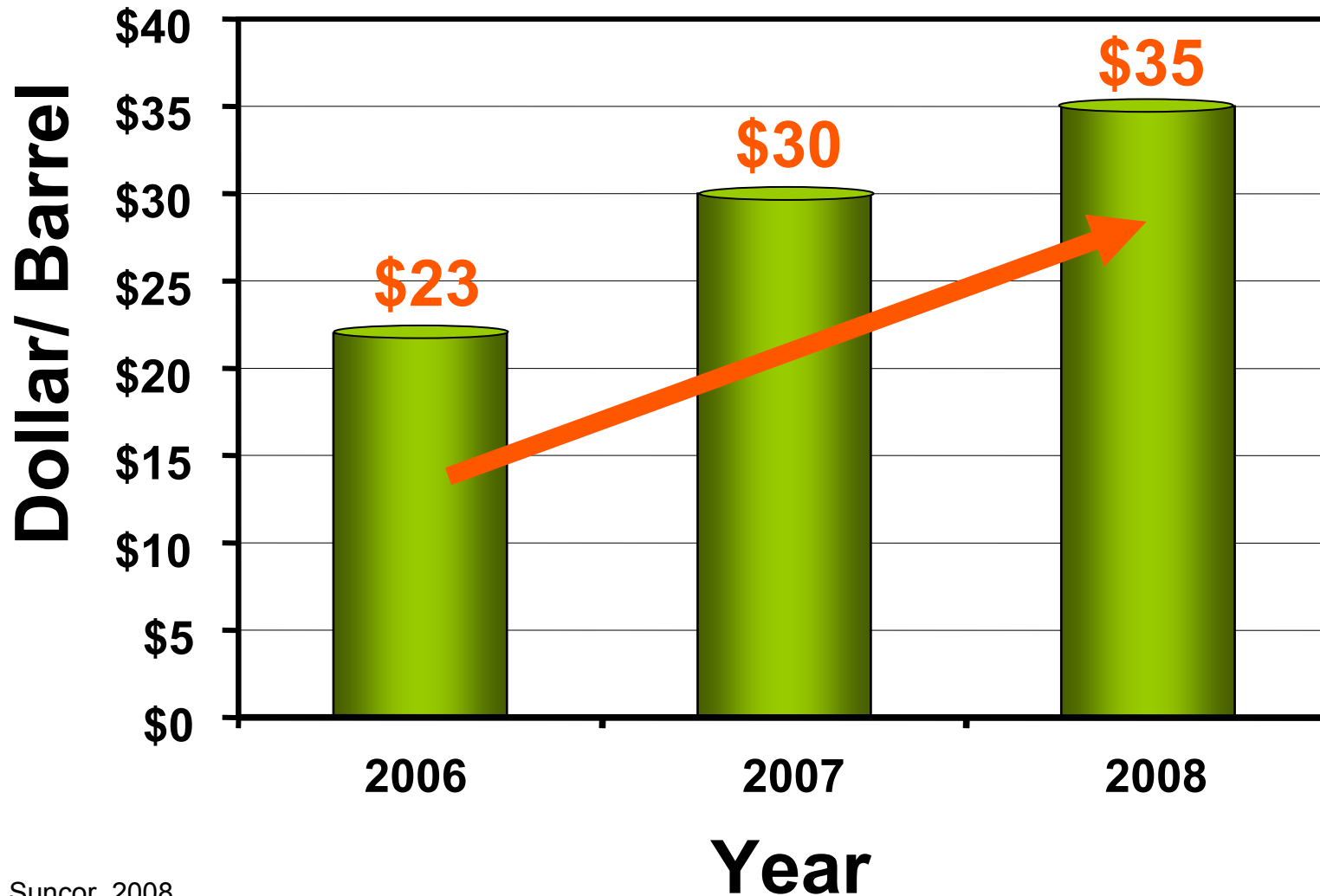
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Higher World Oil Prices

