

The Economy and Possible Effects from Declining Oil & Gas Activity



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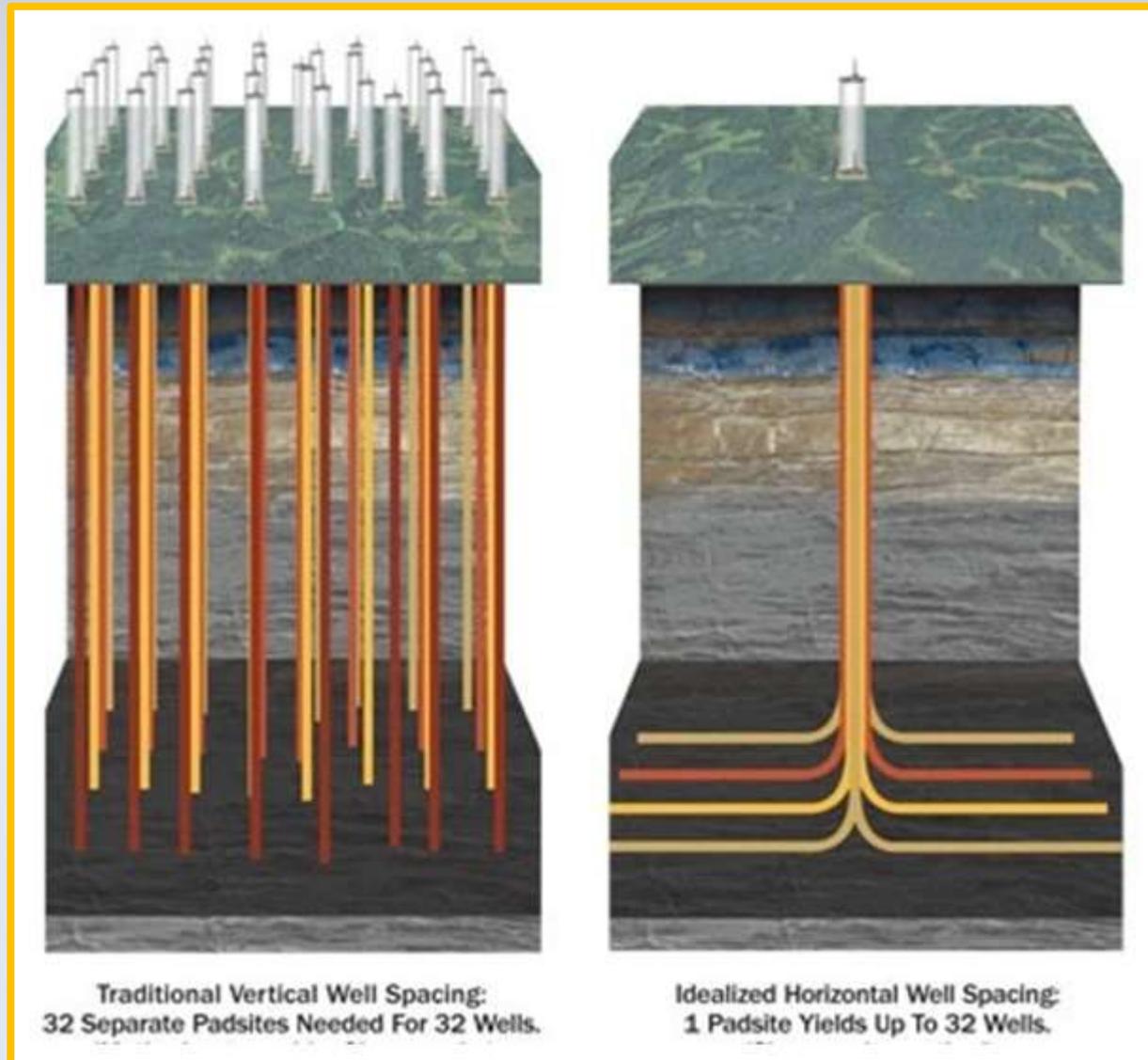
How We Got Where We Are Today In Upstream O&G Activity

