Energy:
Perspectives On U.S. Natural Gas Supply

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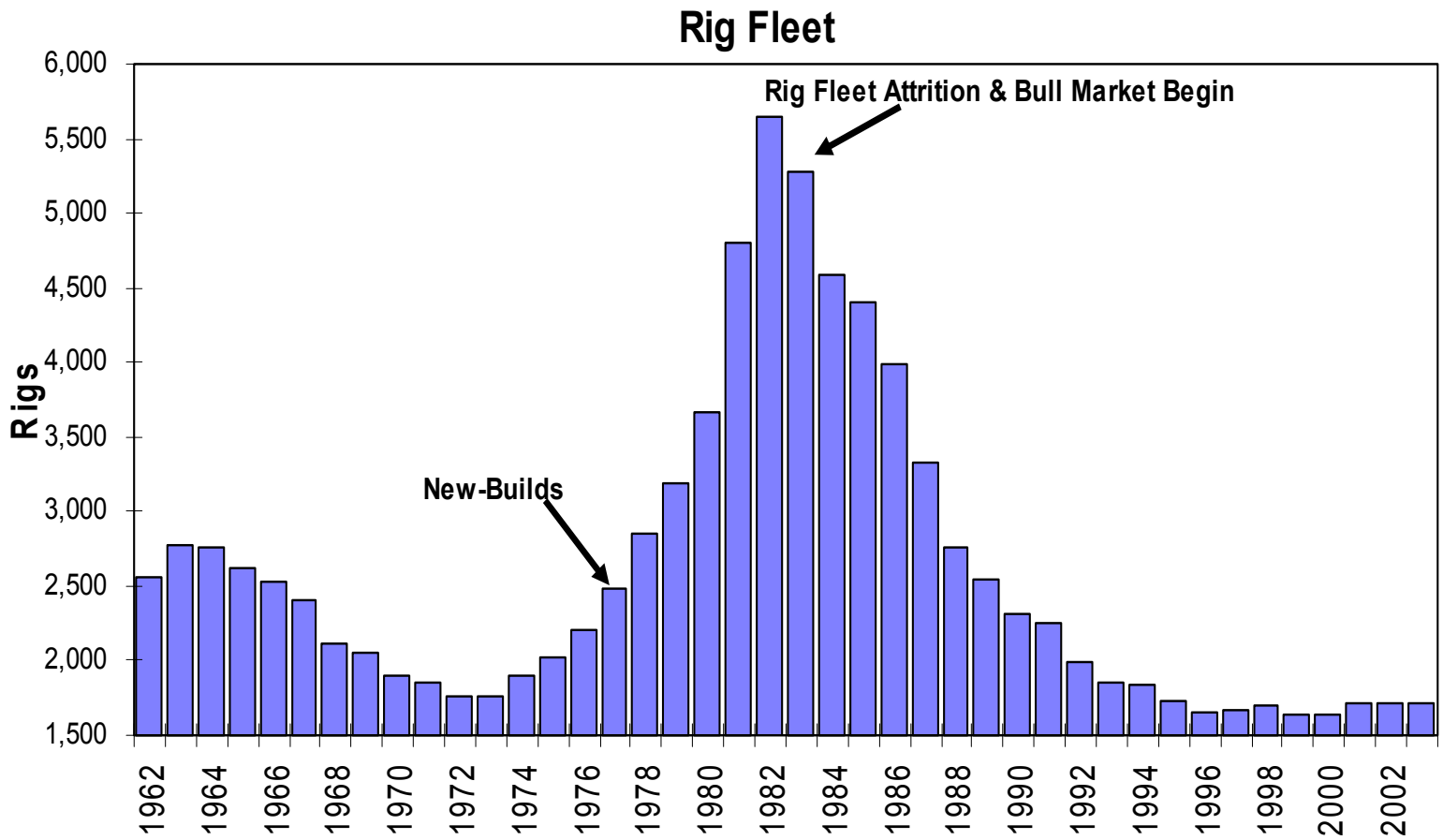
U.S. Rig Fleet Size Shows Long-Term Secular Moves



Source: Reed Hycalog, RJ&A.

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Do We Need As Many Rigs Today?

- Technology is better, but….
- We are searching for smaller reserves
- Decline rates are up
- Well depth is increasing
- How many rigs did we need in the 1970s?

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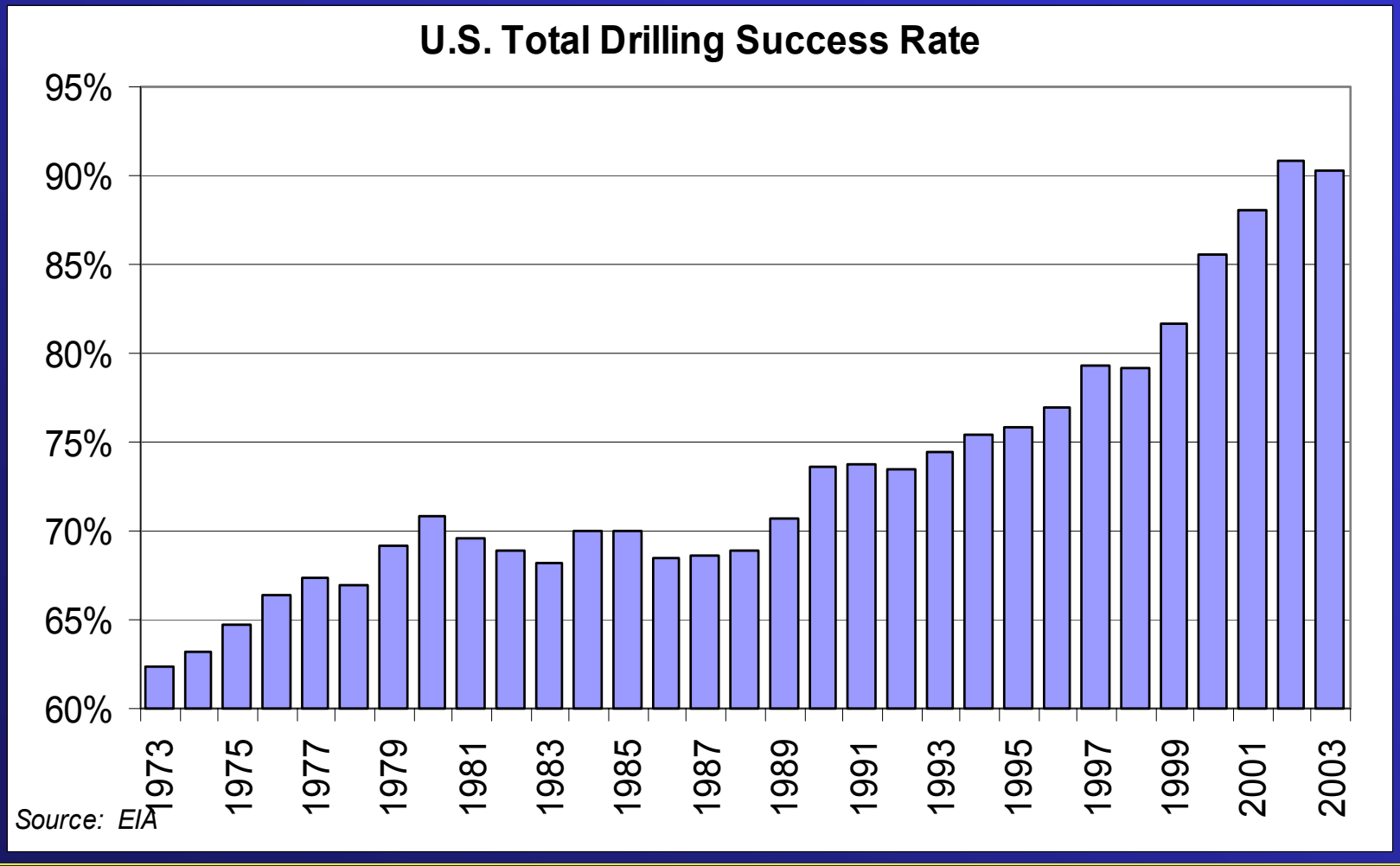
Drilling Success Rates Are Up



