

STATUS OF U.S. NATURAL GAS RESERVES AND PROJECTION OF NATURAL GAS PRODUCTION RATES

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Prior to joining Sempra Energy, Ivey was a new ventures manager and exploration manager for Unocal Asia-Pacific Ventures from 1992 to 2000, and responsible for new business development and new exploration activities in South and Southeast Asia. During this time, he initiated new business ventures on behalf of Unocal in Bangladesh, Myanmar, Thailand, Vietnam and Indonesia.

From 1989 to 1992, Ivey served as exploration manager of Unocal's Southern Alaska District.

Ivey holds a bachelor's degree in geology from the University of Florida and a master's degree in geology from Texas Christian University. He is also a licensed professional geologist by the State of Texas.

ABSTRACT

(Slide 2) Sempra Energy is a Fortune 500 company whose regulated utility subsidiaries “SoCalGas” and “SDG&E” serve 22 million consumers, the largest customer base in the United States. In Texas, Sempra’s unregulated subsidiaries are involved in power generation, oil and gas production, pipelines and storage, commodity trading, and LNG receipt terminals. The relationship of natural gas demand versus supply is critical to Sempra’s key businesses.

(Slide 3) U.S. consumption of natural gas has been increasing since the mid-1980s and is projected to continue increasing through the next two decades. U.S. natural gas production from the Lower 48 States (L48) has also seen a steady but slow increase since the mid-1980s until very recently, when production appears to have peaked. Since the mid-1980s there has been a widening gap between gas consumption and L48 production. This gap has largely been filled with gas imports from Canada. As we move forward through the next two decades, the gap between consumption and L48 production is expected to widen dramatically as production levels drop. Canadian production appears to also have peaked and the increasing gap will have to be filled with imports of LNG.

(Slides 4-5) This decline in L48 production appears to have caught all the experts off guard. At the turn of the century, experts from the government and industry collectively predicted that L48 production would increase to meet increasing consumption. Year by year the experts have lowered the expectations for production to where today most see flat or declining production for the next two decades. Sempra's vision is that L48 gas production will experience a steeper decline than that predicted by the experts. Why is there such confusion on what should be a technical issue?

(Slide 6) Gas reserves in the United States are actually increasing. The AGA announce in April 2005 that industry had more than replaced production for the last year with total reserves exceeding 190 Tcf for the first time since 1986. How can reserves be increasing and production declining? Not all reserves are created equal.

(Slide 7) The quality of the reservoir rock in much of the new reserves discovered is declining. If we look at a graph of Reserve to Production as a ratio over time, we note that the R/P ratio over the last 7 years is increasing. We believe this is an indication that getting the new found reserves out of the ground will take much longer than the superior quality reservoirs in the Gulf Coast which have been the backbone of U.S. production. While technology gains have allowed us to find and exploit more unconventional reservoirs, these reservoirs will add only small increments to production capacity.

(Slide 8) If we look at the relationship of R/P in U.S. basins to the change in reserves over a couple years, we can see that highly productive (low R/P) basins in the Gulf of Mexico and Texas and Louisiana are losing reserves. Most of the basins showing increasing reserves are basins with low productivity (high R/P).

(Slide 10) The data from 2000-2003 shows that the bulk of new reserves discovered are still from the Gulf Coast. While the Gulf Coast basins are our most prolific they are still in decline. (9) In fact the U.S. as a whole is not finding significant amount of gas from new discoveries and most of those discoveries are smaller. Most reserves additions are extensional drilling. We question whether extensional drilling represents new reserves or the acceleration of production.

Let's look at some specific examples. (Slide 11) In the Gulf of Mexico, reserves from the Shallow Water are in a significant decline. Thoughts that Deep Water discoveries would offset the Shallow Water declines seem unlikely as the Deep Water has also shown recent reserves decline. (Slide 12) Reserves in Southern Louisiana also display a significant decline. Reserves from new field discoveries remain fairly flat and reserve losses from revisions are frightening. (Slide 13) In South Texas (TX RRC District 4), we see some reserve growth but all the growth appears to be from extensional drilling. (Slide 14) In Oklahoma, we see reserves gain but again the gain appears to be from extensional drilling not new field discoveries. (Slides 15-16) In the Fort Worth area, the Barnett Shale has been the hot exploration play of the last few years and this is reflected in the reserves adds in TX RRC Districts 5 and 9. However, the increasing R/P in this gas production demonstrates the lower reservoir quality and resulting slower production of this tight rock.

