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Presentation on NPC conference call 23 August 2007

I was pleased by the first call conference in February and now I am pleased to see the NPC approach asking again participants their views after the release of the Draft.
NPC is using the right approach, asking the right people, but, despite many good points, the Draft did not deliver completely the hard truths and what I was hoping for a right balance between the many opinions.
What is wrong in the Draft?
Since the Draft was written, the Minneapolis bridge collapsed and I was almost as shocked as the September 11.
What was wrong
I feel that the US does not want to change, to evolve keeping obsolete practices and obsolete units, when the rest of the world has dropped them.
The Draft shows such desire of not to change the old practices.
I will try to show some examples of obsolete items, as missing items

-A Obsolete items
-A1-Reserve and resource definition
The Draft displays this very old 1972 graph:
Figure 1: NPC figure S2-1

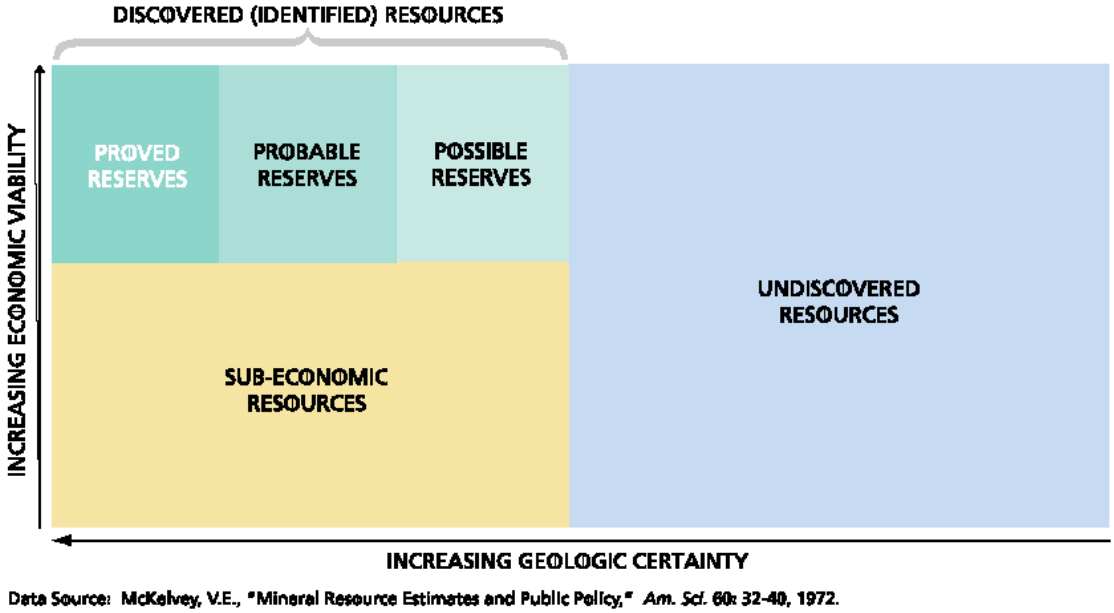


Figure S2-1. Example of a McKelvey[iii] diagram, used to illustrate the technical distinction between resources and reserves (modified from McKelvey, 1972).

It should be replaced by the 2007 SPE definition for reserves and resources, where 2P = proved plus probable is the best estimate and proved is the low estimate.