Factors Affecting the Speed and Number of Wells Being Drilled

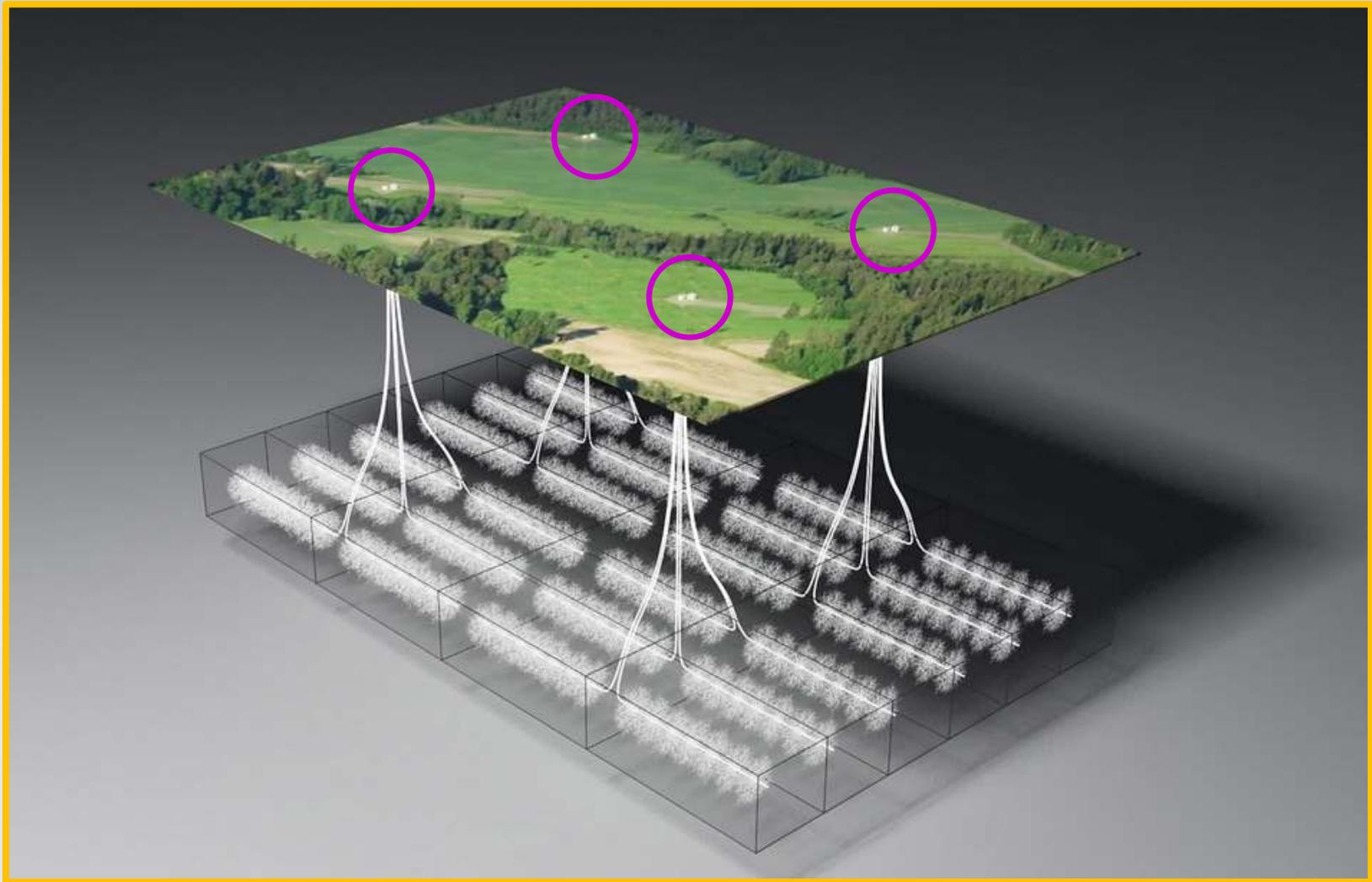
- 1) Drilling one well to “hold a field by production” giving way to “pad drilling”.
 - 2) Moving to drilling rigs that “walk” or move along rails.
 - 3) The well spacing continues to tighten, leading to more producing wells on a given amount of acreage.
 - 4) The amount and cost of investment capital and debt funding.
 - \$240 bil. In O&G junk bonds issued in last 5 years
 - \$100 bil. In capital on sidelines waiting to invest in O&G (Anadarko CEO)
- * Tapping other pay zones will further extend drilling inventory.

