

# PEAKING OF WORLD OIL PRODUCTION

**Problem, Complexity, Mitigation & Risks**

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# Data Quality

**“The oil industry is unusual in the degree to which its statistics are plagued by**

- Errors,
- Exaggerations,
- Omissions and
- Just plain deceit.

**As a result, current numbers are not very accurate, accurate numbers are not very current and there are conflicting versions of some important historical series. Worse yet,**

- Few people know the true condition of reservoirs...
- Hardly any of these are talking and
- The penalty for ... espionage can be instant death.”

**Smith, L.L. "Wild Cards in the Oil Deck." USAEE Dialogue. August 2006**

# The World Must Deal With Approximations

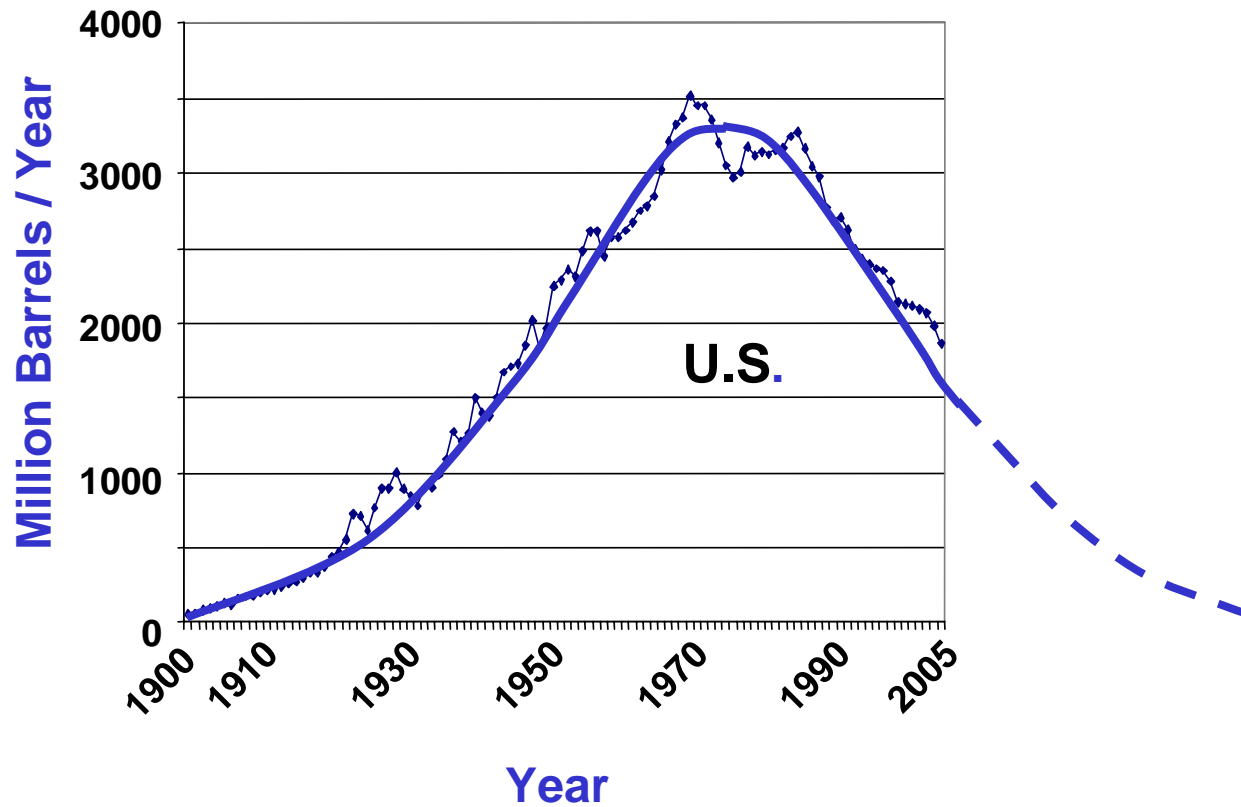
It's forever disturbing .. to see elaborate arithmetic performed with reserves data.

Nobody can measure oil and gas reserves. The numbers are estimates based on interpretation --- often quite a lot of interpretation --- of sparse data about indirect indicators like well and seismic information.