Figure 2: SPE 2007 reserve and resource definition

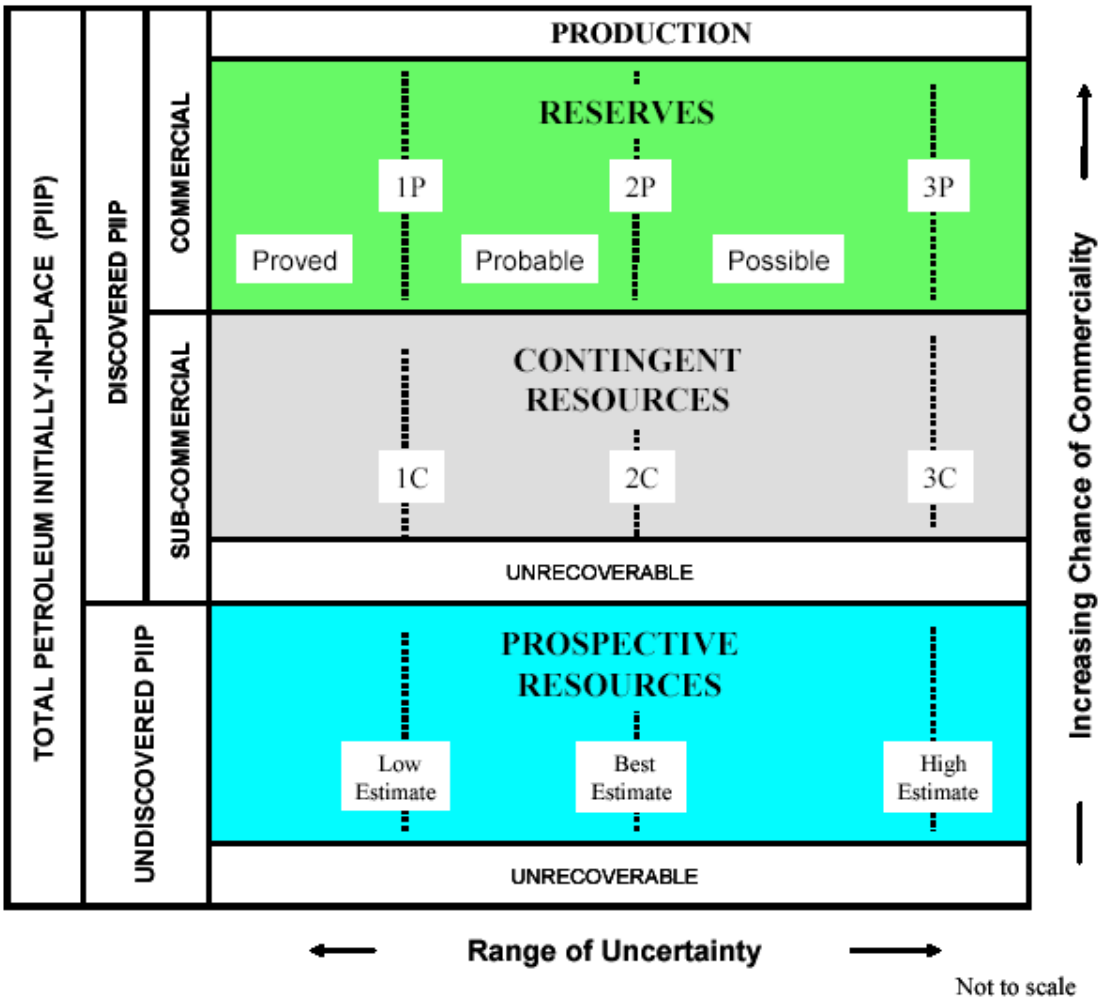


Figure 1-1: Resources Classification Framework.

-A2-Proved reserves and reserve growth

The Draft quotes only once probable reserves

Reserve growth occurs in the US because omission of probable reserves following the SEC rules and because incorrect arithmetic aggregation of proved reserves.

Reserve growth occurs in the so-called proved non audited OPEC reserves because of the fight on quotas, as the 300 Gb increase during 1985-1990.

Reserve growth did occur mainly in unconventional old fields. It is incorrect to compare old heavy oilfields (about 10 b/d/w) with new deepwater prolific oilfields (20 000 b/d/w).

Negative reserve growth has occurred for the largest conventional oil fields in the USL48 i.e. East Texas oilfield (from 6 Gb to 5.4 Gb).
The 700 Gb of reserve growth forecasted by USGS 2000 is based on a wrong extrapolation of US proved reserve growth to the rest of the world proved plus probable reserves.
Reserve growth can occur in scout reports when they accept political estimates from OPEC members instead of staying with geological and technical values or when their past files were incomplete.