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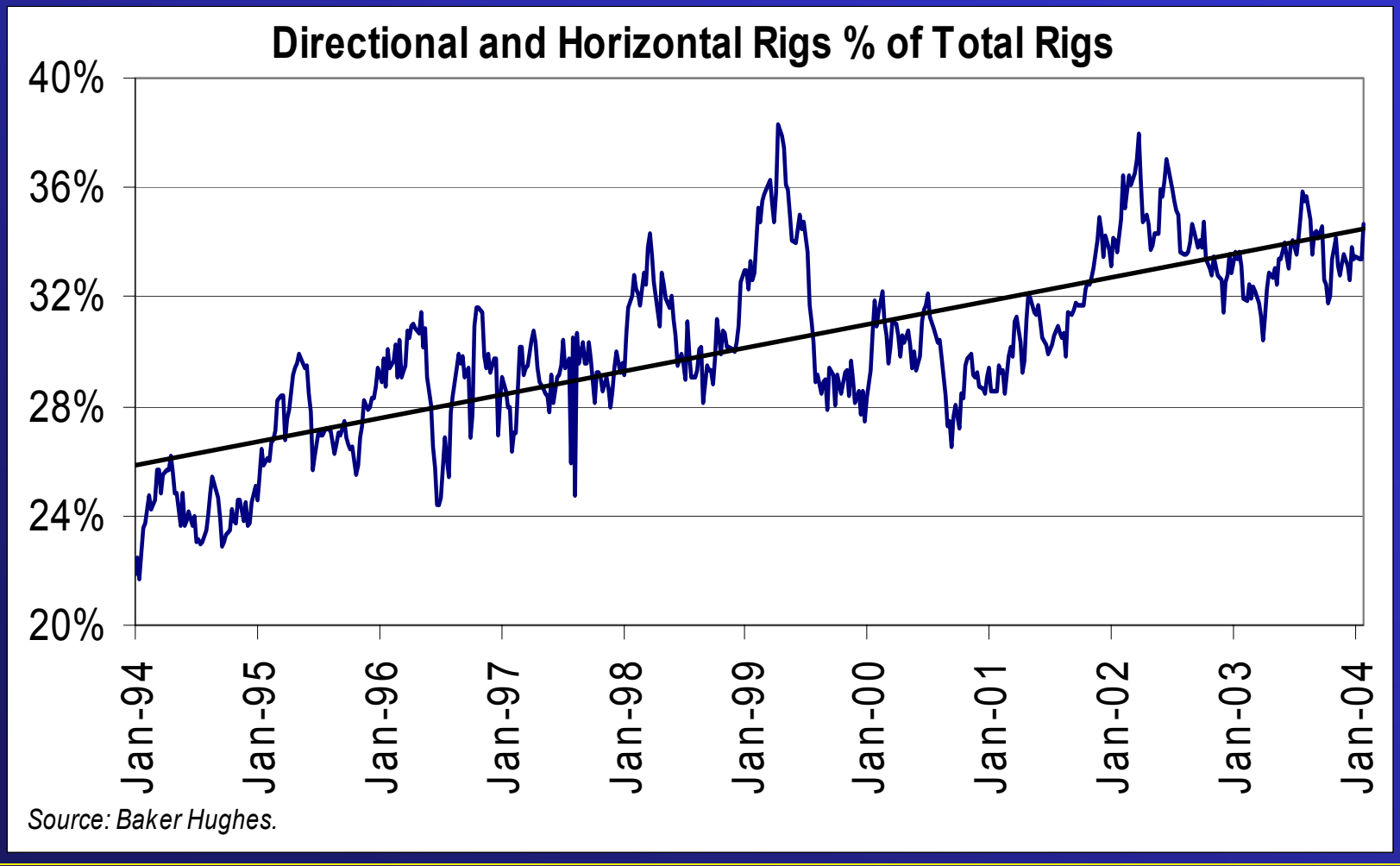
New Drilling Techniques Are Here To Stay



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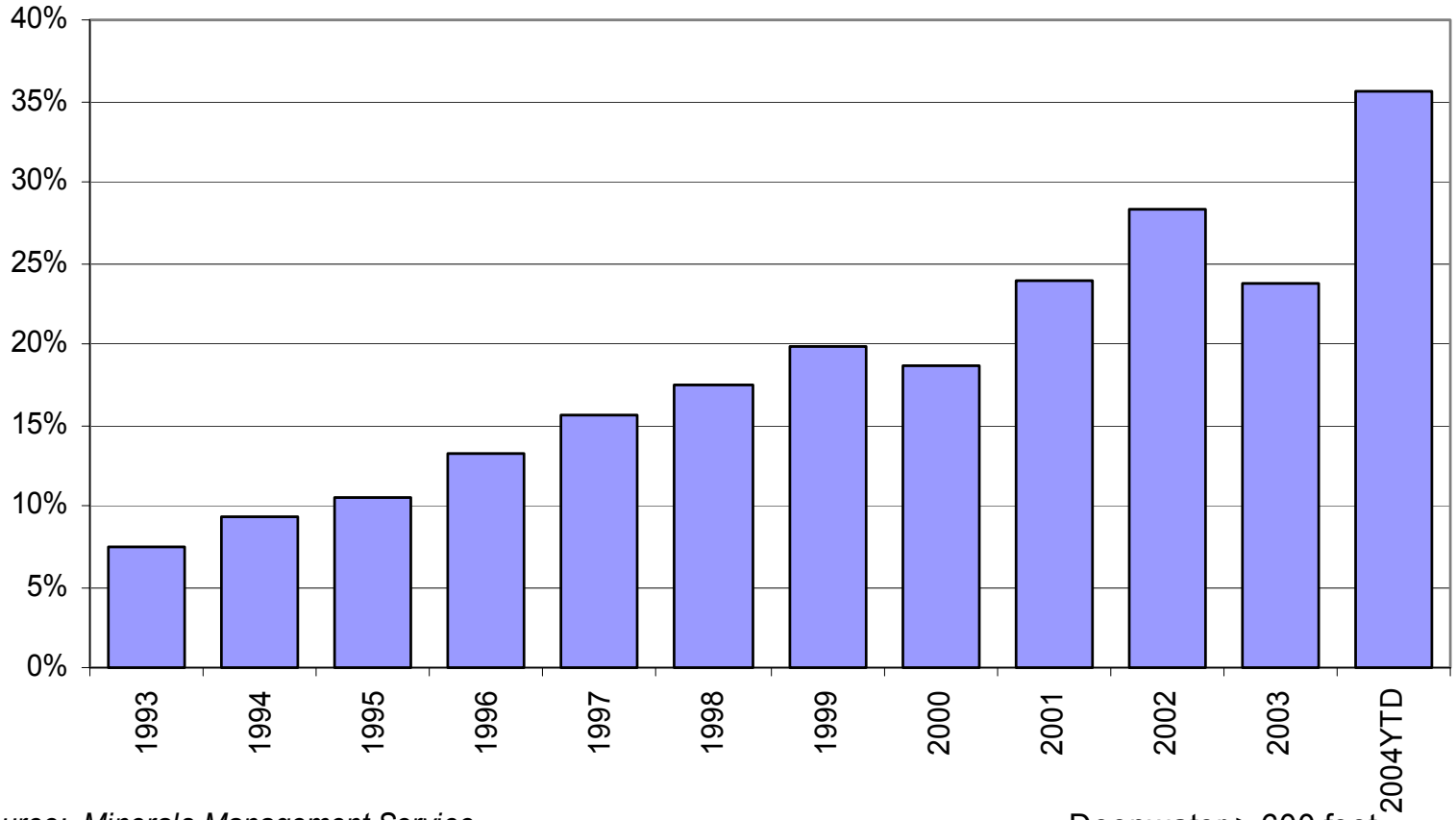
New Areas Are Now Accessible



Source: Minerals Management Service.