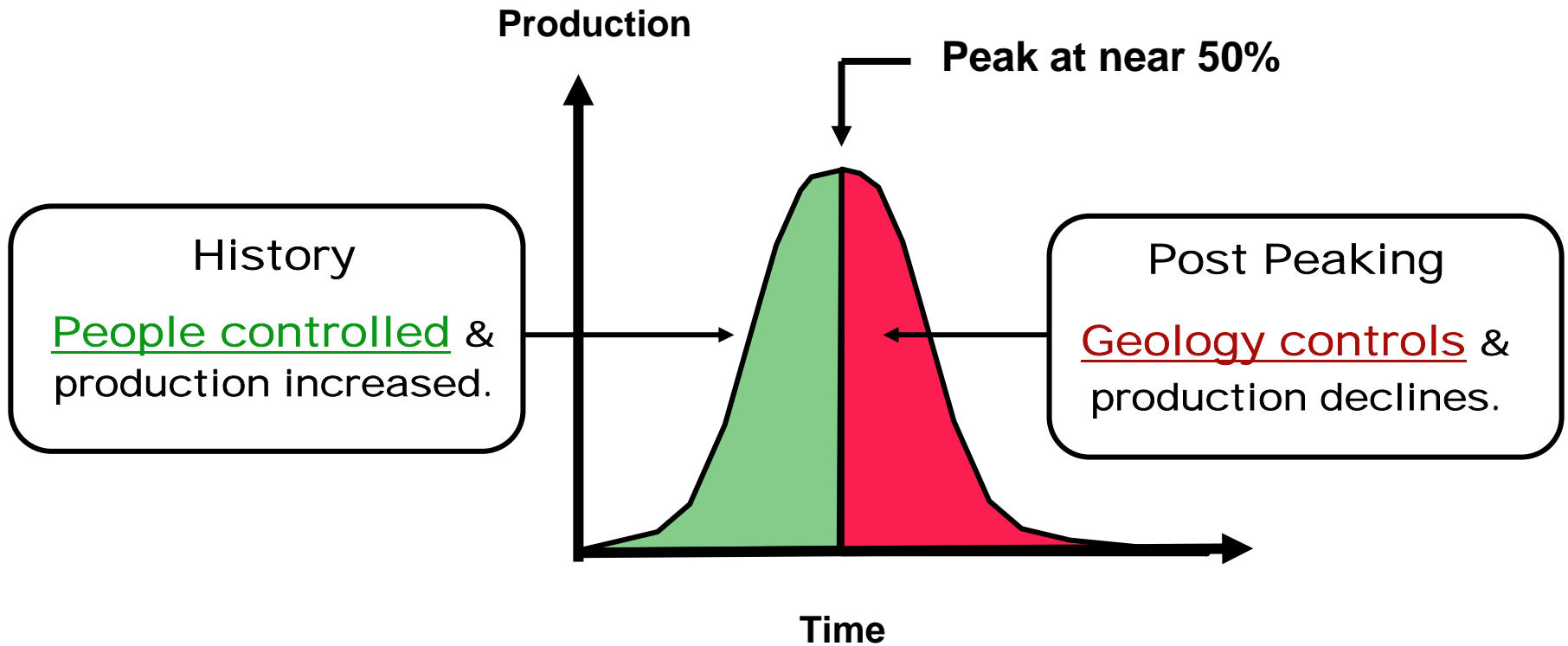
Yet people who don't know better see numbers and assume they represent measurements, as if from some geophysical dipstick. Reserves aren't measurable and probably won't be anytime soon.

Tipee, B. Reserves numbers aren't oil's only market perplexity.  
OGJ. September 25, 2006.

# Production History In the U.S. & In Many Other Places Fits the Logistic (Bell Curve) Distribution



# Peaking of World Conventional Oil Production Will Likely Occur Near 50% of Ultimately Recoverable World Reserves

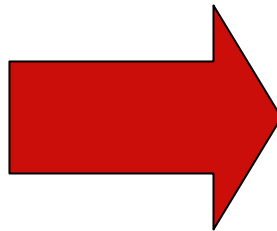


[The curve is smoothed]

# Some Numbers

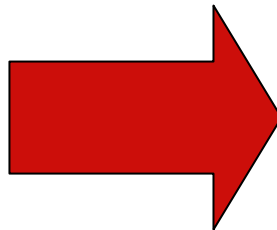
**Already consumed worldwide:** ~ One Trillion Barrels