As long as obsolete SEC proved reserves rules will be used, reserves studies will be flawed, only 2P being the best estimate should be used, as it is to estimate Net Present Value.
In fact IOCs and NOCS reports proved but also proven+probable=2P and 3P

For 2006		proved	2P	3P
Pemex	Gb	15,5	30,8	45,4
Lukoil	Gb	15,9	25	29
	Tcf	26,6	48	58,5
Total	Gboe	11,1	20,5	
Exxon Mobil	Gboe	22	72	
Shell Canada	Gb	1,1	1,5	

-A3-Past production
The most important graph of the Draft reports past production up to 2000, but it should have been up to 2006 or at least 2005
Figure 3: NPC figure ES-5 on total liquid supply

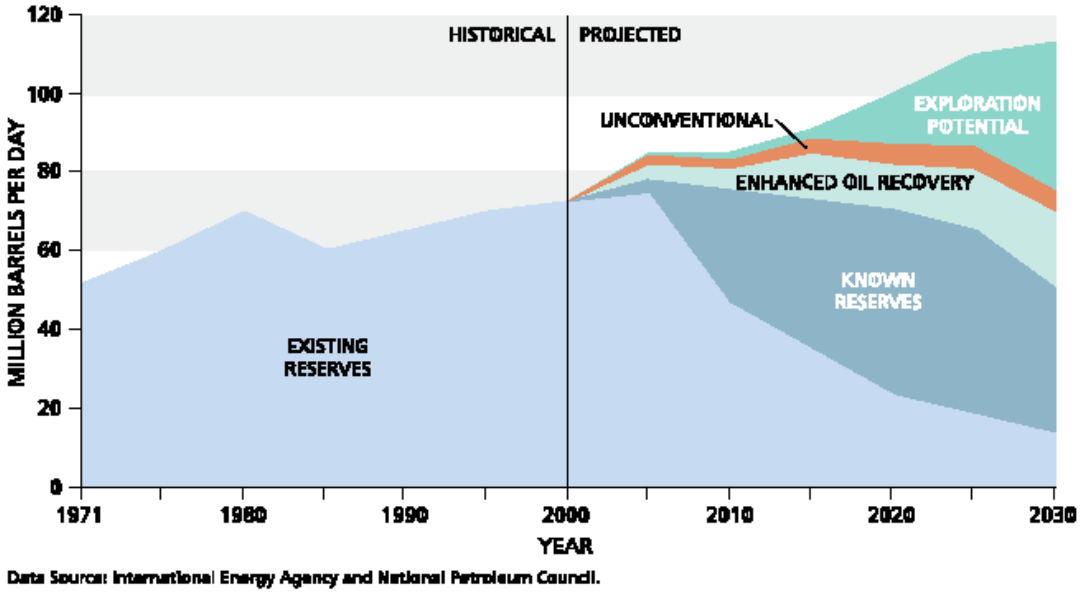
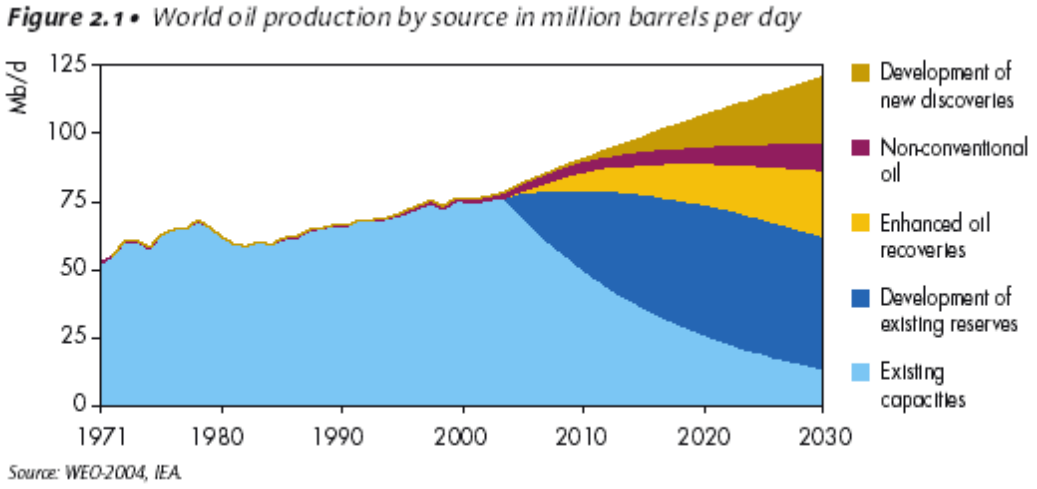