(Slide 17) In the west, basins in New Mexico, Colorado, and Wyoming have shown significant reserve gains. But these gains come almost entirely from extensional drilling and are tight or unconventional reservoirs. The R/P ratio in Wyoming is around 20, more than 3 times the value of

a conventional Gulf Coast well. We cannot replace production declines in the Gulf Coast production levels with gas production from unconventional reservoirs.

Summary

(Slide 18) Statistics demonstrate that very little new natural gas is being discovered. Most of the reserves added and current production levels are derived from an intensified level of in-fill and extensional drilling. Much of the reserves added by this drilling may not be new reserves and the drilling is focused on acceleration, not additional recovery. While reserves are growing that growth will not offset reserve quality deterioration. Reserves to Production ratios indicate that much of the new production is increasingly from poor quality reservoir rock. Production declines in key producing basins are accelerating. Increases in drilling will not stop that decline. LNG imports are the most economic means to fill the expanding gap between production and demand.



U.S. Natural Gas Supply Outlook

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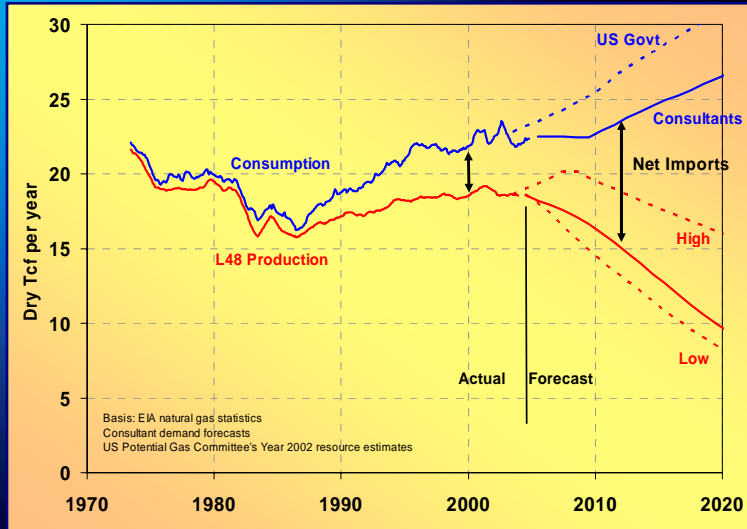


Sempra Energy



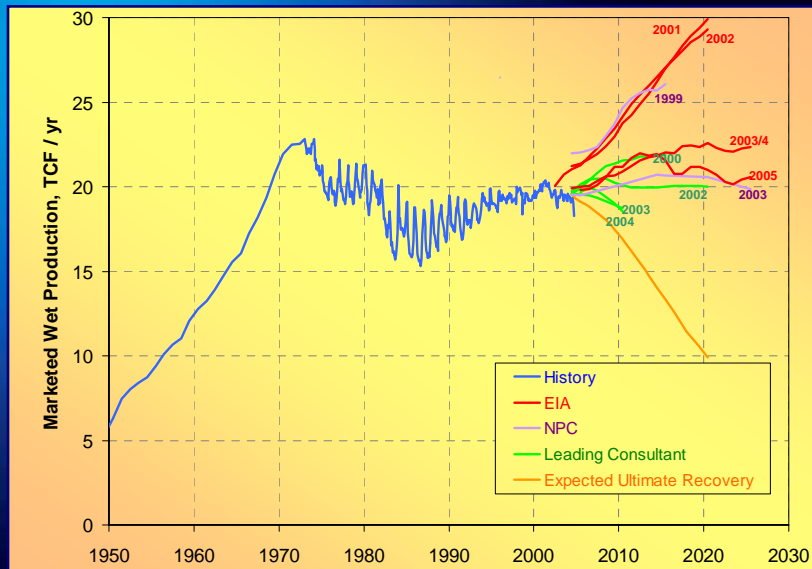
- Based in San Diego, Sempra Energy is a Fortune 500 company with nearly 13,000 dedicated employees. Together, our family of companies provides a wide spectrum of value-added electric, natural gas, and related products and services to a diverse range of customers. Sempra Energy was created in 1998 by a merger between the parent companies of two, long established, and highly respected, investor-owned utilities. The union of Pacific Enterprises and Enova Corporation grew naturally from energy deregulation and the restructuring of the energy industry.
- Sempra's regulated utility subsidiaries, Southern California Gas Company ("SoCalGas") and San Diego Gas & Electric ("SDG&E") proudly serve 22 million consumers, the largest customer base of any energy utility in the United States.
- Sempra's unregulated subsidiaries construct, operate and manage a diverse set of assets including power generation, gas pipelines and storage, LNG receipt terminals, local distribution companies, markets and trades commodities, and manages commodity risk.
- In Texas, Sempra companies own all or a part of nine Texas power plants totaling 4,118 MW, plus 1800 MW of generating capacity in development.