**Some estimates of remaining world reserves = One Trillion Barrels**



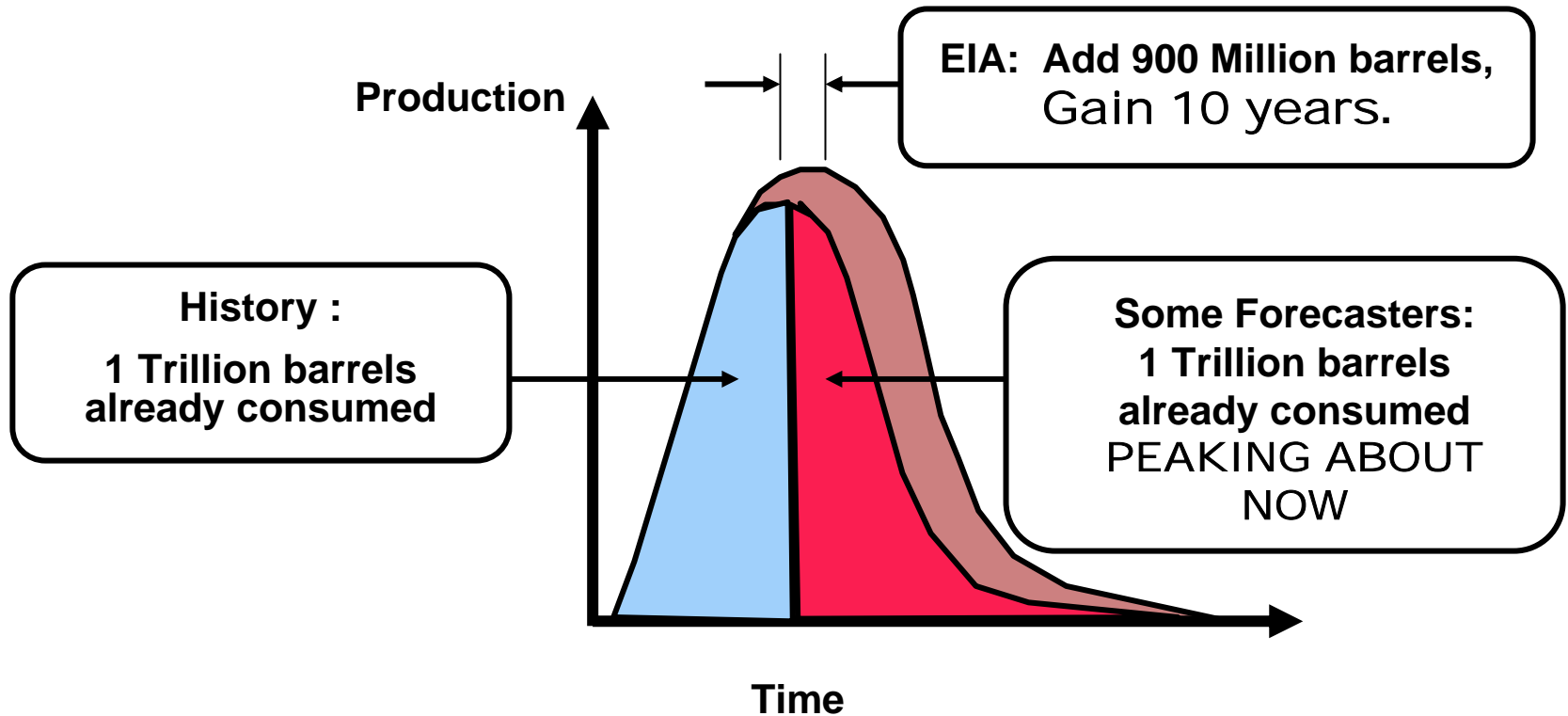
**If so, world oil peaking is about now.  
[50% of total]**

**Others estimate remaining world reserves = Two Trillion Barrels**



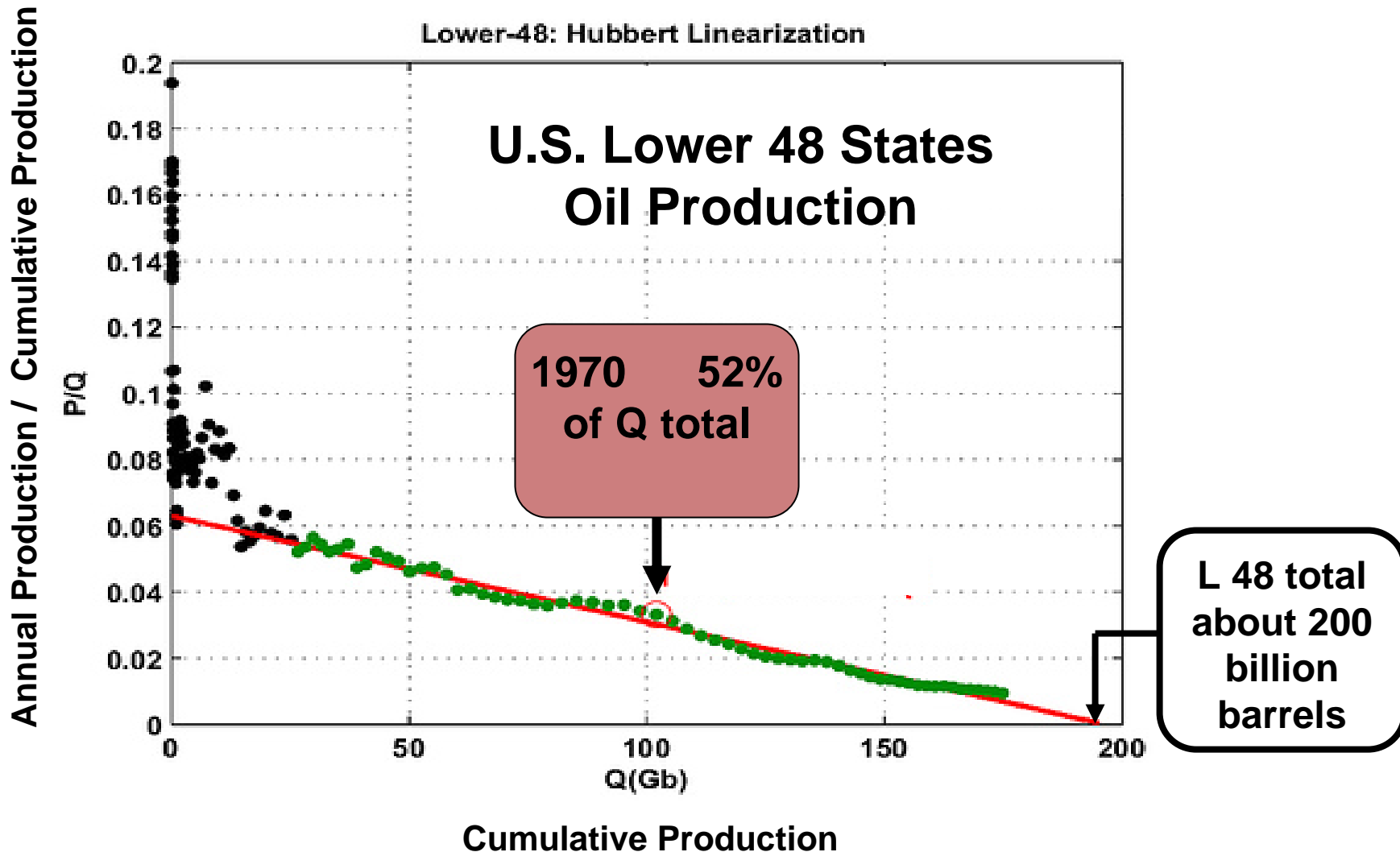
**EIA: “(Our) results are remarkably insensitive to ... alternative resource base estimates... adding 900 Bbbl more oil ...**only delays the estimated production peak by 10 years.**”**