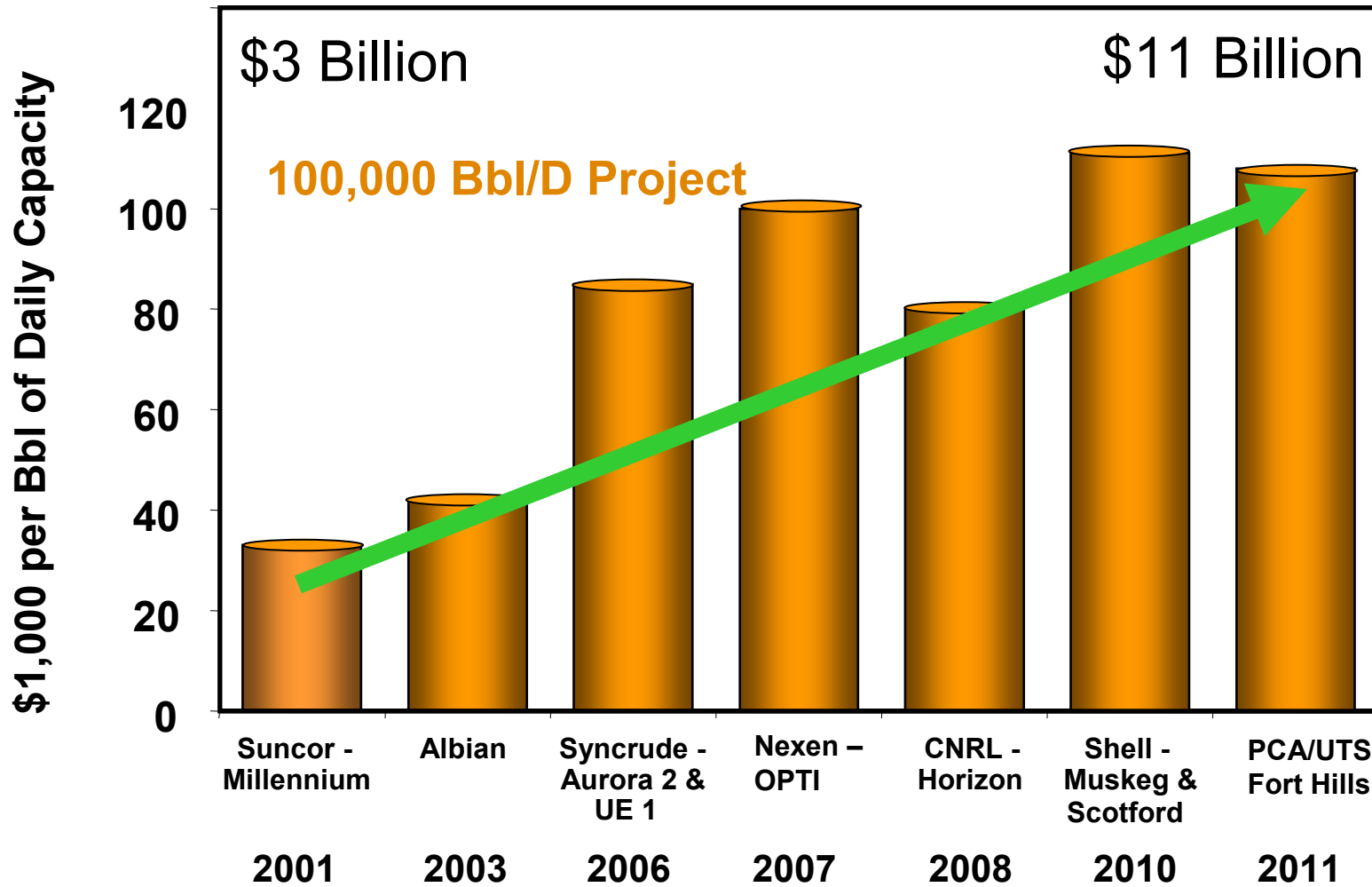
- What it has done for oil sands in Canada
- What it may do for oil shale in the United States and elsewhere

Canadian Oil Sands Operating Costs



Source: Suncor, 2008

Canadian Oil Sands Capital Costs



Source: Canadian Association of Petroleum Producers, April 2008

Causing Project Delays

Bloomberg.com

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Updated: New York, Oct 09 16:41 London, Oct 09 21:41 Tokyo, Oct 10 05:41



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Shell CEO Says Higher Costs Limit Canadian Oil Sands Projects

By Tina Seeley

Oct 8, 2009 Higher costs and low oil prices are limiting further development of oil sands projects in Canada, the chief executive officer of Royal Dutch Shell Plc said.

"Costs have risen very clearly in the Alberta region for new projects, hence new projects are not entirely profitable at today's oil prices," Peter Voser told reporters today after giving a speech in Washington. "Costs have to adjust to lower oil prices. Once they come down, then further projects can be considered."

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Total Canada Chief Says Oilsands Need Pricier Oil

BY SCOTT HAGGETT, REUTERS

Oct 4, 2009

STORY

PHOTOS (1)



The new chief executive of Total SA's Canadian unit said on Monday the French oil major will delay giving the final go-ahead for its Joslyn oil sands project in Alberta, waiting until higher oil prices allow it to wrest a solid return from its Canadian investments.