U.S. Natural Gas Supply & Demand



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L48 Natural Gas Supply



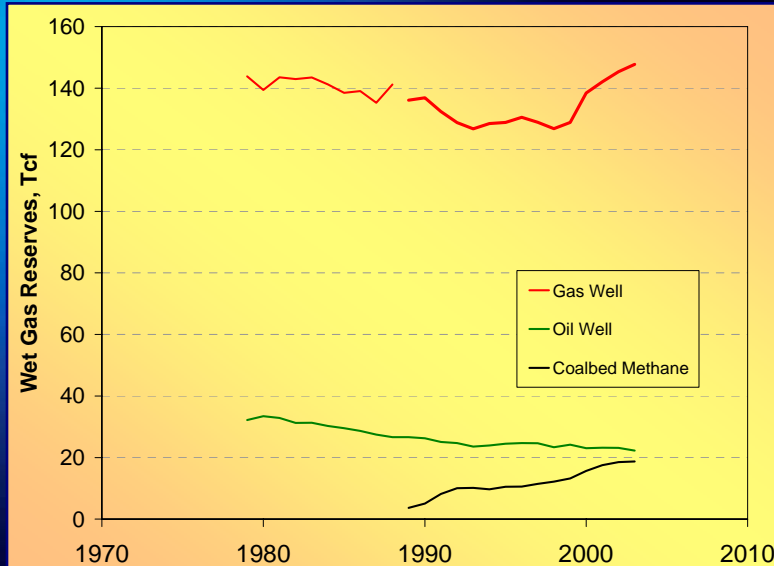
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L48 Natural Gas Supply



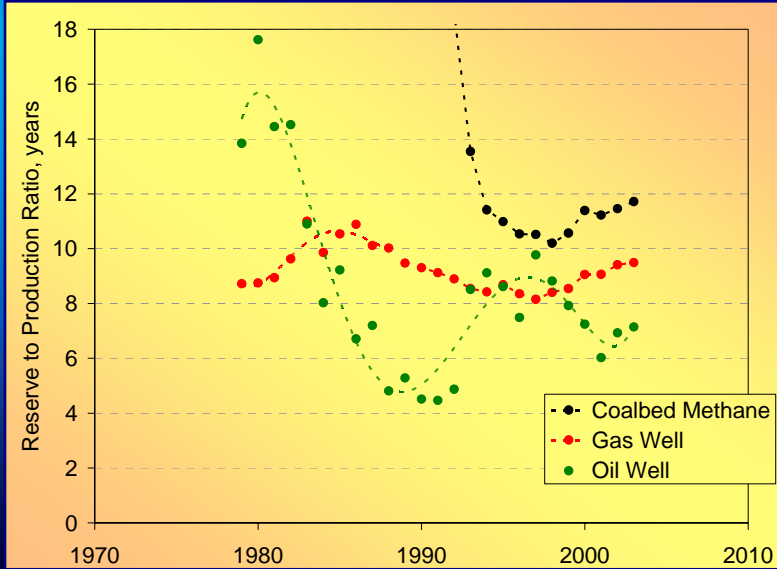
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L48 Natural Gas Reserves



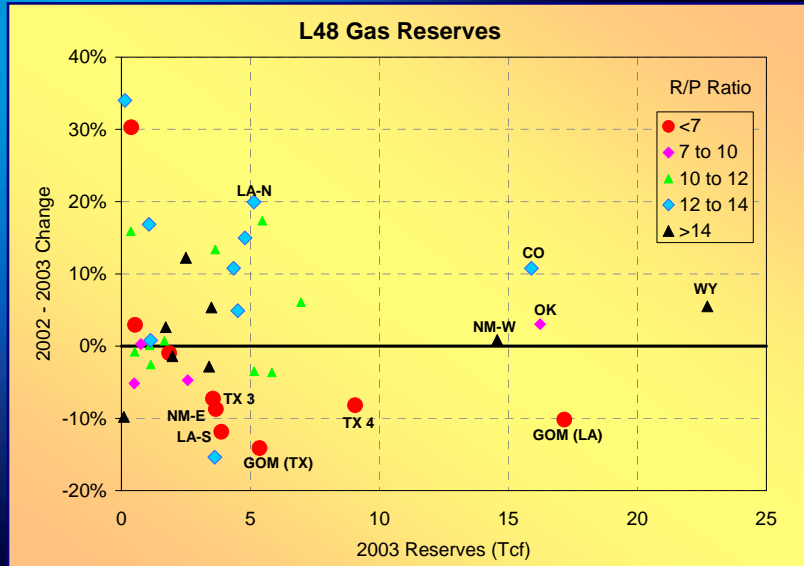
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L48 Natural Gas Reserves / Production Ratio