Figure ES–5. Illustrative Total Liquid Supply

It looks to be a copy of an IEA WWEO 2005 graph where the past was put back from 2004 to 2000, values only every 5 years and some definitions changed! What improvement!
Figure 4: IEA graph from 2005"Resources to reserves"



-A4-Unconventional oil and gas
Table II.2 quotes BGR 1998 for unconventional, but BGR has published a study in 2001 and another in 2004 on non-conventional, the table is obsolete by two surveys where non-conventional oil **reserves and resources have been reduced by about half**! I suspect it is the reason to quote 1998!

-A5–US reports
Most of US reports are obsolete or late to be published
-USGS 2000 world inventory is as end 1995 and we are in 2007.
Previous USGS world inventories were carried out every 4 years, using ***inferred*** estimates assuming no reserve growth (Ch.Masters).
-USDOE published reserves inventory is now obsolete and should be updated:
"Geologic distributions of US oil and gas" as end 1990
"US oil and gas reserves by year of field discovery" as end 1988
-MMS reserves and production of the Gulf of Mexico
This very important and reliable published last database is dated as end 2003, it should be as end 2005.

-A6-Units: SI and "Imperial" units
I remind that every country in the world is using by law the SI units except US, Liberia and Bangladesh.
However since 1993 US federal agencies are obliged to use SI, but it does not show up much !. The crash in 1999 of the Mars Climate Orbiter occurs because NASA sent instructions approaching Mars in SI to the spacecraft built by Lockheed in *imperial* units !

UK, Australia and Canada have moved to the SI to follow the majority, as in democracy, why not the US? Is it that Americans are unable to change?

-B-Missing items

-B1-SEC reserves rules

The big omission is that the Draft ignores completely the obsolete SEC rules obliging oil & gas companies listed on the US stock market to omit probable reserves, leading to the US reserve growth bad practice.

Exxon Mobil subsidiary Imperial said that the SEC rules prevent good practice of reporting.

CERA (2005) said bluntly that the SEC rules have to be changed to be in line with modern practices :

Canada was using SEC definitions but in 2003 they decided to drop them and to use proven and probable.

The rest of the world is using proven plus probable being the best estimate and the value used by operators when deciding development

It is amazing to find that the word SEC is absent of the Draft, despite the strong warnings of Exxon Mobil and CERA in official statements on this bad practice.

-B2-Non-audited OPEC proved reserves

OPEC reserves are not proved at all because they are not audited, they represent the goals of each OPEC member in the fight on quotas. The example of Kuwait is a good example because after a recent audit requested by the Parliament proved has been divided by half and replaced by about 2P. The Draft does not mention this important hard truth on Kuwait reserves?

-B3-Reporting of reliable forecasts.

The North America natural gas production is one of the most important coming US problem, but there is only one graph showing EIA2006 and 2007 forecasts growing up, but missing to show Exxon Mobil forecast which shows a peak now