Photograph by: AFP-Getty Images, Herald Archive

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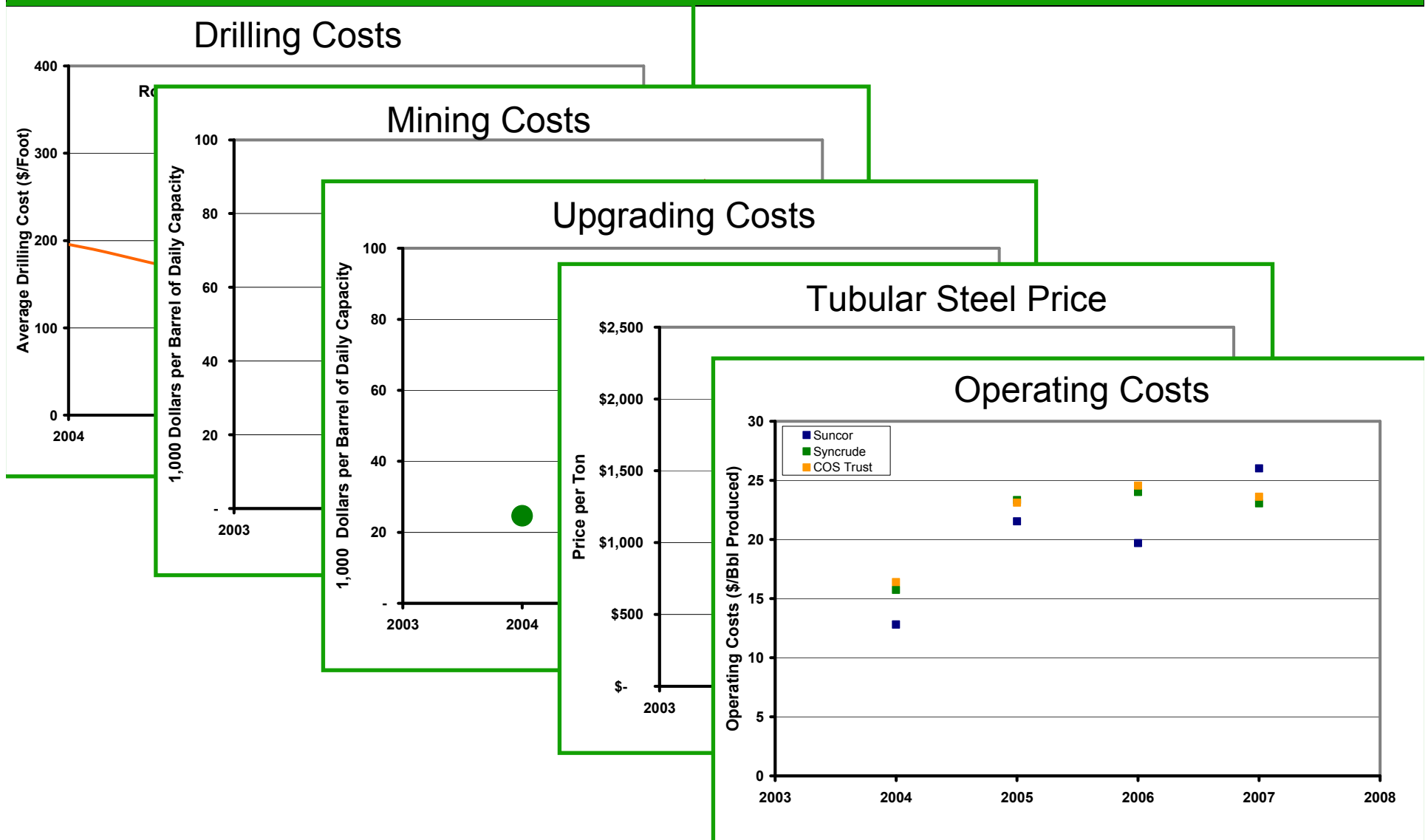
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Oil Shale Costs are Impacted