# Peaking of World Conventional Oil Production Will Occur Near 50% of Ultimately Recoverable World Reserves



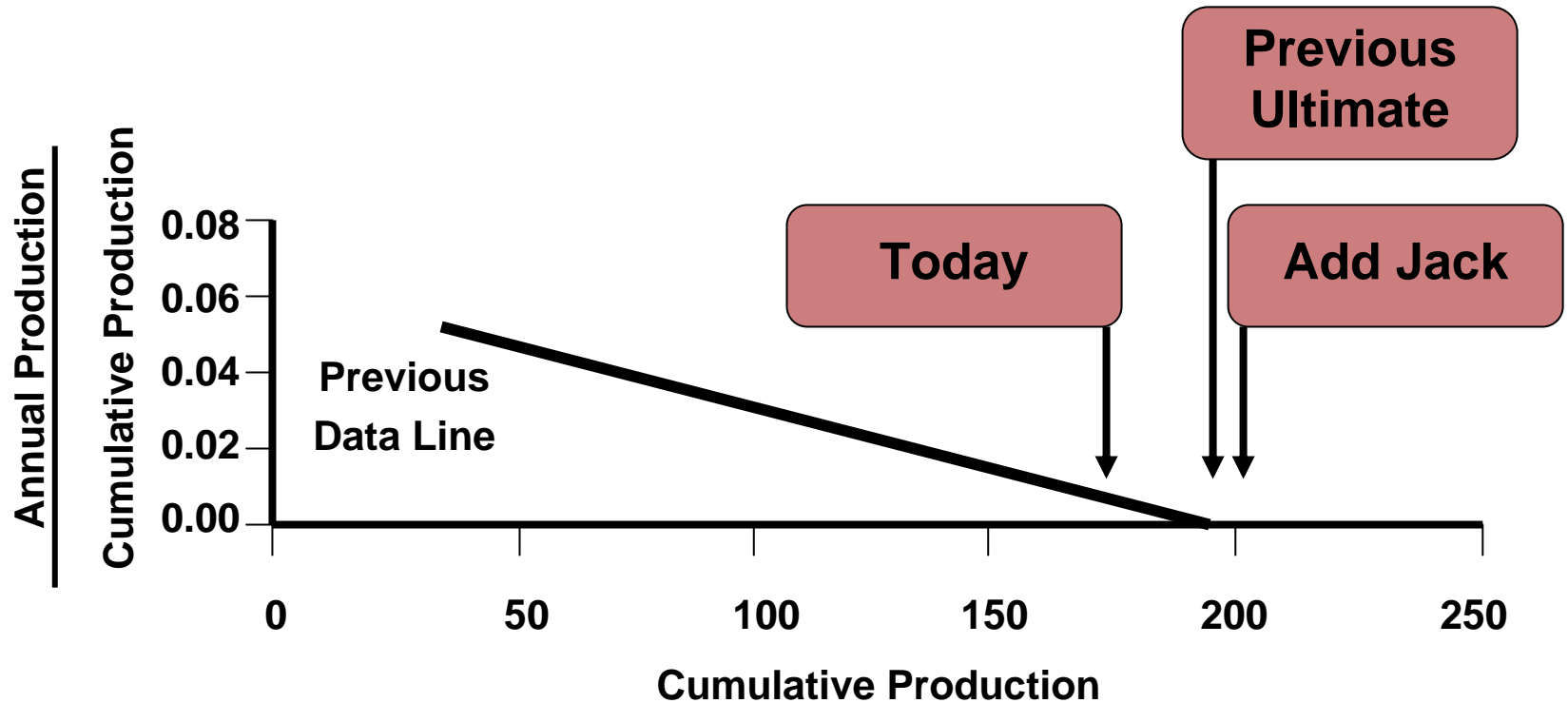
[The curve is smoothed]