The Evolution to Pad Drilling

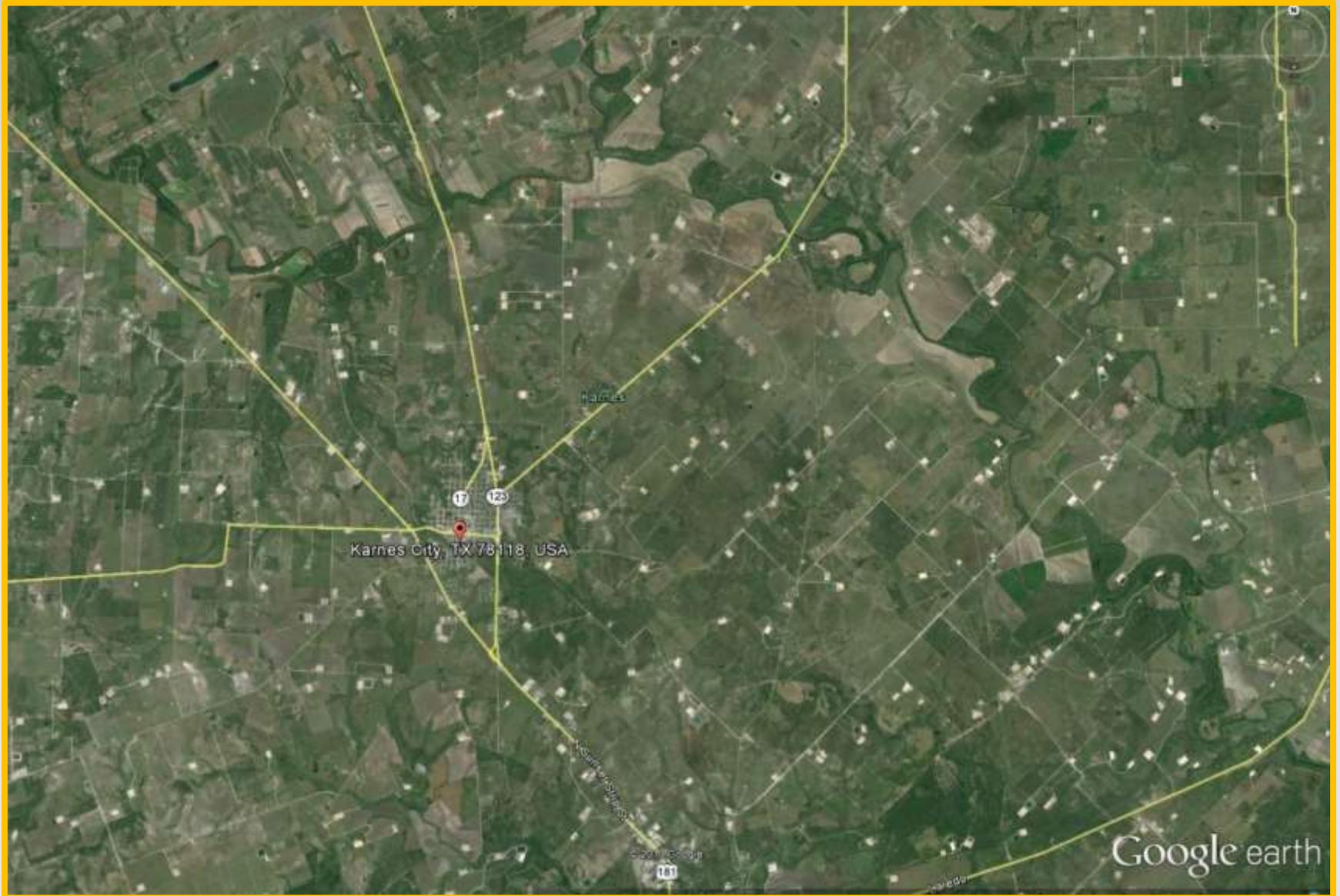
Vertical Wells versus Horizontal Wells Using Pad Drilling