Deepwater > 600 feet

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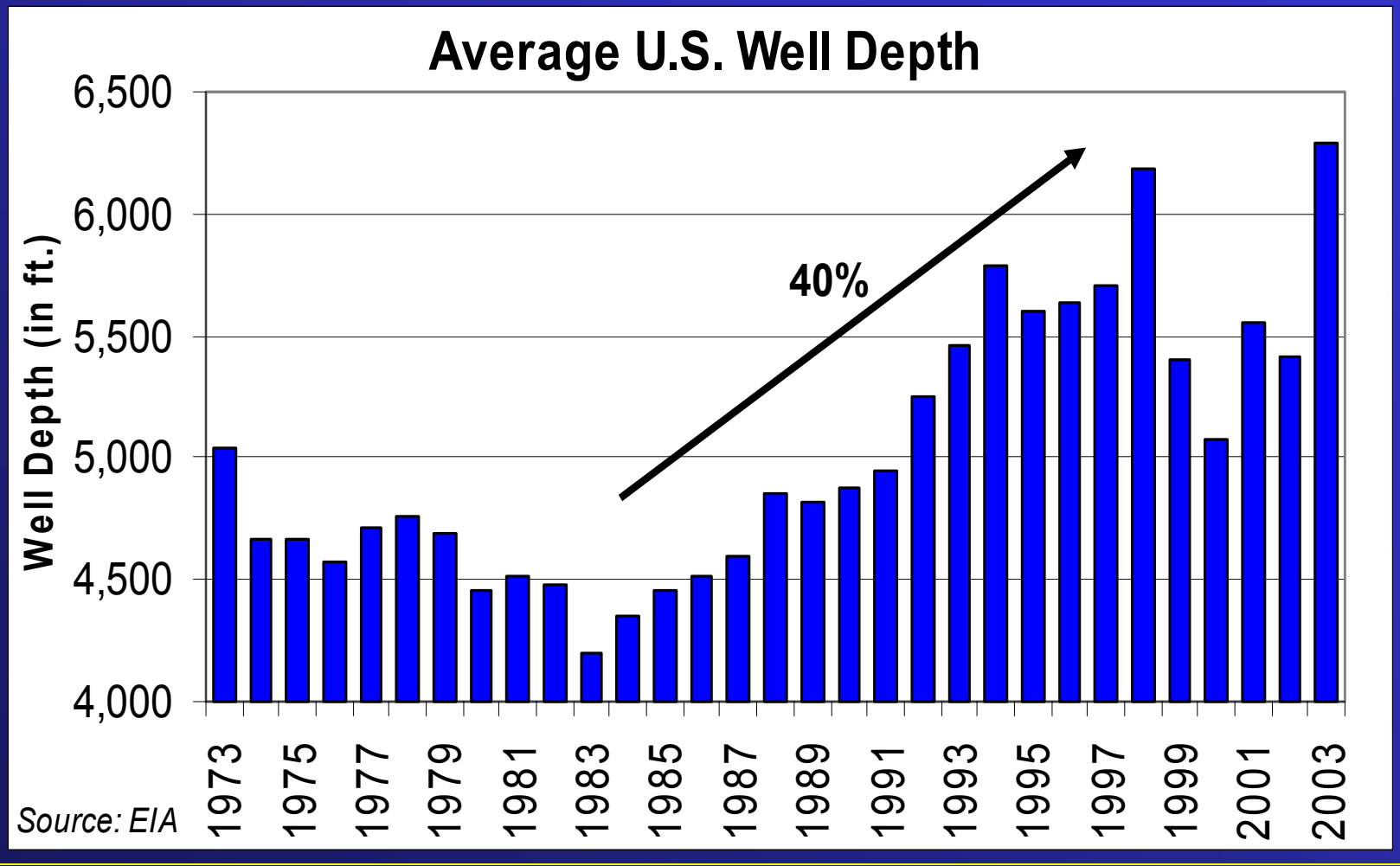
But, We Are Drilling Deeper



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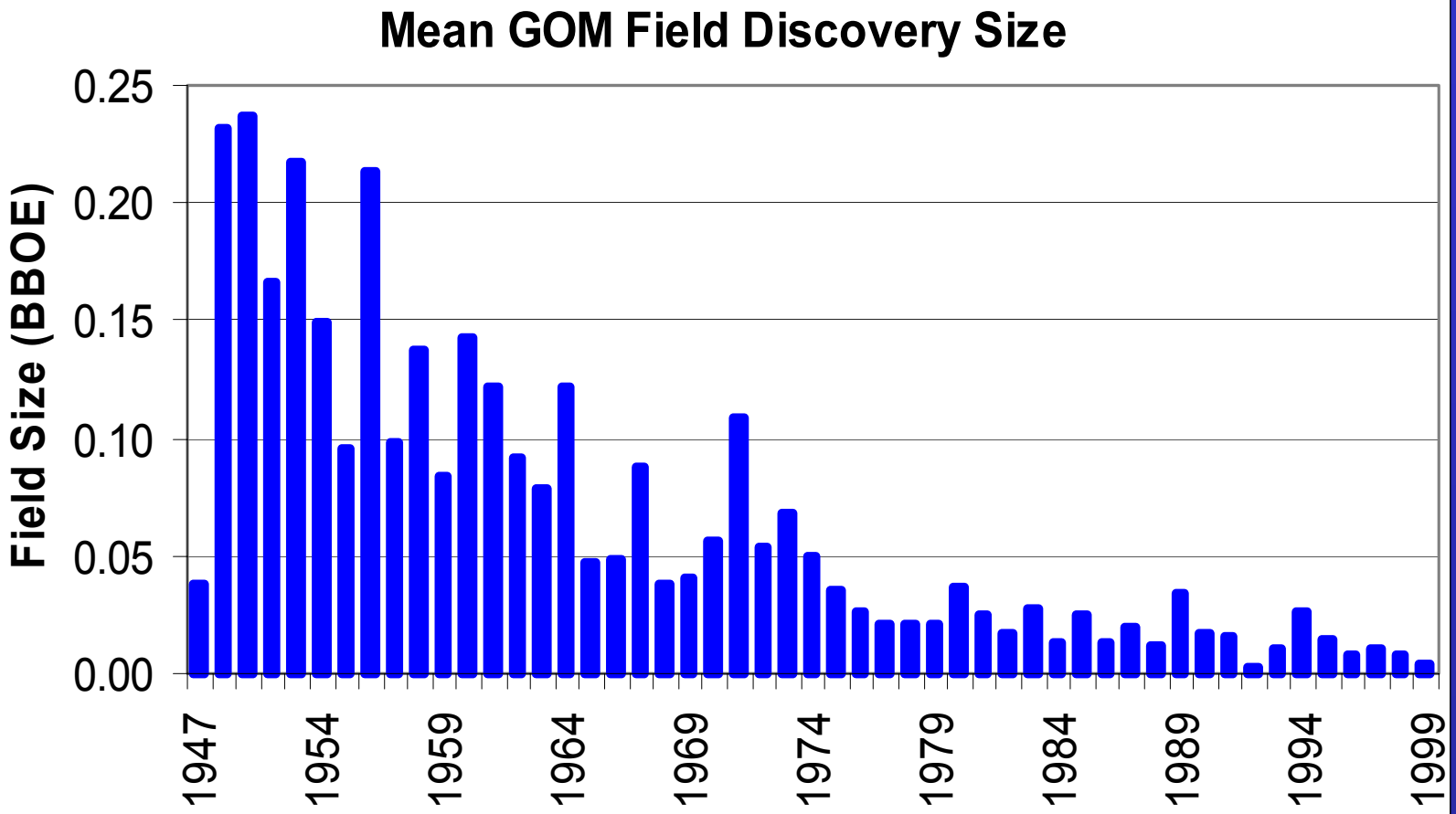
Searching For Smaller Reserves



Source: Minerals Management Service.