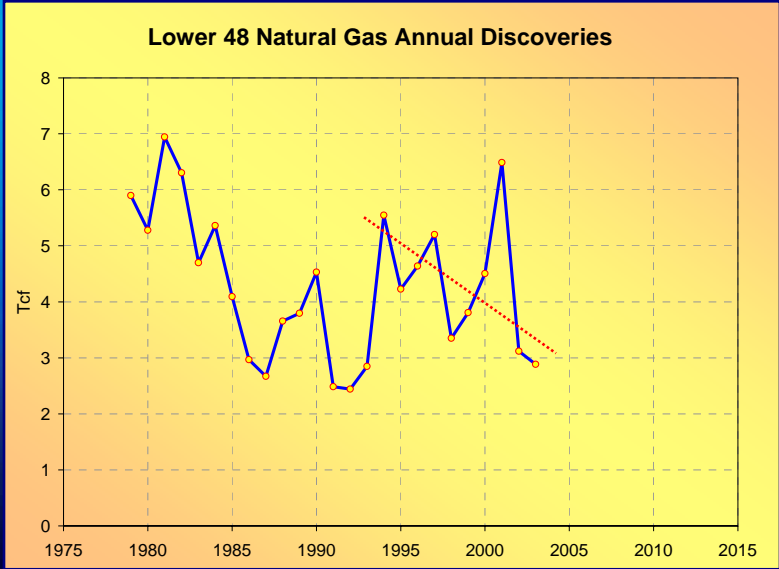
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L48 Natural Gas Reserves



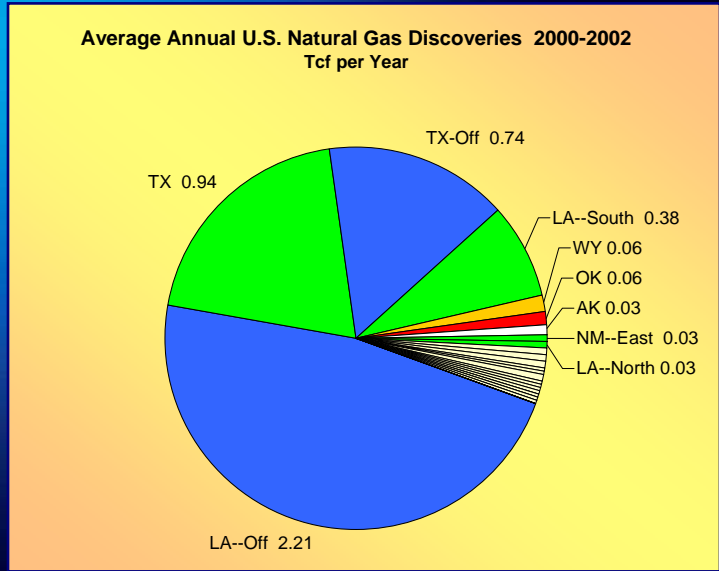
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L48 Natural Gas Reserves



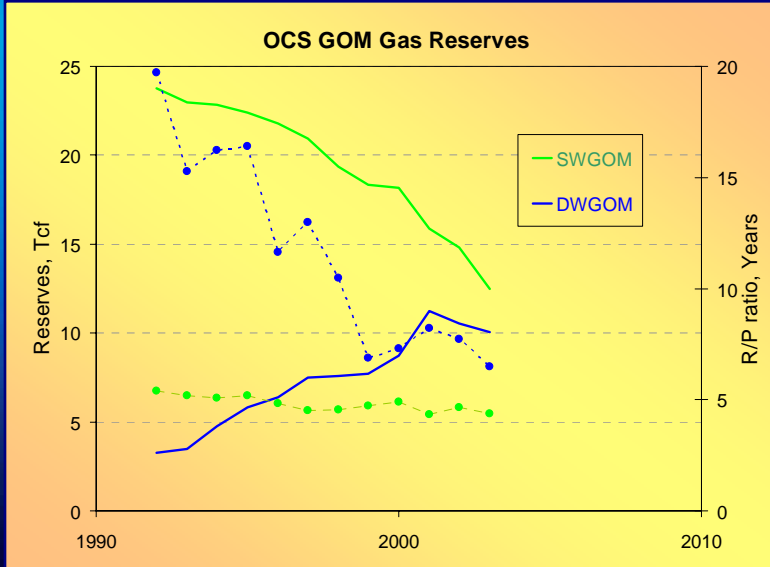
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L48 Natural Gas Reserves