NPC graph

Figure 5: NPC figure S3B-13 on North America gas production

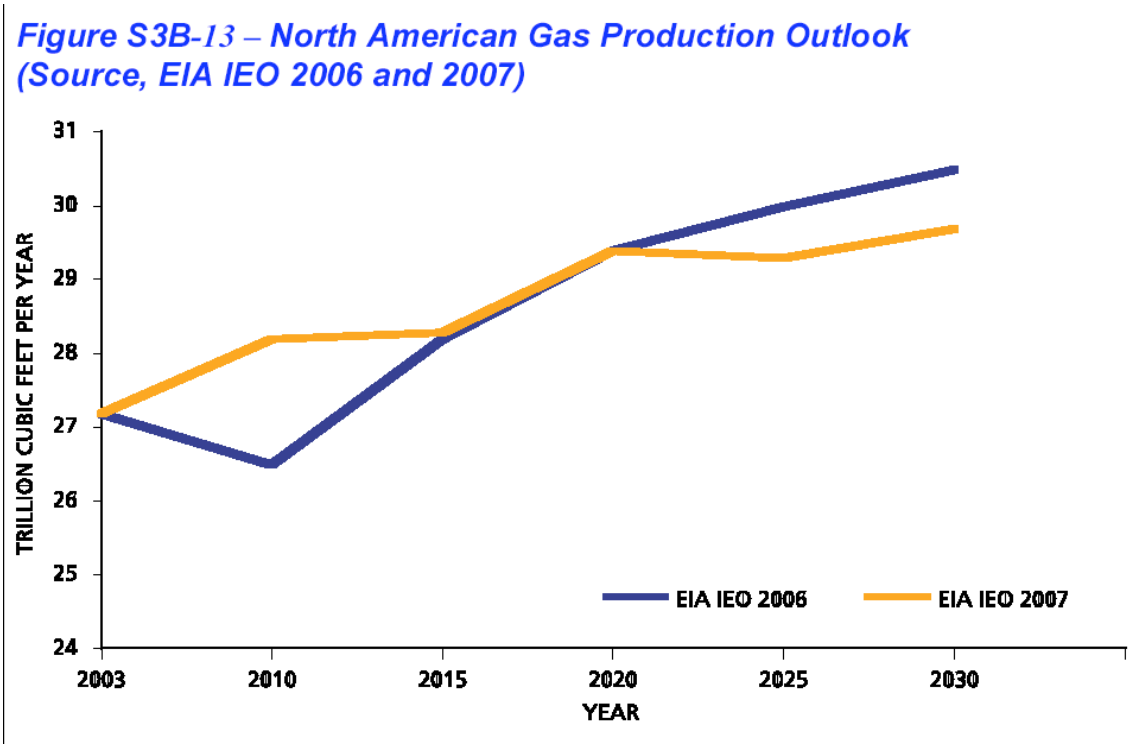
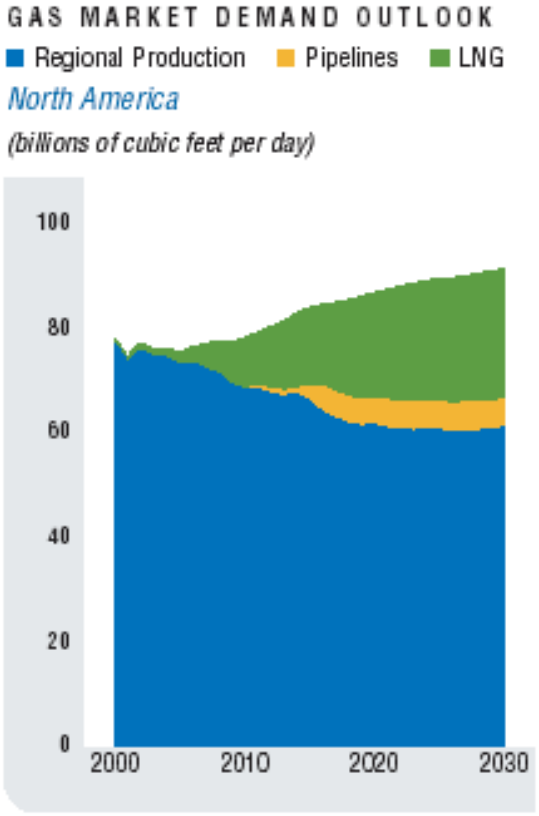
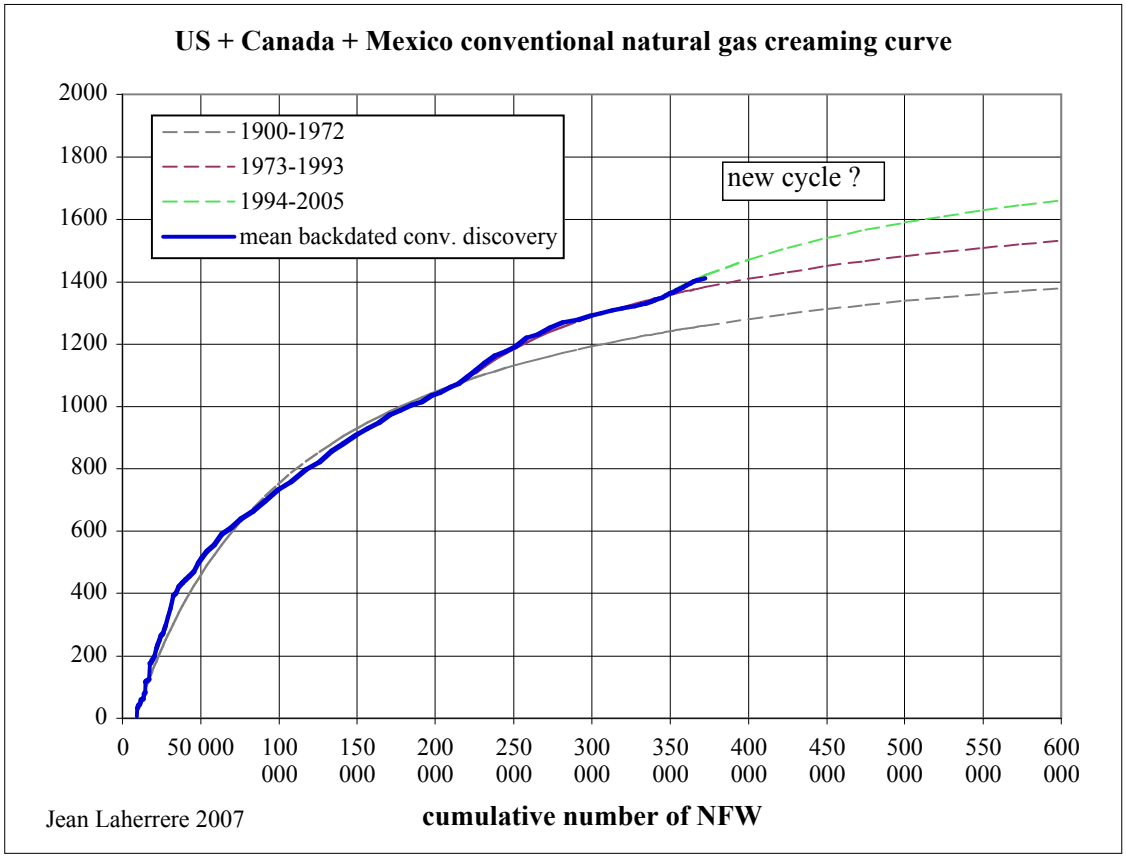