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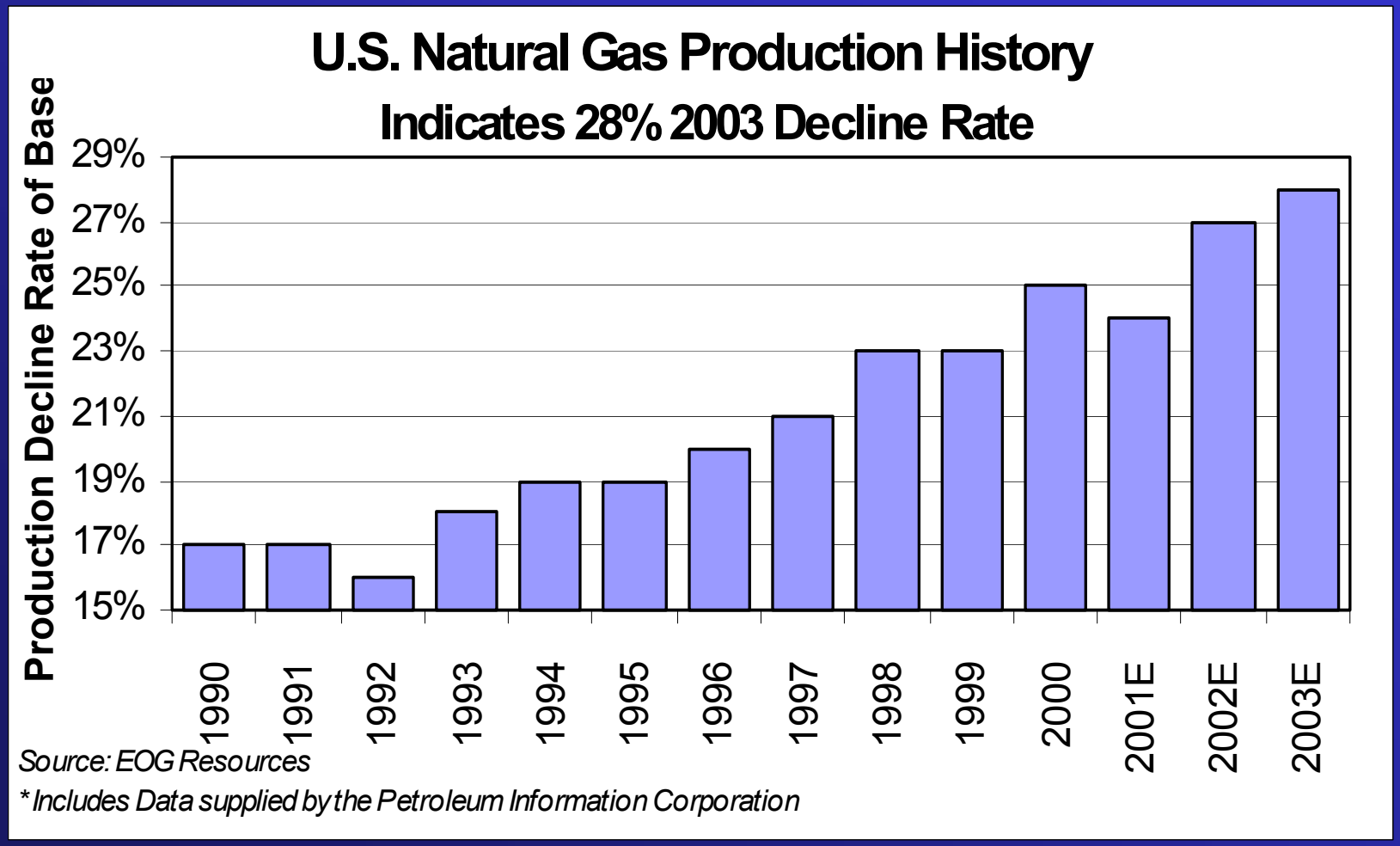
Which is Driving Decline Rates Higher



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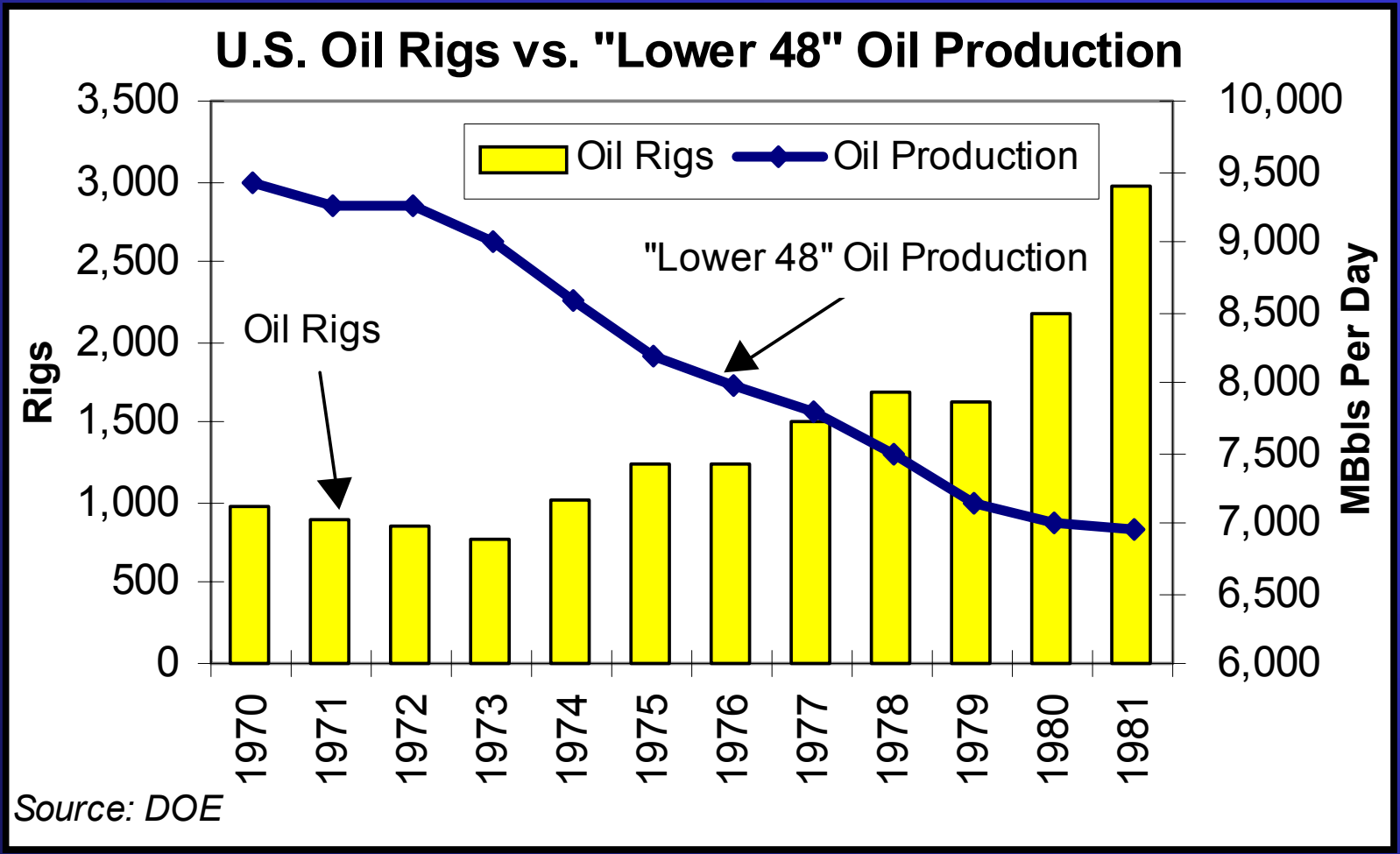
How Will More Rigs Affect Production?