# One Model Has Shown That a Very Complex Situation Maps Into a Straight Line.

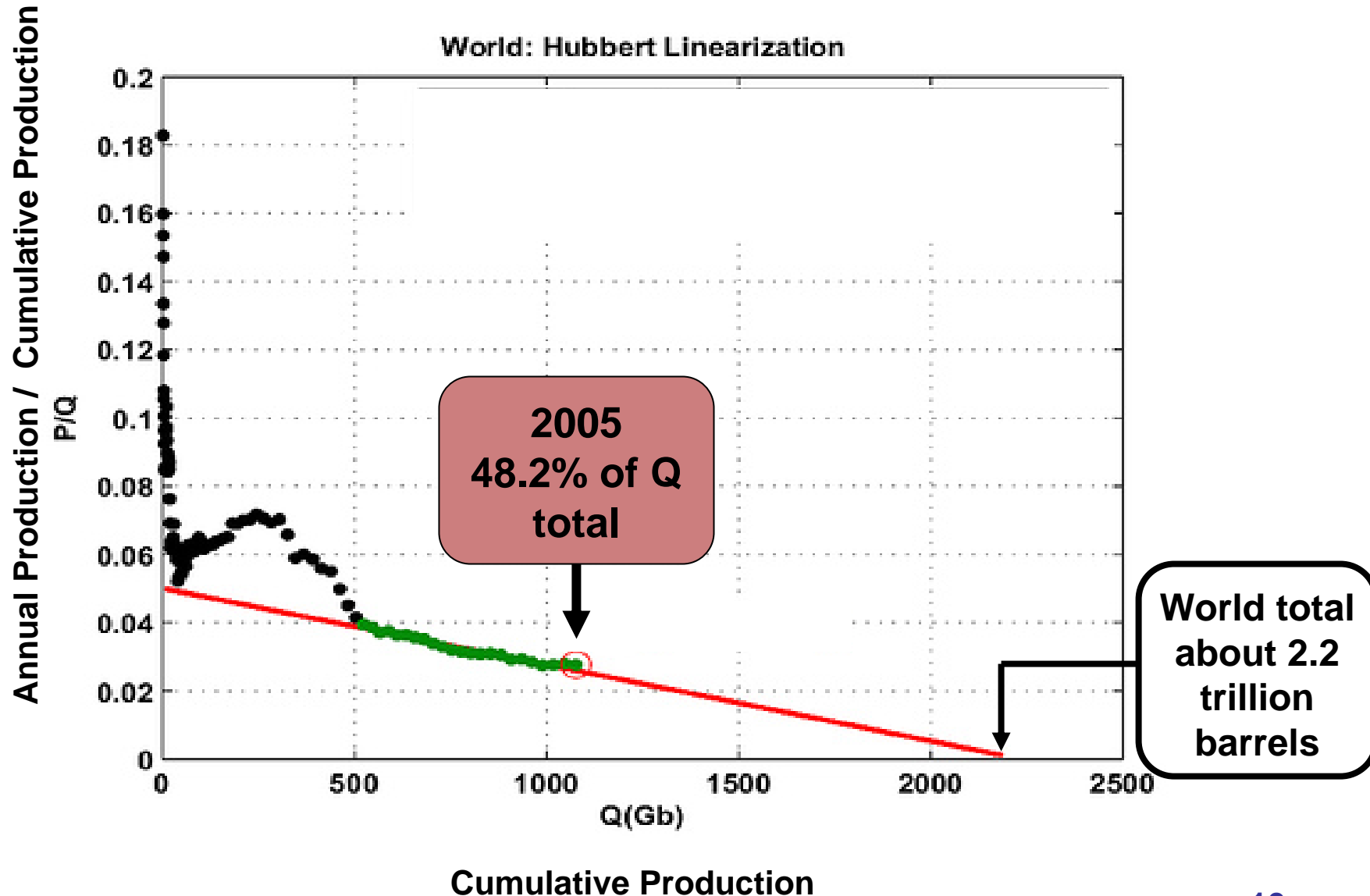