A Few Examples



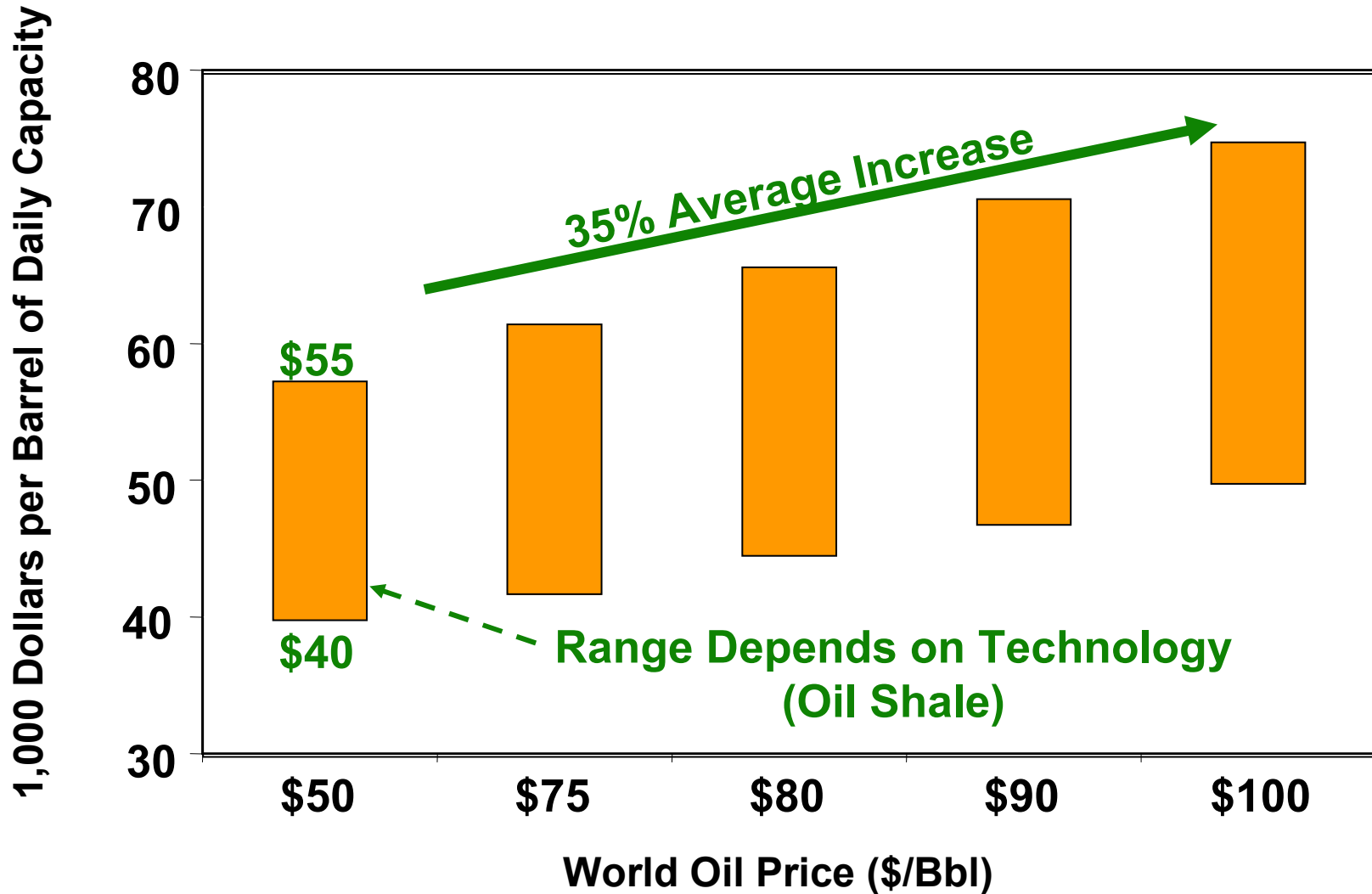
DOE's Estimate of Oil Shale Cost

National Oil Shale Model, 2006