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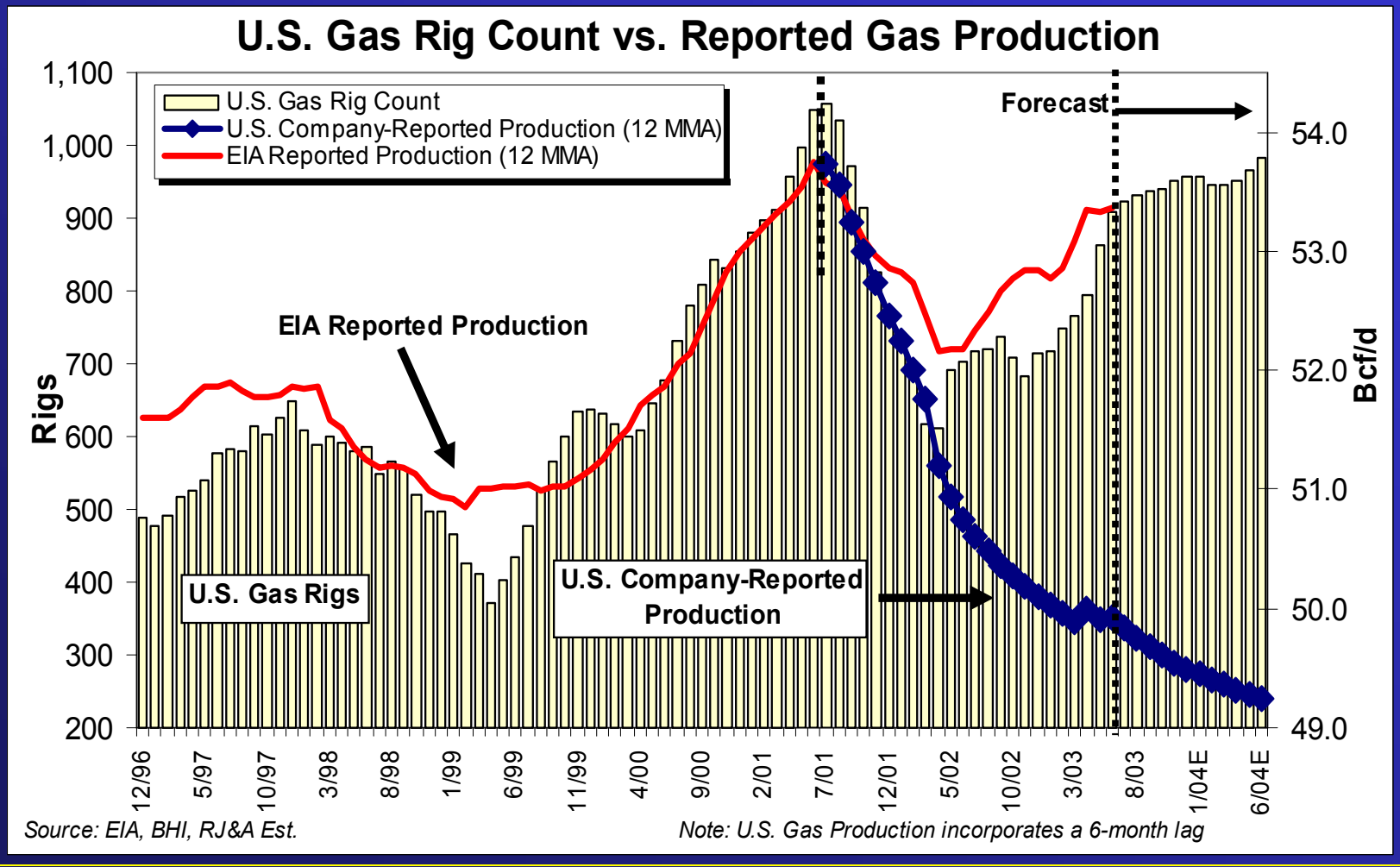
Today's U.S. Gas Production Is Replay Of 1970's Oil Production



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Where Are Declines Coming From?

	Est. % of U.S. Gas Prod.	Gas Rigs YTD Change	Gas Rigs YTD % Change	Est. YOY Prod. Change
Public Ind.	29%	97	49%	2.4% A
Public Majors	27%	6	6%	-8.3% A
Total Public Co.	56%	103	35%	-3.1% A
Total Private Co.	44%	106	30%	-3.0% E
Total Industry Co.	100%	209	32%	-3.1% E

Source: Smith Int'l, RJ&A est.

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State Production Data Supports Public Data

NATURAL GAS PRODUCTION (Bcf/day)			
	YTD		YOY
State	**2003**	**2002**	**% Change**
Louisiana*	3.7	3.8	-2.8%
New Mexico	4.3	4.5	-4.1%
Oklahoma	3.8	4.3	-11.3%
Texas*	15.6	15.8	-1.2%
Subtotal	**27.4**	**28.4**	**-3.4%**
Colorado	2.6	2.5	6.3%
Montana	0.2	0.2	-1.9%
Utah	0.8	0.8	-2.8%
Wyoming	4.9	4.7	5.3%
Subtotal	**8.6**	**8.2**	**4.6%**
Federal OCS (Estimated)	***11.3***	***12.3***	***-8.0%***
Total	**47.3**	**48.9**	**-3.2%**

Sources: CO OGCC, LA DNR, MT DNR, NM EMNRD, OK OCC, TX RRC, UT OGM, WY OGCC, MMS, RJ&A Est.

Through July 2003

*Excludes Federal Offshore Production

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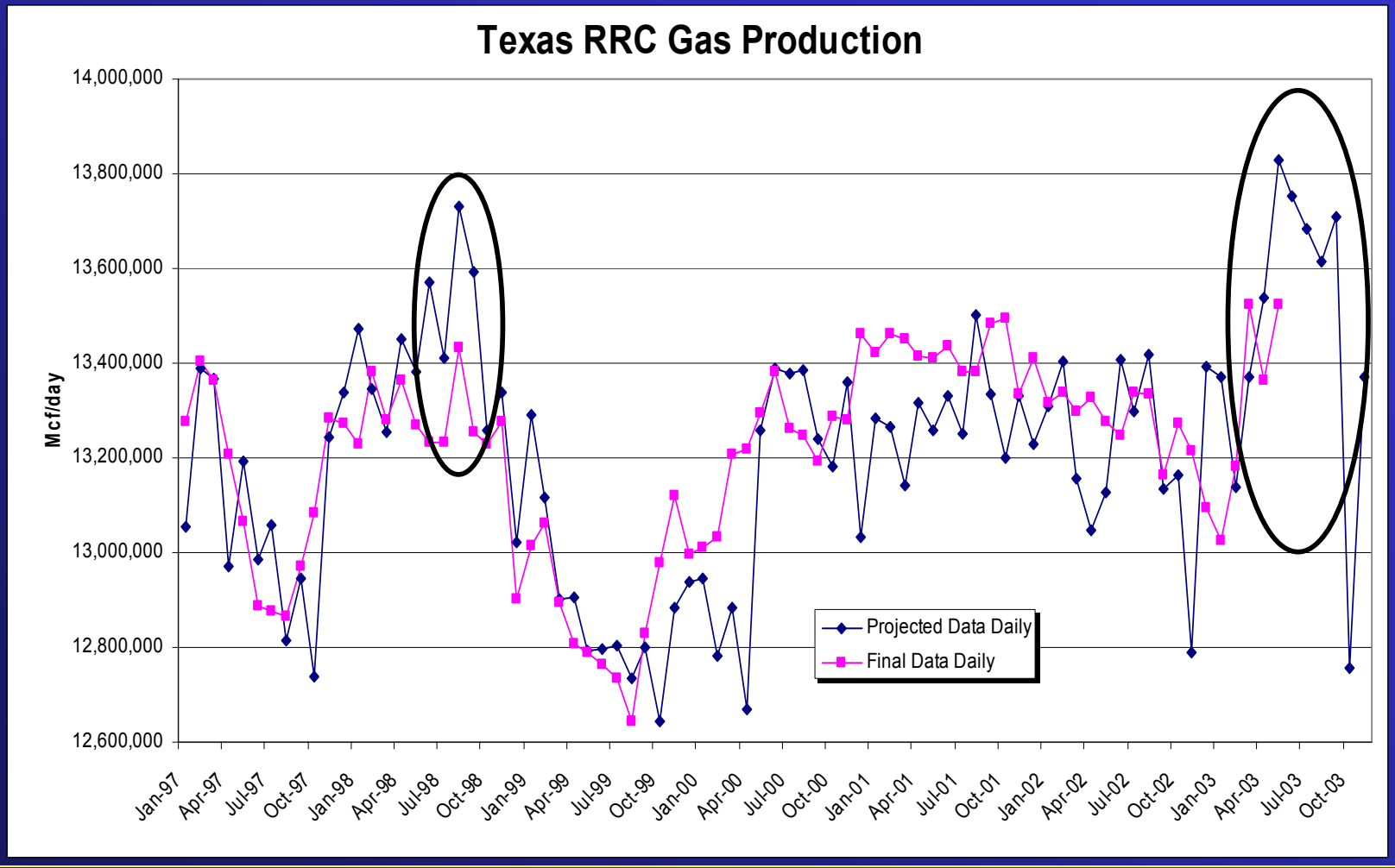
Texas Railroad Commission Data



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Preliminary Q4 2003 Gas Production

Preliminary Results of RJ Production Survey (22 of 47 companies reporting)
U.S. Natural Gas Production (MMcf/d)

Category	4Q:03	3Q:03	4Q:02
Majors & Gas Utilities	9,750	9,857	10,439
Estimated Sequential Change	-1.1%		
Estimated Y-Y Change	-6.6%		
Independents	7,828	8,003	7,910
Estimated Sequential Change	-2.2%		
Estimated Y-Y Change	-1.0%		
Total	17,578	17,860	18,349
Estimated Sequential Change	-1.6%		
Estimated Y-Y Change	-4.2%		

Source: Company reports, JS Herold

Note: Pro forma for acquisitions and divestitures

Note: The 22 companies having reported so far represent, by volume, about 67% of total survey.