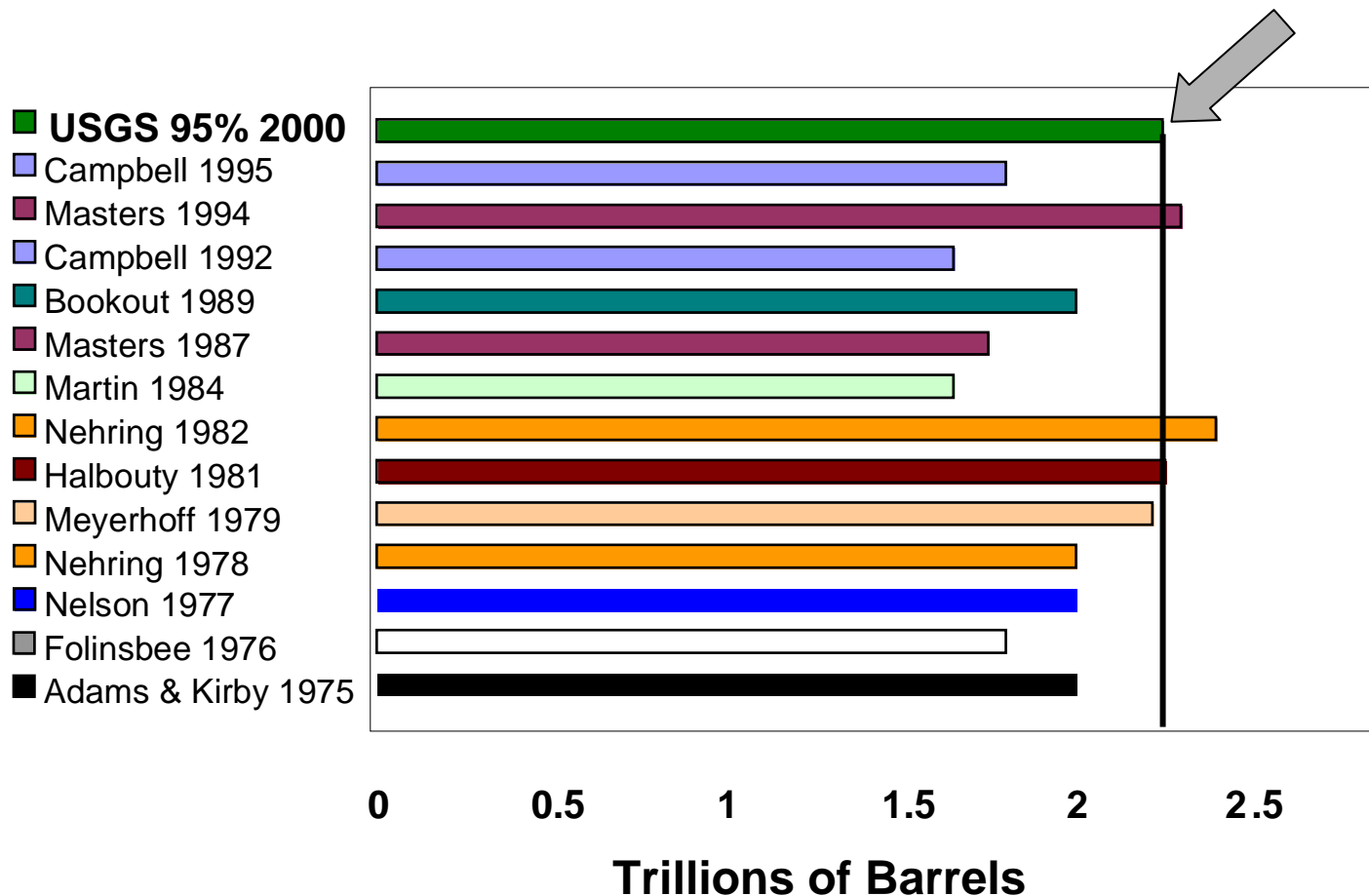
# The Impact of the Jack Discovery, If It's 10 Billion Barrels Recoverable