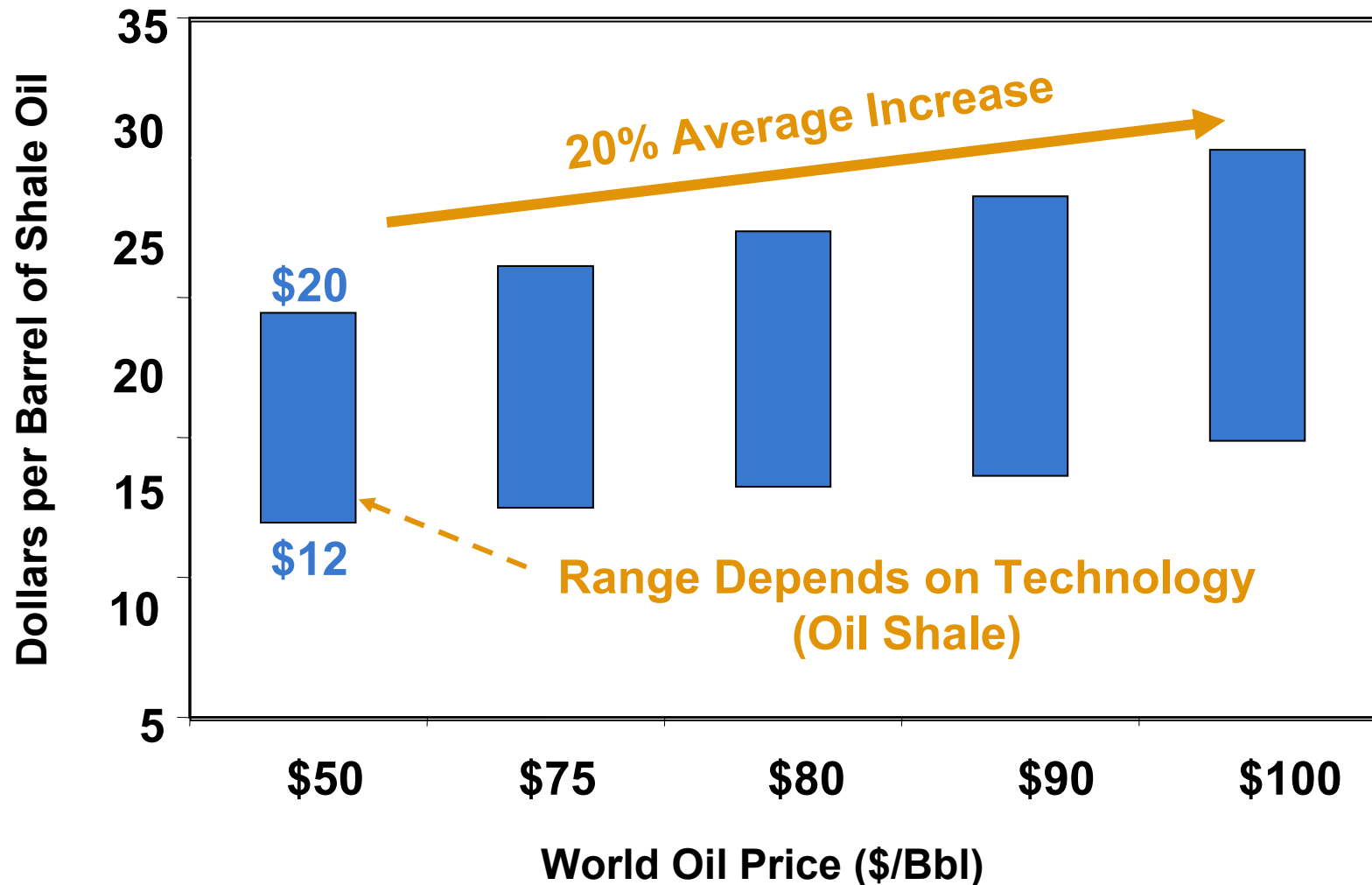
Item	Unit	Range
Capital Cost	\$/BPD*	40K-55K
O&M Cost	\$/Bbl	12-20