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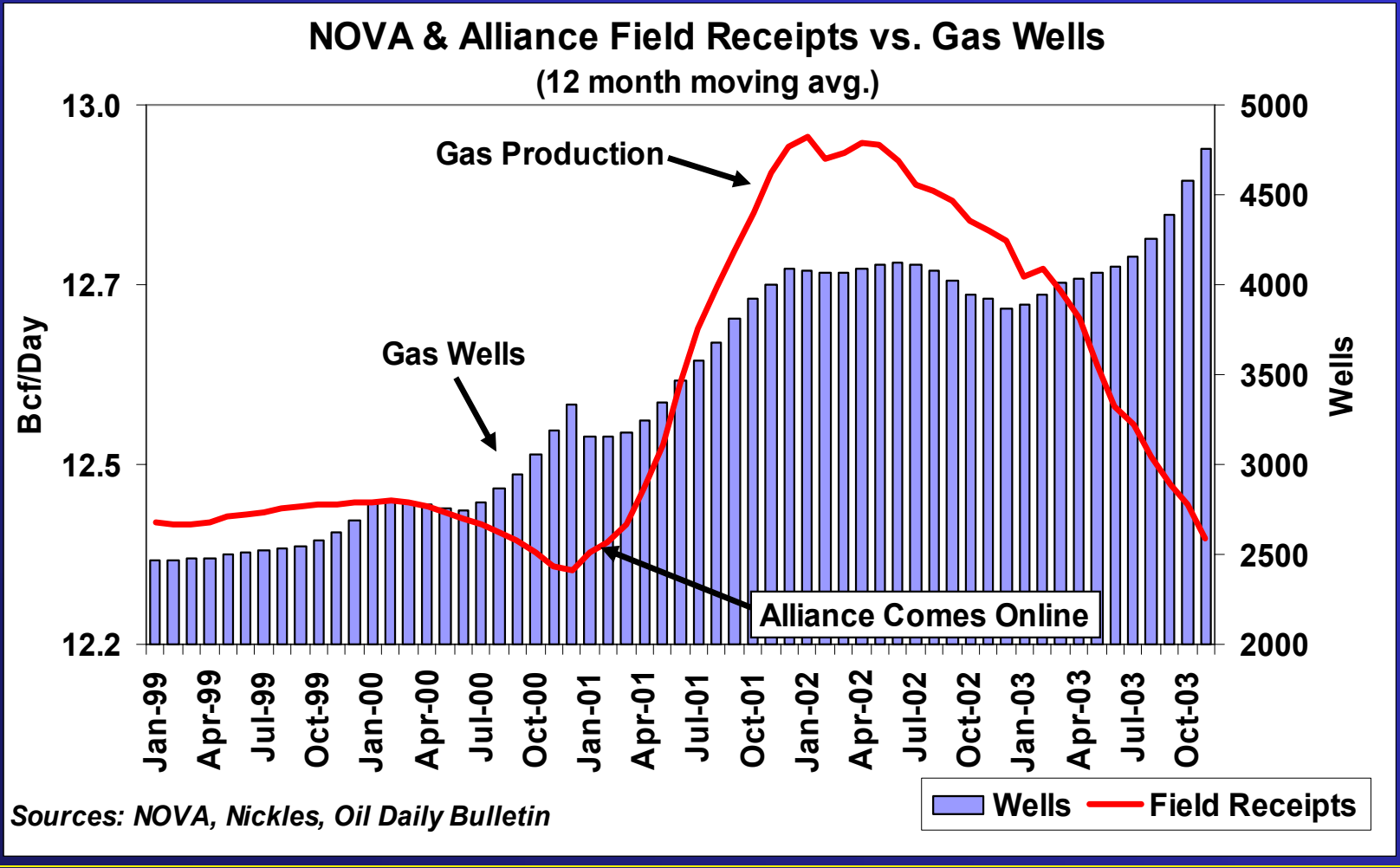
Canadian Production Is Rolling Over
(Imports should be down 0.5 Bcf/day in 2003)



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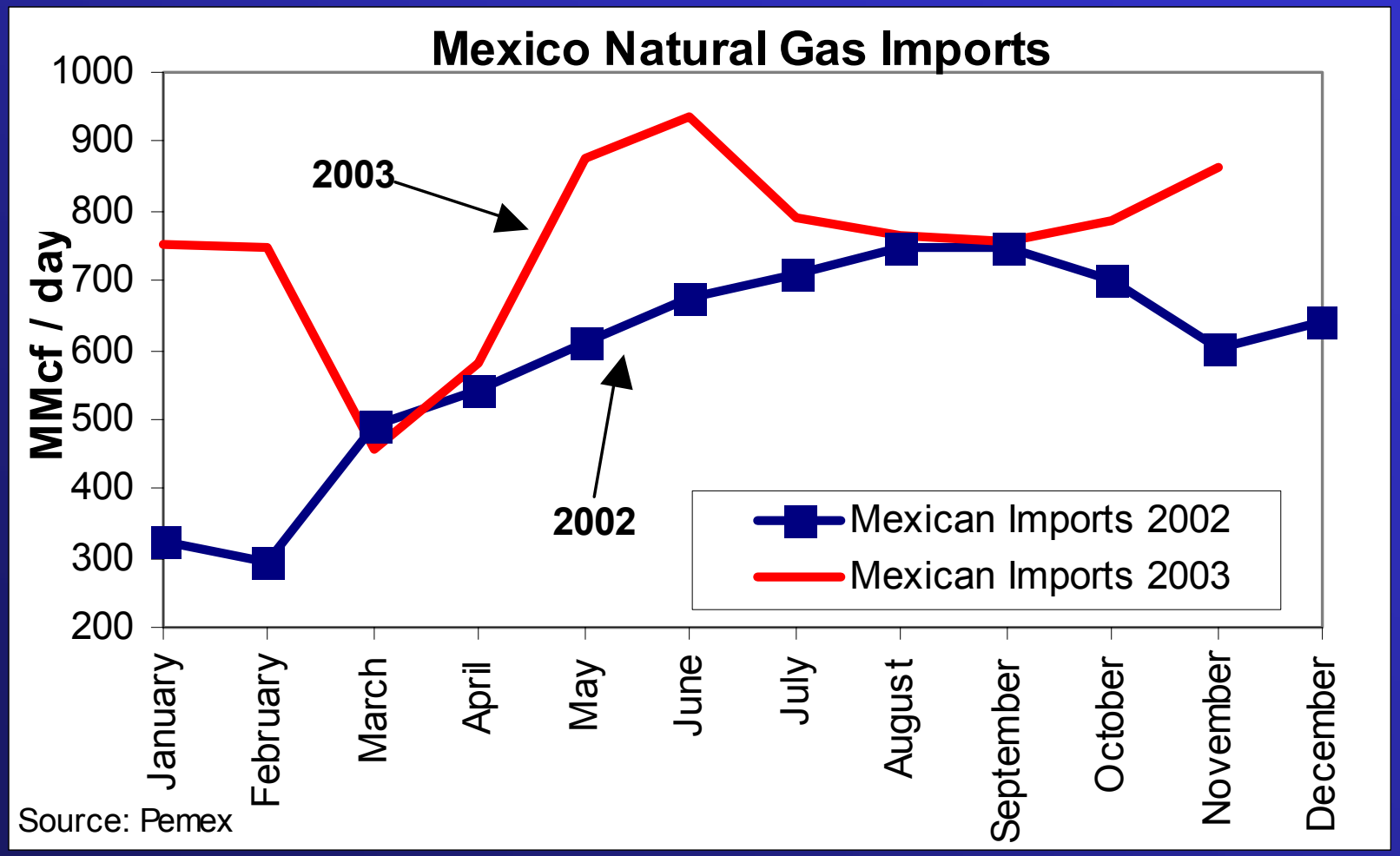
And, We Are Exporting More Gas to Mexico (Imports up @ 0.2 Bcf/day)