# The Model Indicates Early World Peaking

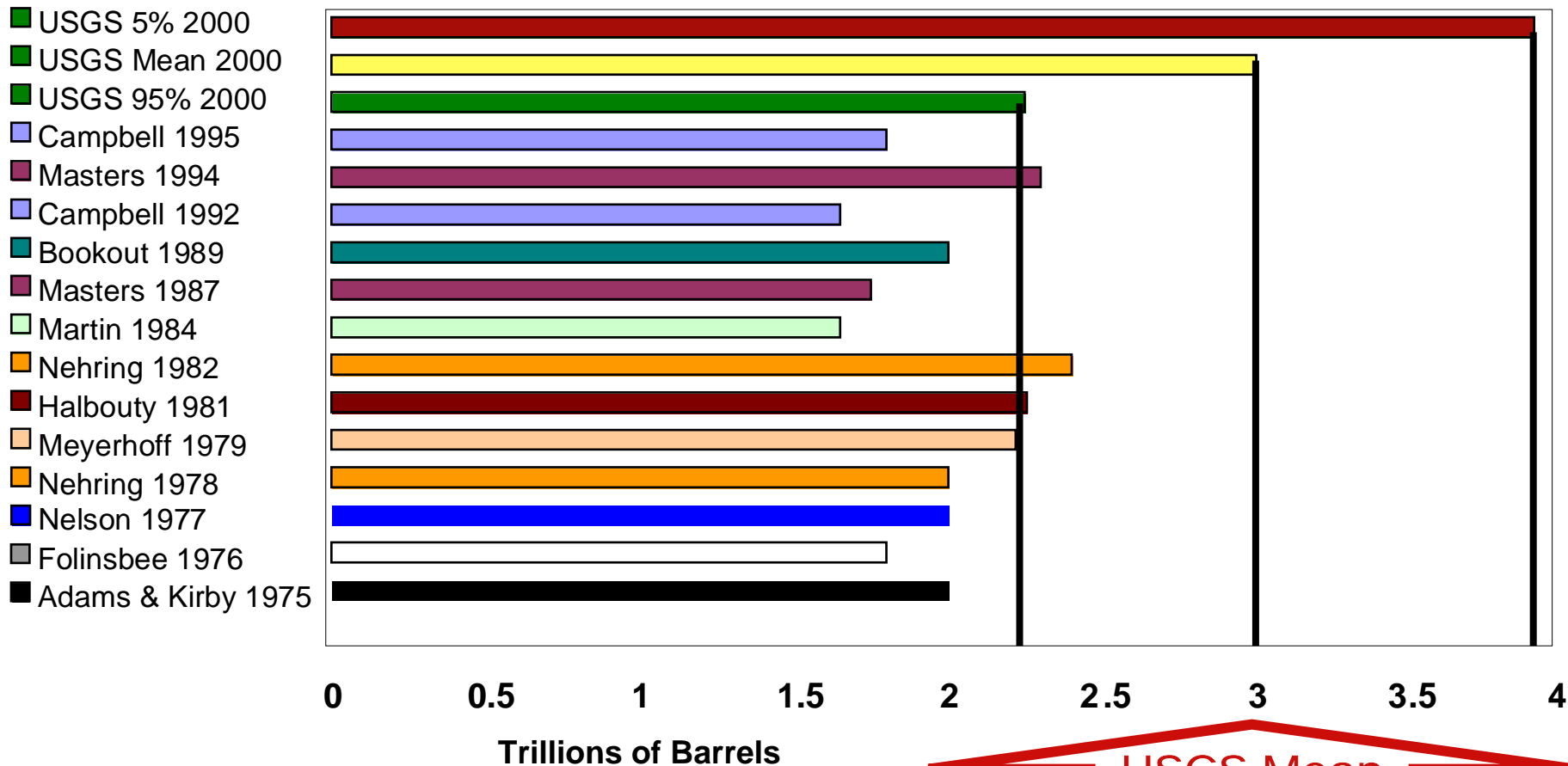


# PAST WORLD CONVENTIONAL OIL RESERVES ESTIMATES FIT ROUGHLY WITH THE HUBBERT EXTRAPOLATION & THE USGS 95% ESTIMATE.



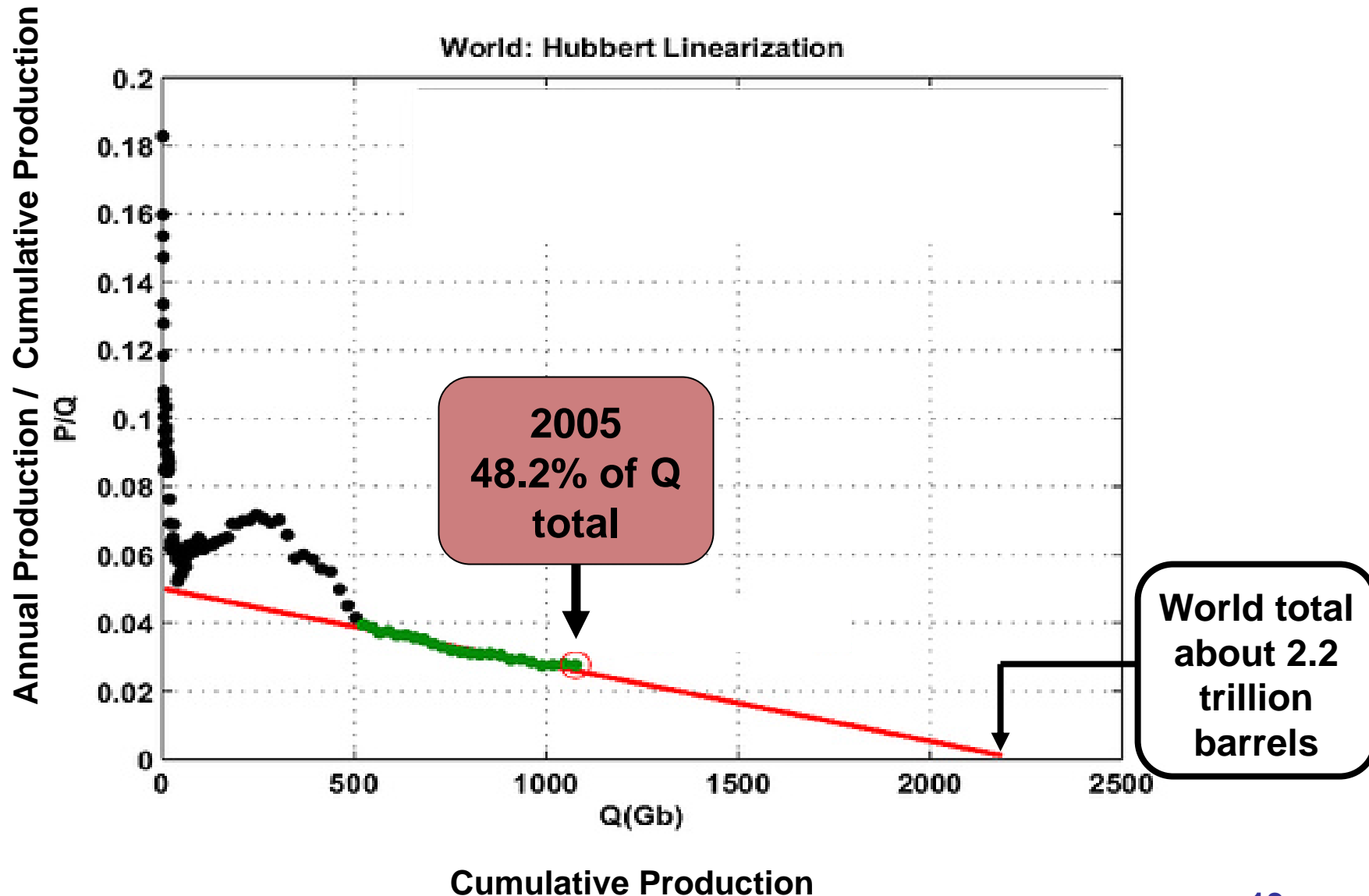