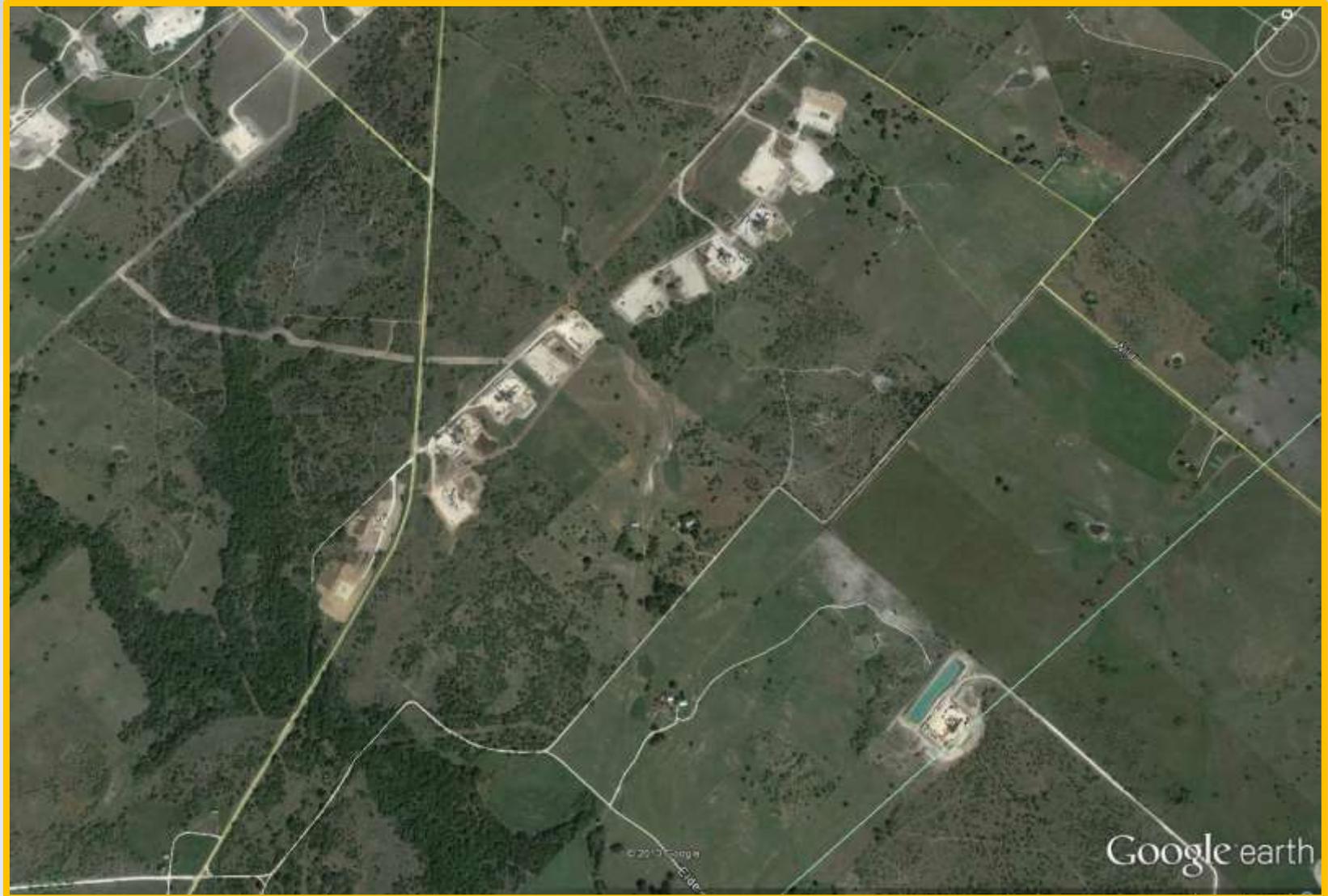
Pad Drilling Example



Karnes Co. Drilling Pads



Gonzales Co. Drilling Pads



2 Wells On One Pad in Gonzales Co.



3 Wells On One Pad in Gonzales Co.



4 Wells on 1 Pad in McMullen Co.



22 Wells On One Pad



Twenty-two wells, 75 wireless instruments, and one pad controller: Wireless automation solutions with advanced automation allow efficient monitoring and control of plunger lift wells. (Images courtesy of Flow Data Inc.)