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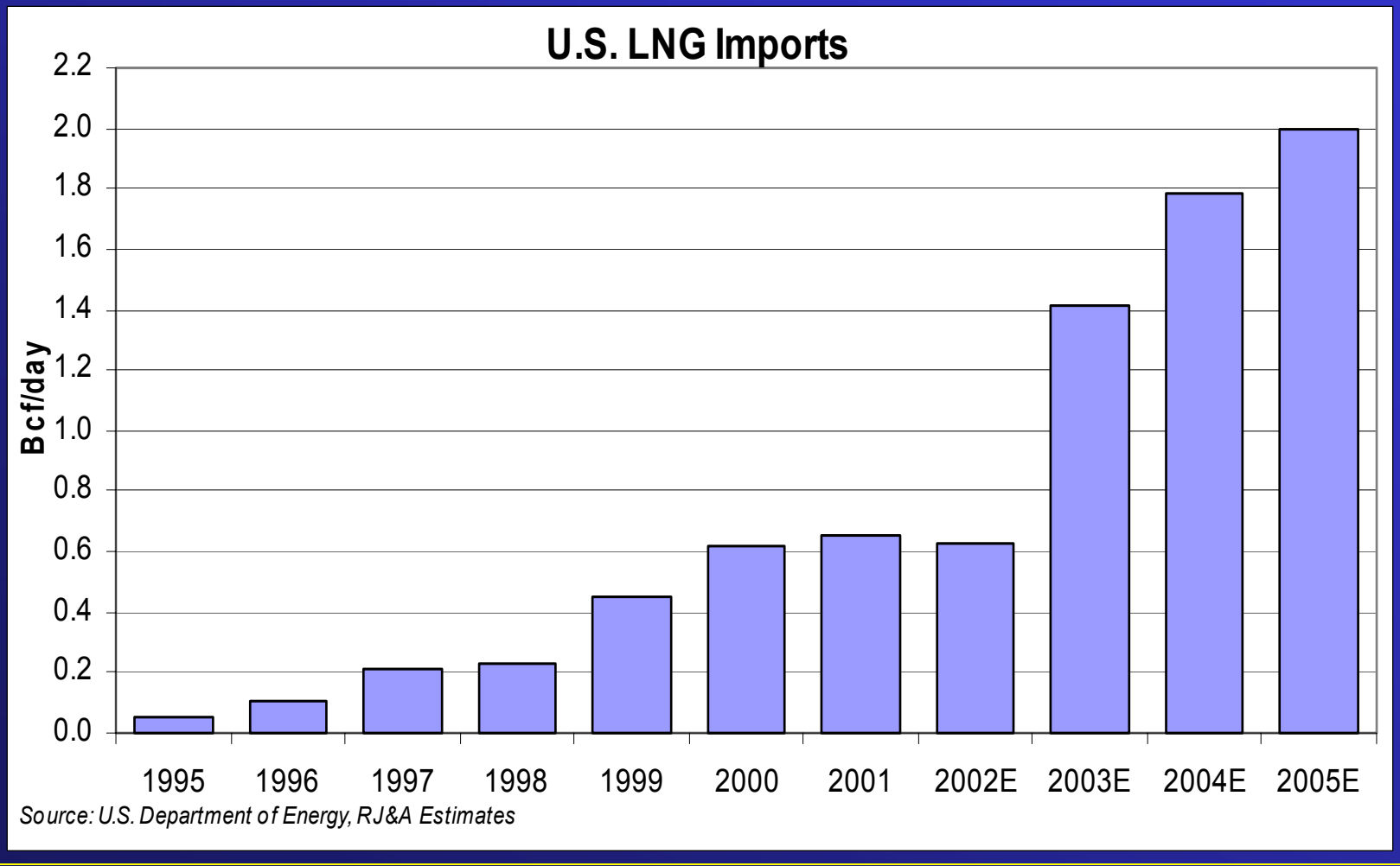
But, LNG increases should offset Canada/Mexico (Imports up +/- 1.0 Bcf/day (winter-over-winter)



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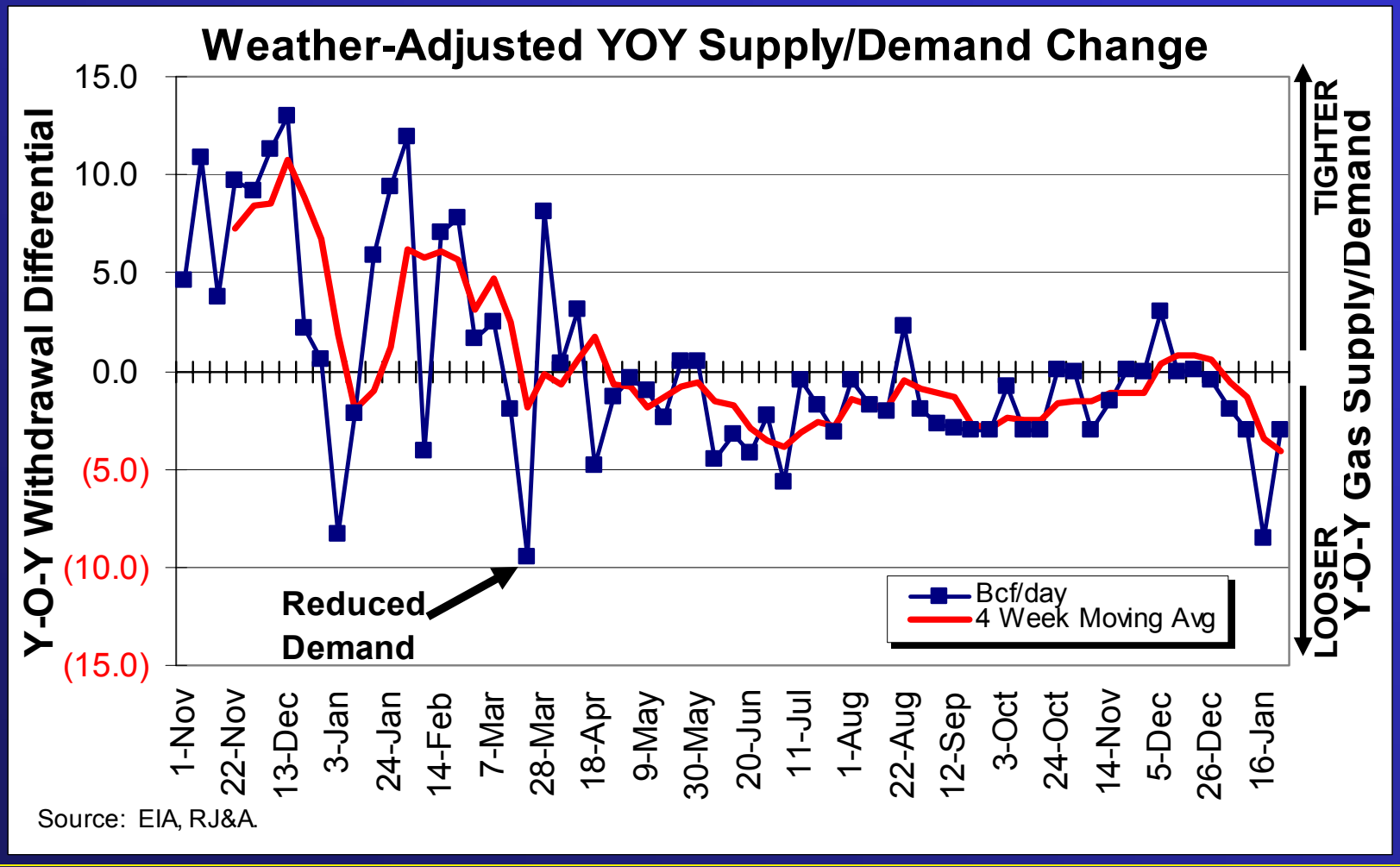
The Market Is Working!
(Higher Prices Are Squeezing Demand)



Source: EIA, RJ&A.