# But

## Many Are Basing Their Forecasts on the USGS Mean Estimate

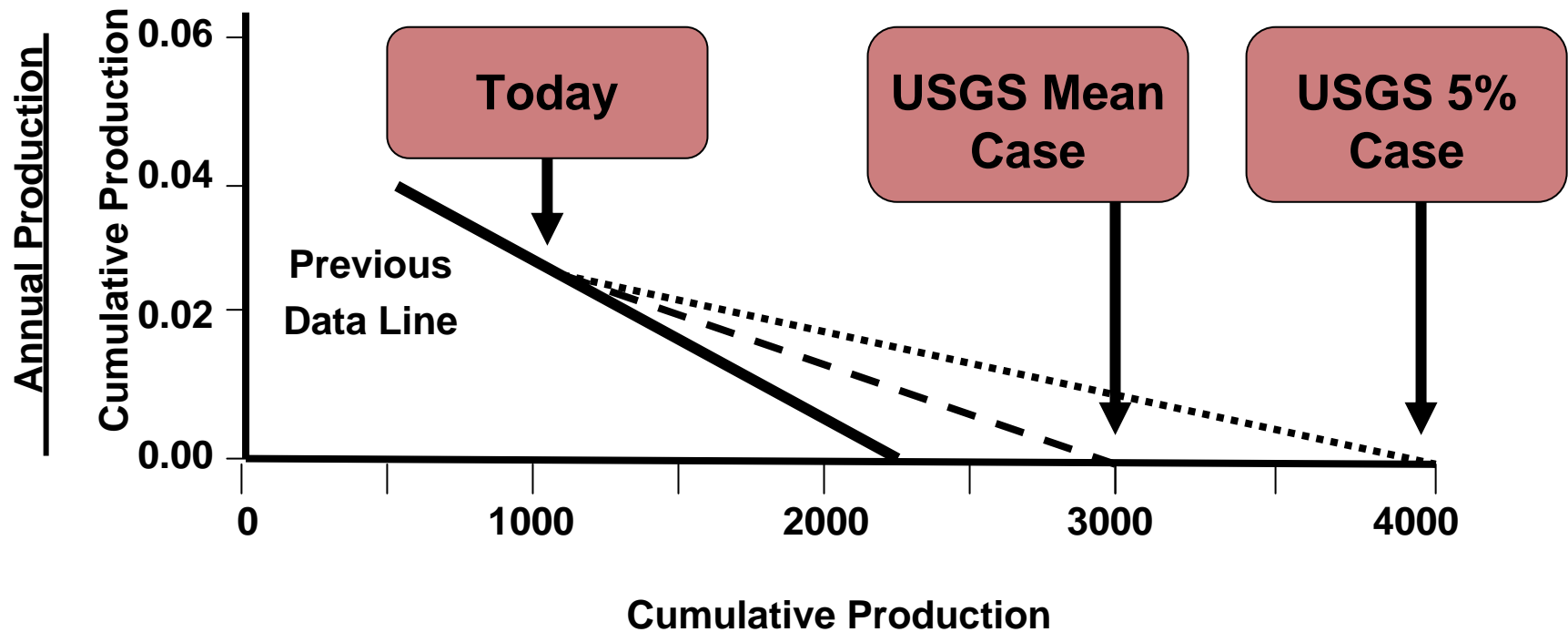


USGS Mean Case = Later Peak

# The Model Indicates Early World Peaking



# The USGS Mean & 5% Cases Would Require Dramatic Changes in Previous Trends



**It could happen.  
How likely?**