Moving the Rigs Gets Much Faster

Walking Rigs



B-Series rigs are each equipped with a Columbia Walking System (in photo). The system allows the rig to travel up to 100 ft (30.5 m) without moving the backyard and with full setback. A well-to-well move can be accomplished in as little as one hour, and it can return to a previously drilled well with an accuracy of plus or minus one-sixteenth of an inch. (Image courtesy of Nabors Drilling USA)

Rigs Moving on Rails



Fig. 1. The PaDSRig (Production and Drilling System Rig) is designed for drilling multiple well bores from a single pad location, skidding along rails.

Rigs Moving on Rails



Piping Moves With Rig Movement



Increasing Efficiency Begins to Show Up

U.S. Land Well Count by Basin

Date	Eagle Ford	Granite Wash	Haynesville	Permian	Total Wells U.S.Land
Q1 - 2012	876	160	184	2,302	9,173
Q2 - 2012	932	178	109	2,497	9,582
Q3 - 2012	1,024	155	84	2,402	9,411
Q4 - 2012	974	168	92	2,196	8,658
Q1 - 2013	1,044	141	109	2,169	8,534
Q2 - 2013	1,089	150	98	2,260	9,011
Q3 - 2013	1,096	170	103	2,351	9,075
Q4 - 2013	1,171	148	94	2,351	9,083
Q1 - 2014	1,178	133	102	2,405	8,966
Q2 - 2014	1,195	166	118	2,681	9,456
Q3 - 2014	1,168	182	126	2,715	9,542
Q4 - 2014	1,168	152	114	2,725	9,544

U.S. Land Rig Count by Basin

Date	Eagle Ford	Granite Wash	Haynesville	Permian	Total Rigs U.S.Land
Q1 - 2012	234	86	91	482	1,947
Q2 - 2012	251	90	59	516	1,923
Q3 - 2012	242	80	41	513	1,855
Q4 - 2012	228	71	37	484	1,759
Q1 - 2013	232	69	41	470	1,706
Q2 - 2013	230	70	38	469	1,709
Q3 - 2013	233	70	41	463	1,709
Q4 - 2013	225	60	40	463	1,697
Q1 - 2014	221	54	43	491	1,724
Q2 - 2014	217	65	44	545	1,796
Q3 - 2014	206	70	44	559	1,842
Q4 - 2014	209	59	41	559	1,856

U.S. Land Wells/Rig by Basin

Date	Eagle Ford	Granite Wash	Haynesville	Permian	Total U.S.Land
Q1 - 2012	3.74	1.85	2.02	4.77	4.71
Q2 - 2012	3.72	1.97	1.84	4.84	4.98
Q3 - 2012	4.22	1.93	2.04	4.68	5.07
Q4 - 2012	4.26	2.36	2.47	4.54	4.92
Q1 - 2013	4.51	2.05	2.66	4.62	5.00
Q2 - 2013	4.73	2.15	2.55	4.82	5.27
Q3 - 2013	4.70	2.43	2.51	5.08	5.31
Q4 - 2013	5.20	2.47	2.35	5.08	5.35
Q1 - 2014	5.33	2.46	2.37	4.90	5.20
Q2 - 2014	5.51	2.55	2.68	4.92	5.27
Q3 - 2014	5.67	2.60	2.86	4.86	5.18
Q4 - 2014	5.59	2.58	2.78	4.87	5.14