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Where Will Storage End?
(Depends on Price and Weather)

	5 Yr. Avg	Last Year	2 Years Ago	RJ Est
Gas Price ($/Mcf)	$3.86	$5.49	$3.34	$5.75
Weather (Vs. Normal)	5% Warmer	2% Colder	7% Warmer	3% Colder
Final 9 Week Withdrawals	802 Bcf	1,033 Bcf	911 Bcf	904 Bcf
Current Storage	2,063 Bcf	2,063 Bcf	2,063 Bcf	2,063 Bcf
Ending Storage	1,261 Bcf	1,030 Bcf	1,152 Bcf	1,100 Bcf

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What Happens This Summer?
(Assume $30 Oil and $5.50 Natural Gas)

2003 Injections	2,450 Bcf
- Supply Down 3% (1.5 Bcf/day)	- 322 Bcf
- Weather (Normal) (0.5 Bcf/day)	+ 108 Bcf
- Economy/Ind. Demand (1 Bcf/day)	- 215 Bcf
- Fuel Switching	0 Bcf
2004 Injections	2,021 Bcf
April Beginning Storage	1,100 Bcf
October Ending Storage	3,121 Bcf

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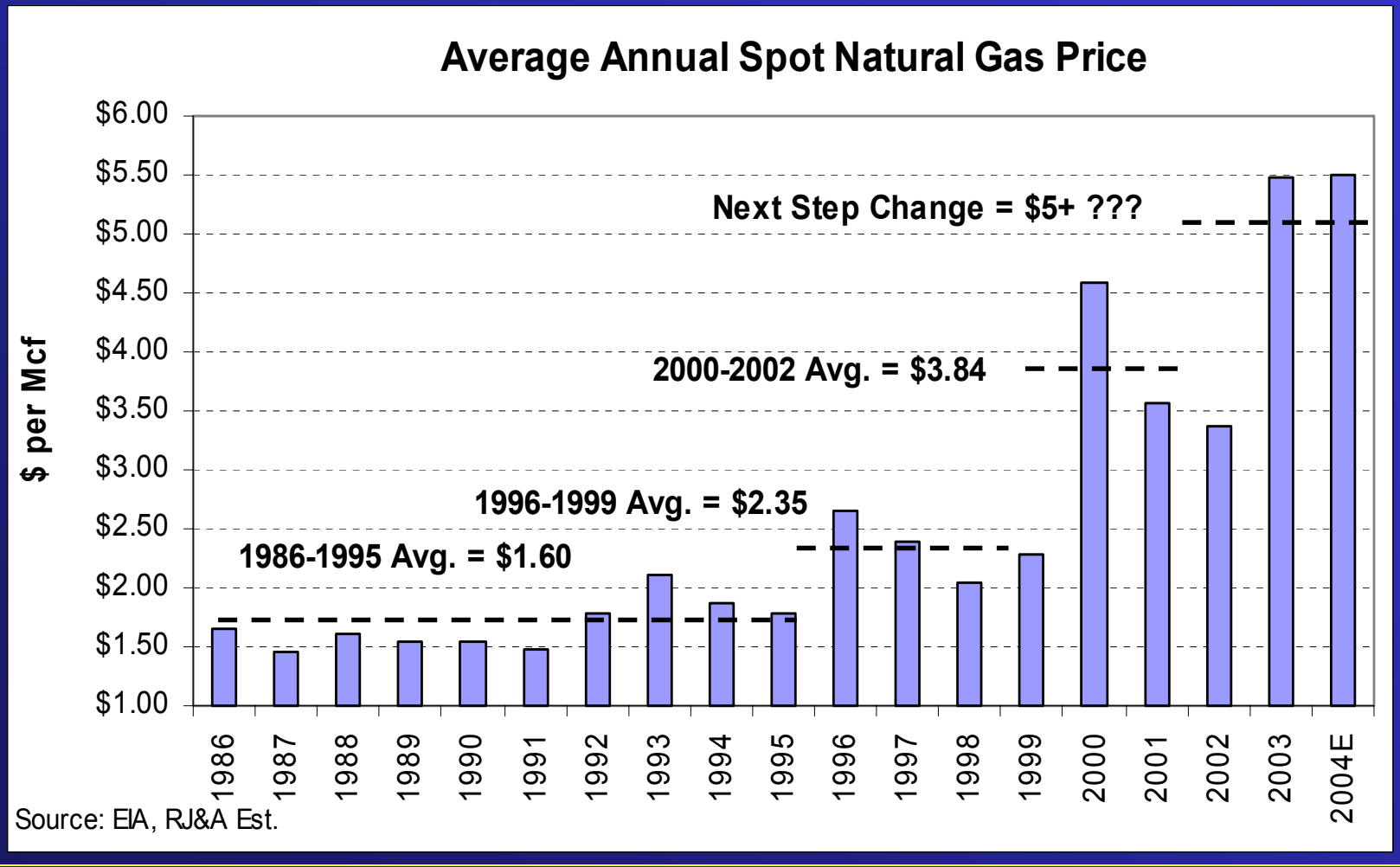
This is a Sustainable "Step Change" in Gas Prices



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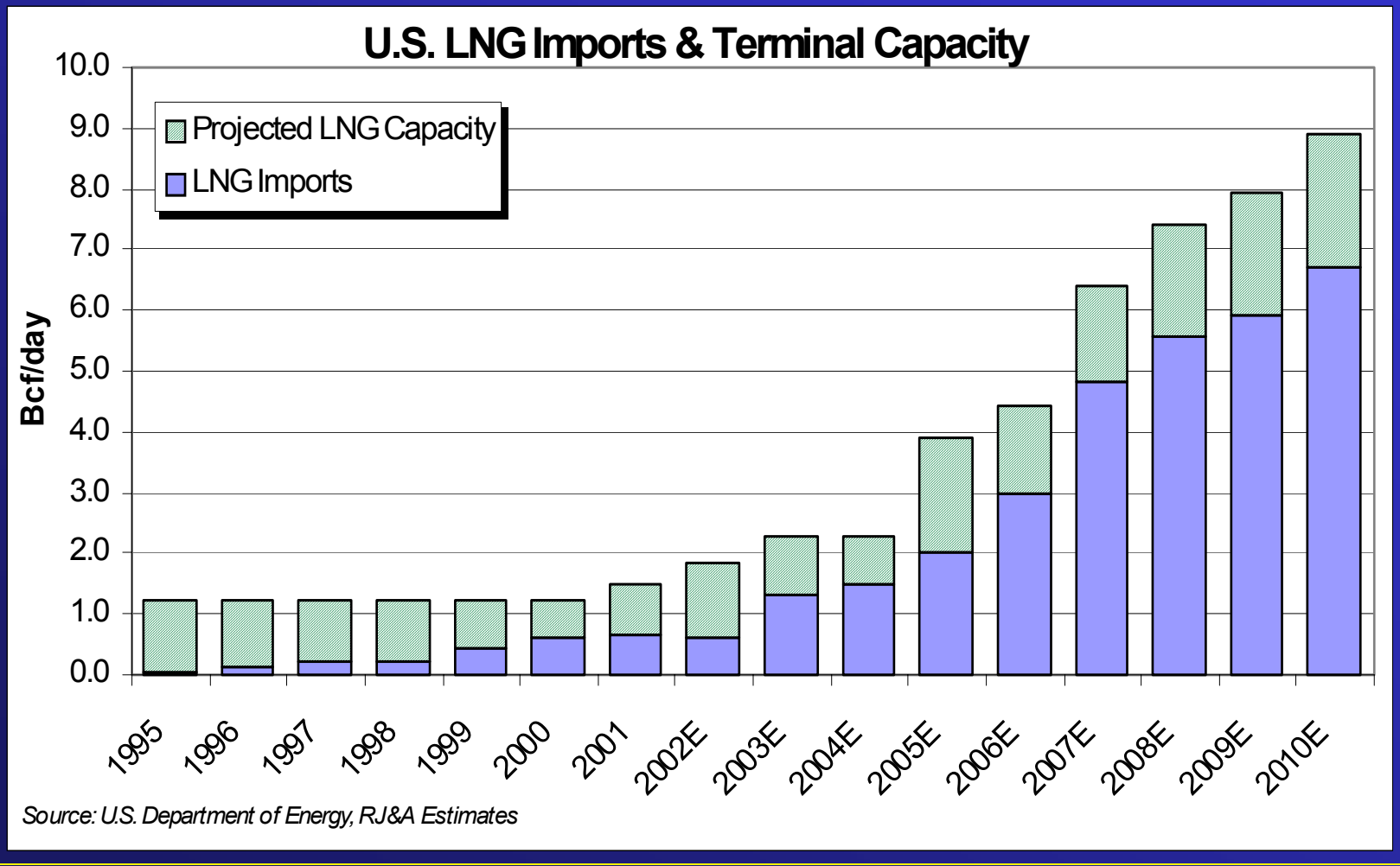
Will LNG Save Us?



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LNG Issues

- Many project announcements, only some will get built
- 2008 should be the breakout year
- What will the country of origin charge for the gas?
  - (ie: who gets the arbitrage?)
- International competition?
  - Current Japanese LNG cost $5/Mcf
- LNG prices will ultimately be linked to global oil prices

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Gas Conclusion

- The gas market is working!
- High prices are squeezing demand
- Drilling activity is increasing
- North American gas supply will continue falling
- LNG is the long term solution

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