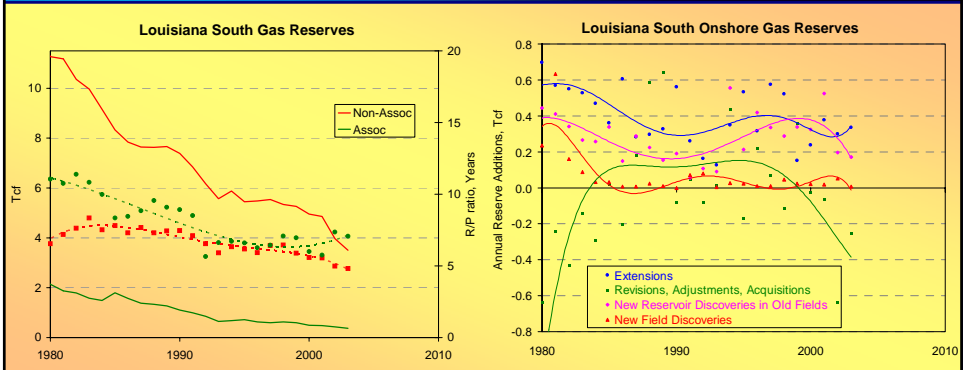
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L48 Natural Gas Reserves



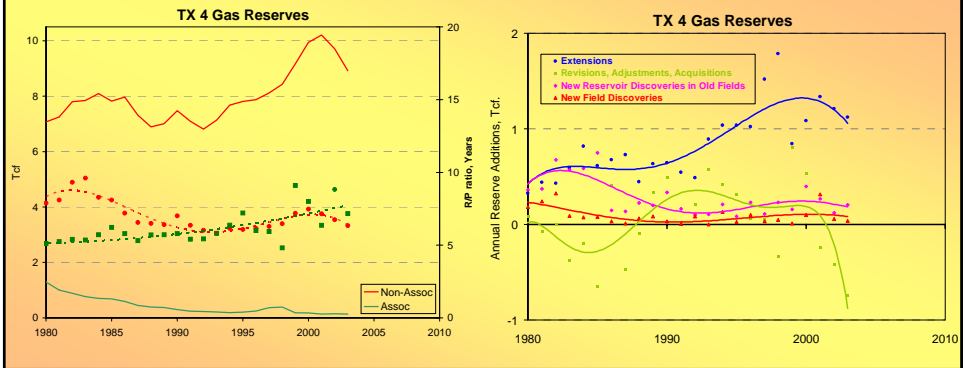
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L48 Natural Gas Reserves