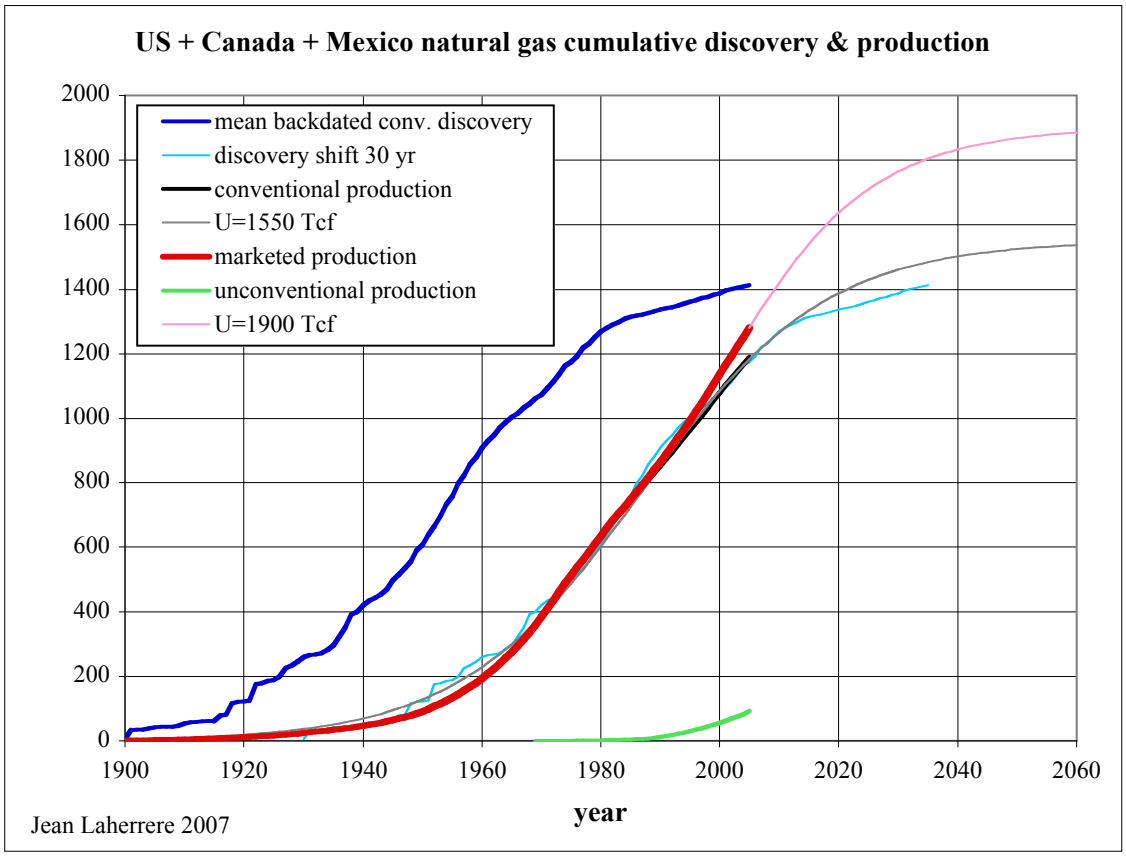
Figure 6: Exxon-Mobil AR2006 forecast on North America gas production