* Barrel of Daily Capacity

Escalation of Capital Costs due to Higher Oil Prices

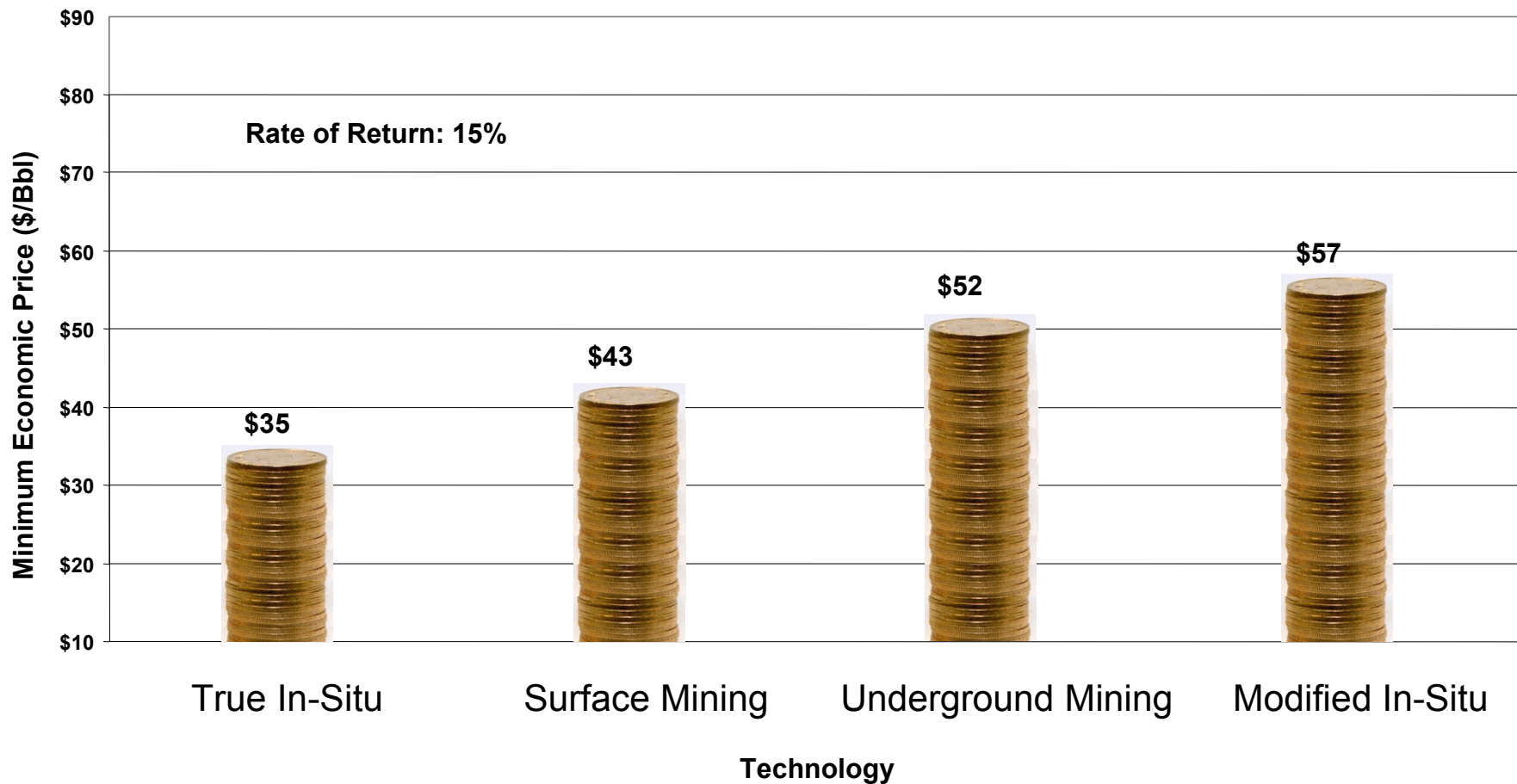


Escalation of Operating Costs due to Higher Oil Prices

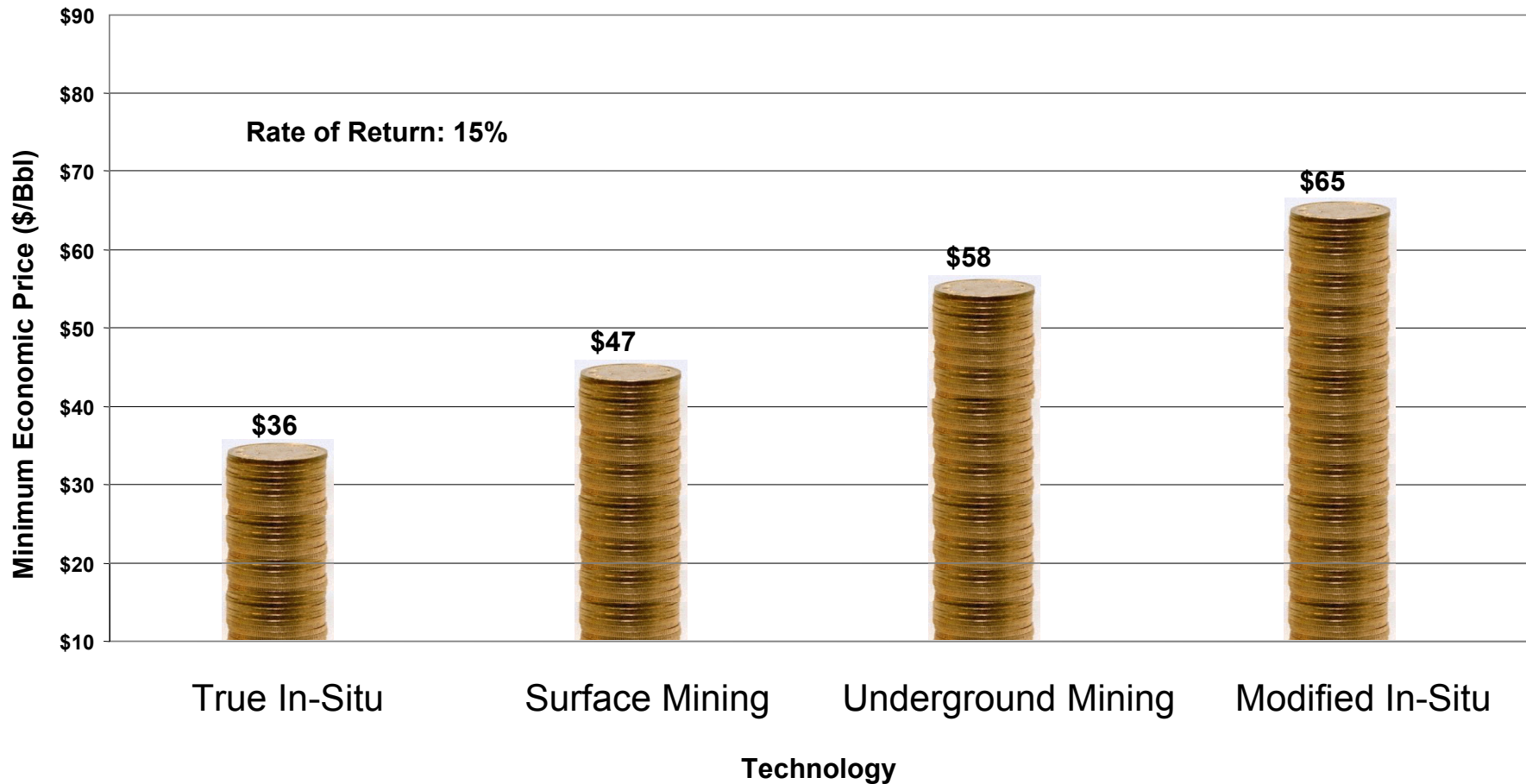