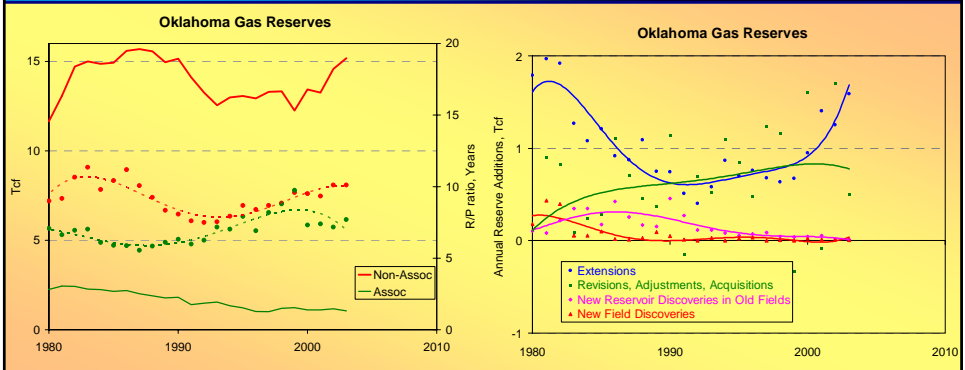


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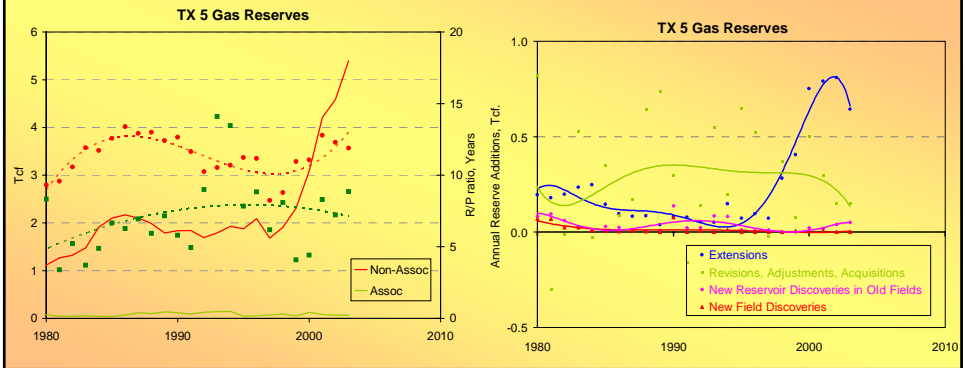
L48 Natural Gas Reserves



L48 Natural Gas Reserves

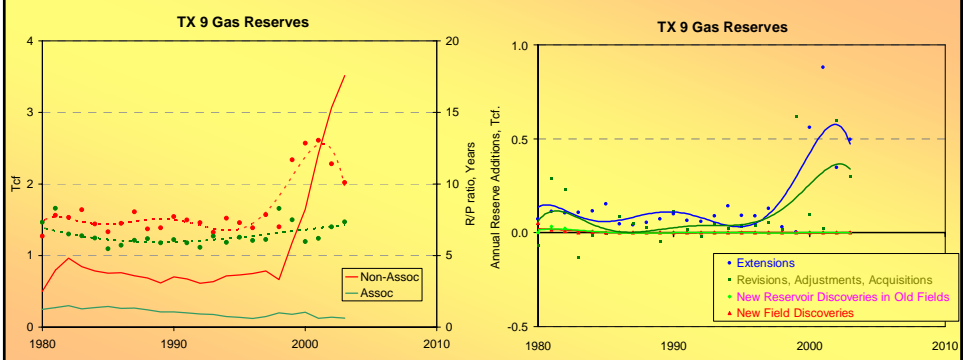


L48 Natural Gas Reserves



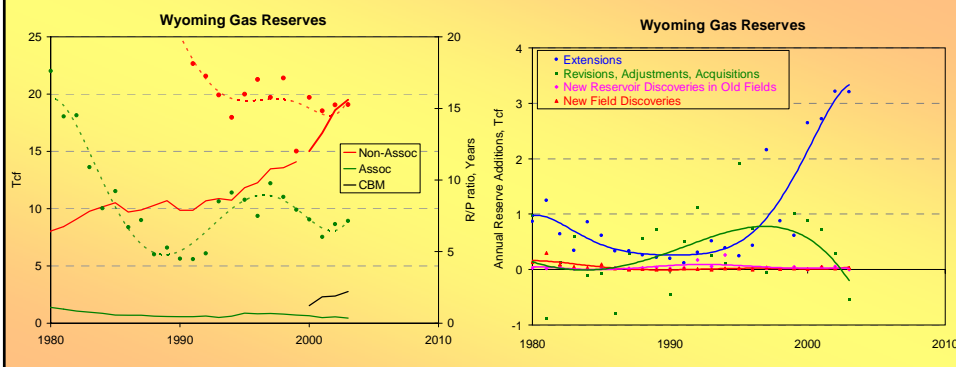
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L48 Natural Gas Reserves



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L48 Natural Gas Reserves



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Conclusions



- Little new natural gas being discovered, particularly outside of Gulf Coast
- Most of current production derived from in-fill drilling
 - High fraction of in-fill production is acceleration, not additional recovery
 - Production acceleration make future decline rates steeper
- Reserve growth not fast enough to offset reserve quality deterioration
 - Most new production derived from increasingly poor reservoir rock – R/P escalation
 - It takes three times the reserve addition in Wyoming to replace Gulf Coast production
- Production rate declines in most basins accelerating
 - 70% growth in onshore rig counts from 2002 delayed production declines by 2 years
 - Unable to continue growing rig count at a rate high enough to stop declines
- LNG imports are the most economic means of supplying marginal natural gas demand

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