Using the backdated mean discovery from different files, the North America conventional natural gas creaming displays three cycles, first = normal areas ; second = Arctic, third = deepwater.
A fourth cycle is unlikely and the ultimate is about 1600 Tcf.
Figure 7: North America gas creaming curve from mean backdated discoveries



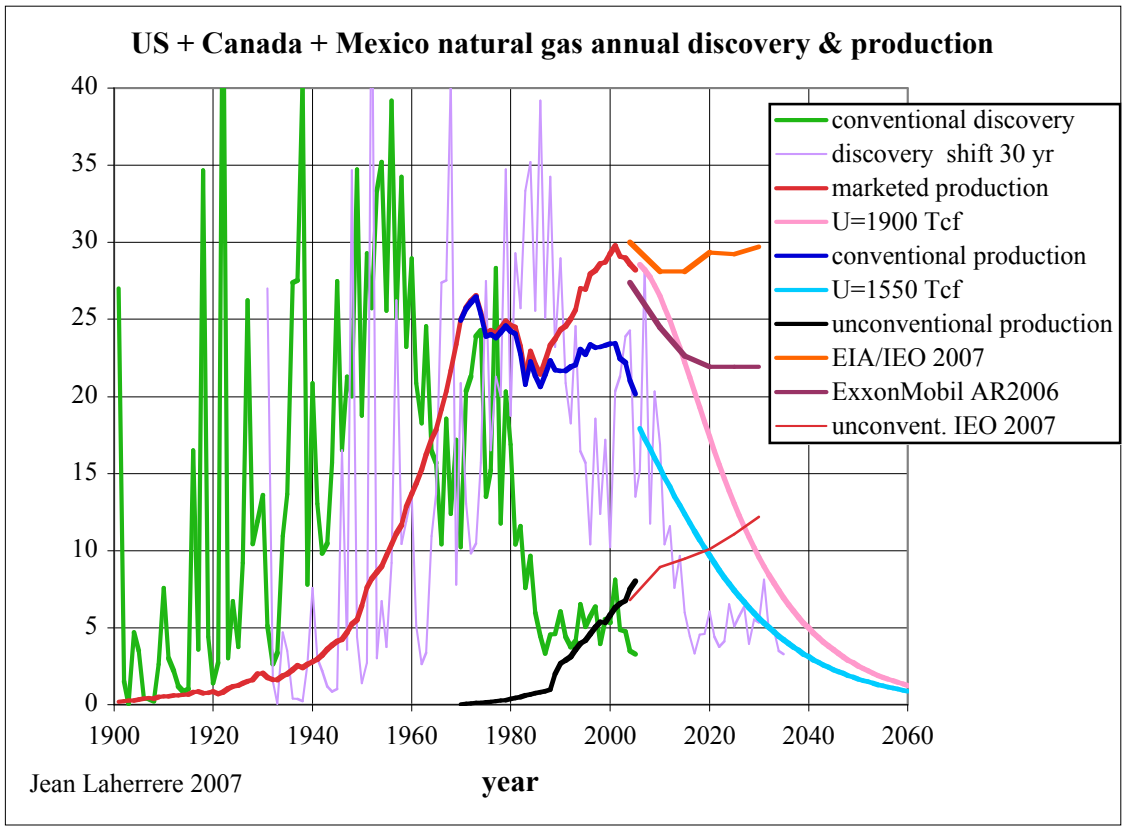
Cumulative conventional discovery, conventional production and marketed production are modeled, with an ultimate of 1900 Tcf for the marketed production
Figure 8: North America gas cumulative discovery and production and models