Average Oil Shale Break Even Prices

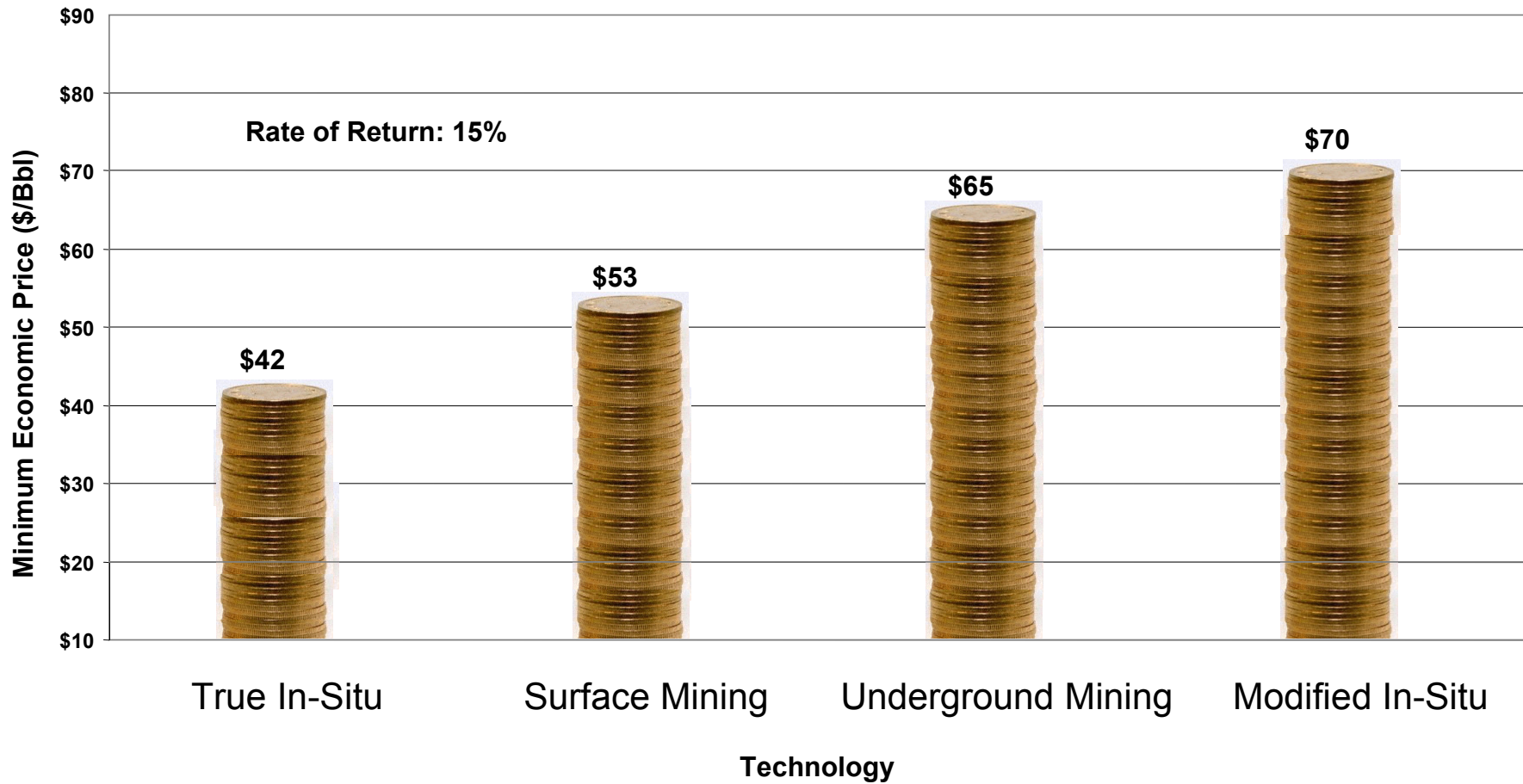
Original Price



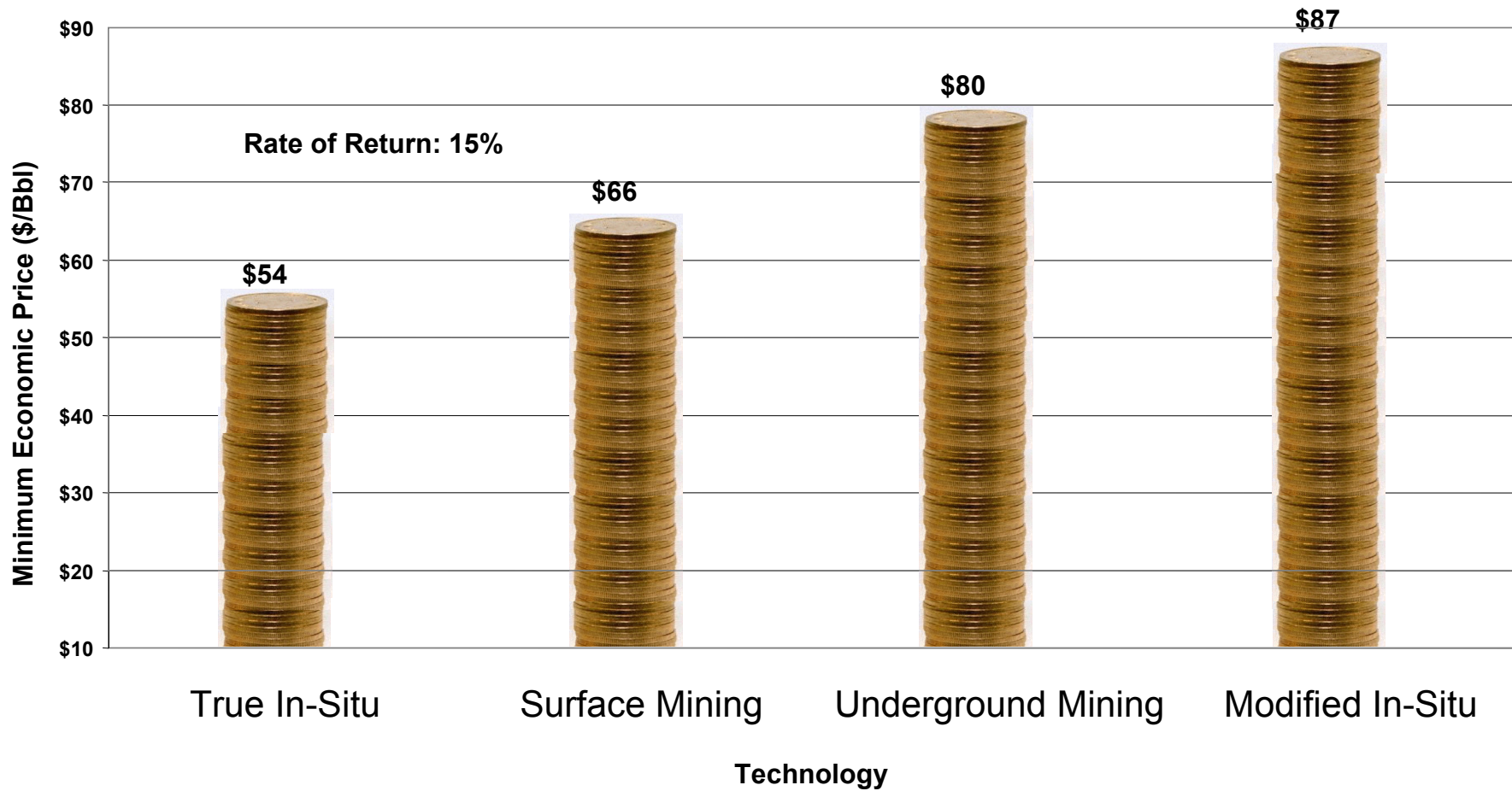
Average Oil Shale Break Even Prices \$50/Bbl



Average Oil Shale Break Even Prices \$75/Bbl



Average Oil Shale Break Even Prices \$100/Bbl



Conclusions

- Oil shale is a local asset with global constraints
- Technology improvements will drive these costs lower
- Price stability is the biggest driver for oil shale development