The annual marketed production modeled with an ultimate of 1900 Tcf displays a decline in line with the discovery shifted by 30 years. Exxon Mobil forecast is close to my forecast and EIA forecast looks really too optimistic

I trust more Exxon Mobil than EIA for production forecasts and Exxon Mobil is not rumored to be pessimistic!.

Figure 9: North America gas annual discovery and production and models



-B4-Homogeneous annual and cumulative database
EIA publishes a good inventory of world production, reserves and consumption, but also the States, as Texas and California, which provide annual field productions. I use them very often but it is a pity that data are not homogeneous and is not provided on a central organization.
Cumulative is reported without good definition and often disagree with the aggregation of annual reports.
In Canada we found a discrepancy of 35 Tcf in cumulative gas production compared to remaining reserves of 58 Tcf: it is more than significant

-B5-Possible demand constraint
. The present US housing bubble must have an impact on energy demand. In contrary only dramatic growth in demand is mentioned, is a recession impossible?

-B6-Time is the worst constraint and the most important item of good forecasting
This time delay is found on most present megaprojects (Thunder Horse, Kashagan, tarsands, EPR).

Nature has its own timing and poor forecasts on staff and infrastructure have worsen the problem. It is impossible to get a baby in one month with nine women!
Rules on time forecast publishing could be issued. Time forecasts should be improved by publishing (post-mortem) ratio between initial and final values, instead of hiding these weak performances, as it is done by most operators.

-B7-Energy and GDP
For the last 40 years world energy cost was about 5% of the GDP when the contribution of energy (Kummel, Ayres) is estimated to be about 50%. Such discrepancy between cost and contribution means that energy is undervalued. It is a hard fact which must be emphasized.

-B8-Waste of food = energy
Food is energy, but food is missing in most energy studies. The best solution to obtain a sustainable world is to eliminate all energy waste, beginning by food wastes. US wastes 50% of the food (UK 33%, France 25 %).
Obesity is a waste of food.
Obesity and waste of food should be fought as one of the first goals.

-Conclusions
Some hard truths are missing in the Draft, but also some simple recommendations for improving oil and gas database.
I suggest some US oil and gas database improvements:
-1-obsolete SEC rules should be modernized in agreement with SPE 2007 in order to report, in addition to proved reserves, proven + probable = 2P
-2-annual reports should provide together initial 2P reserves, cumulative production and remaining 2P reserves on the same line
-3-USDOE/EIA should update every four years the "US oil and gas reserves by year of field discovery » as the "Geologic distributions of US oil and gas" published more than 15 years ago
-4-USDOE/EIA should uniform the North America database in collaboration with the States files (Texas, California), the Provincial Canadian boards, NEB and Pemex and keep public historical series for annual (and cumulative) production and reserves
-5-USGS should update every four years the oil and gas inventory of the world resources

If the US does not eliminate obsolete practices, there will be a new bridge collapse and also energy failures because of incorrect knowledge.
Facing hard truths is one thing, improving our knowledge is another.