2012 Q1

Started 1 well every 24 days →

2014 Q4

Started 1 well every 16 days →

49.4%

39.2%

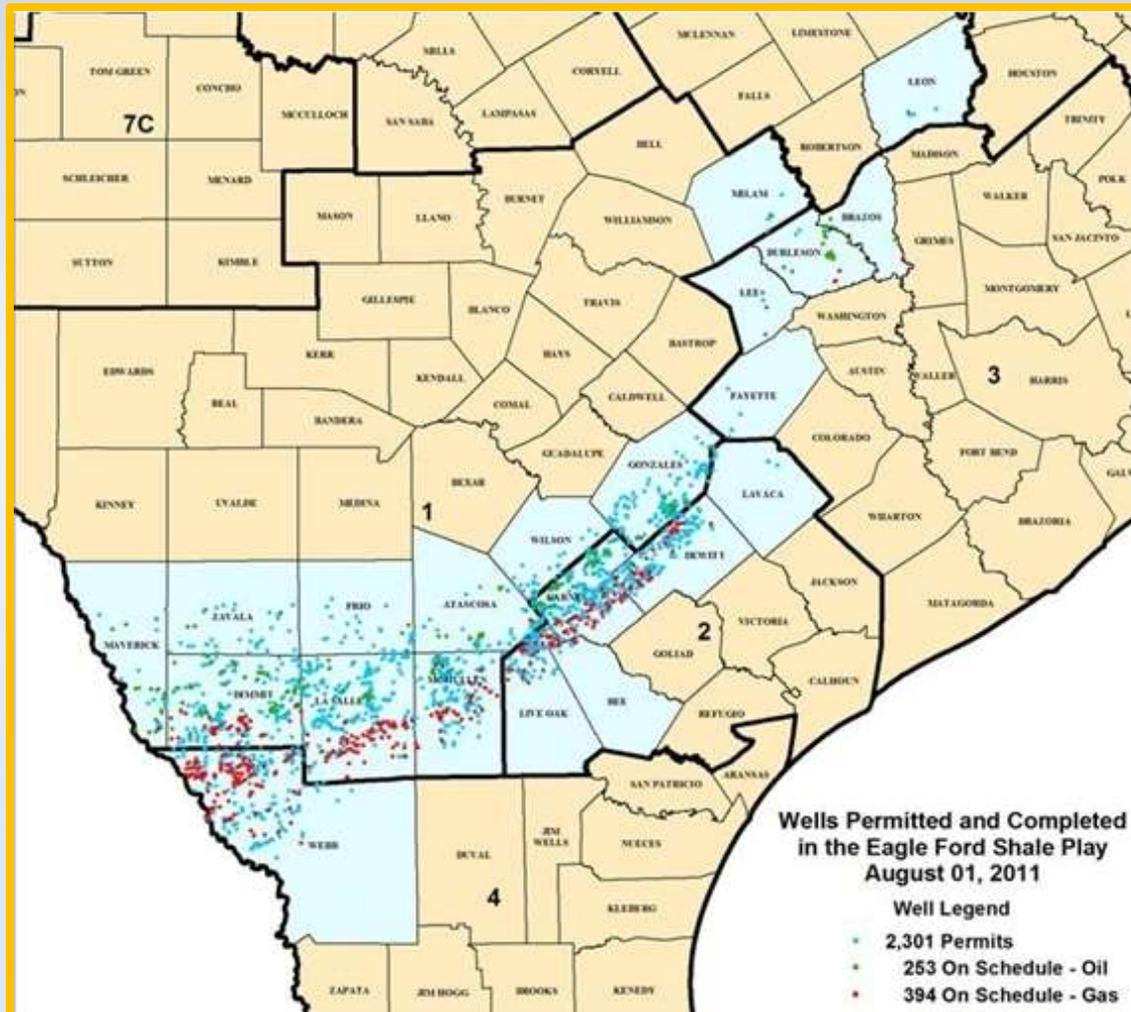
37.4%

2.1%

9.1%

The Results Can Be Seen in the Eagle Ford

Completed Wells in the Eagle Ford



As of Aug, 2011:

263 Producing Oil Wells

394 Producing Gas Wells

657 Total Producing Wells
after 3 years of drilling.

Completed Wells in the Eagle Ford

11 Months Later...

As of July, 2012:

1,690 Producing Oil Wells

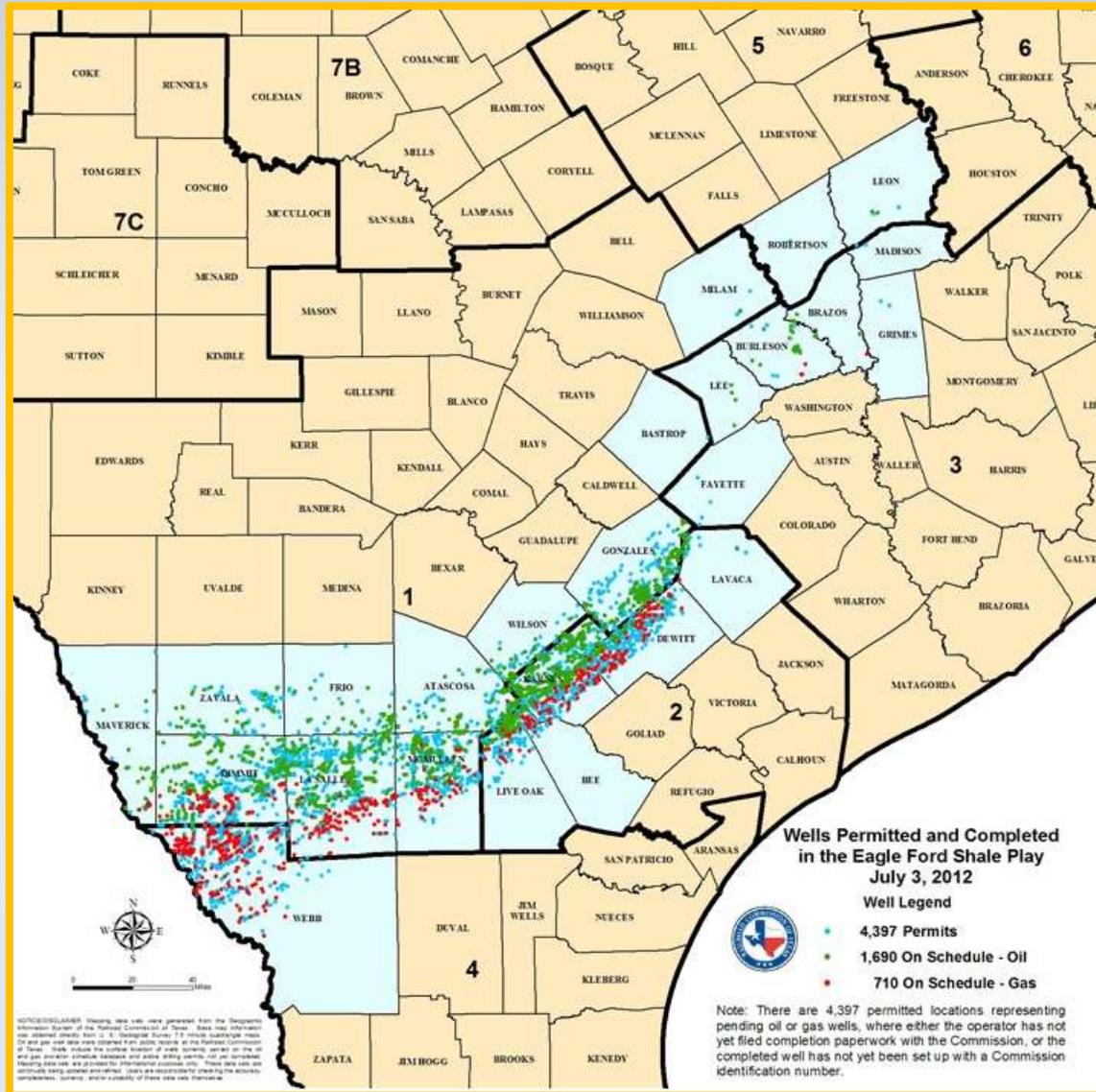
710 Producing Gas Wells

An Increase of:

1,427 Producing Oil Wells

316 Producing Gas Wells

Total Increase: 1,743 wells



Completed Wells in the Eagle Ford

12 Months Later...

As of July, 2013:

3,868 Producing Oil Wells

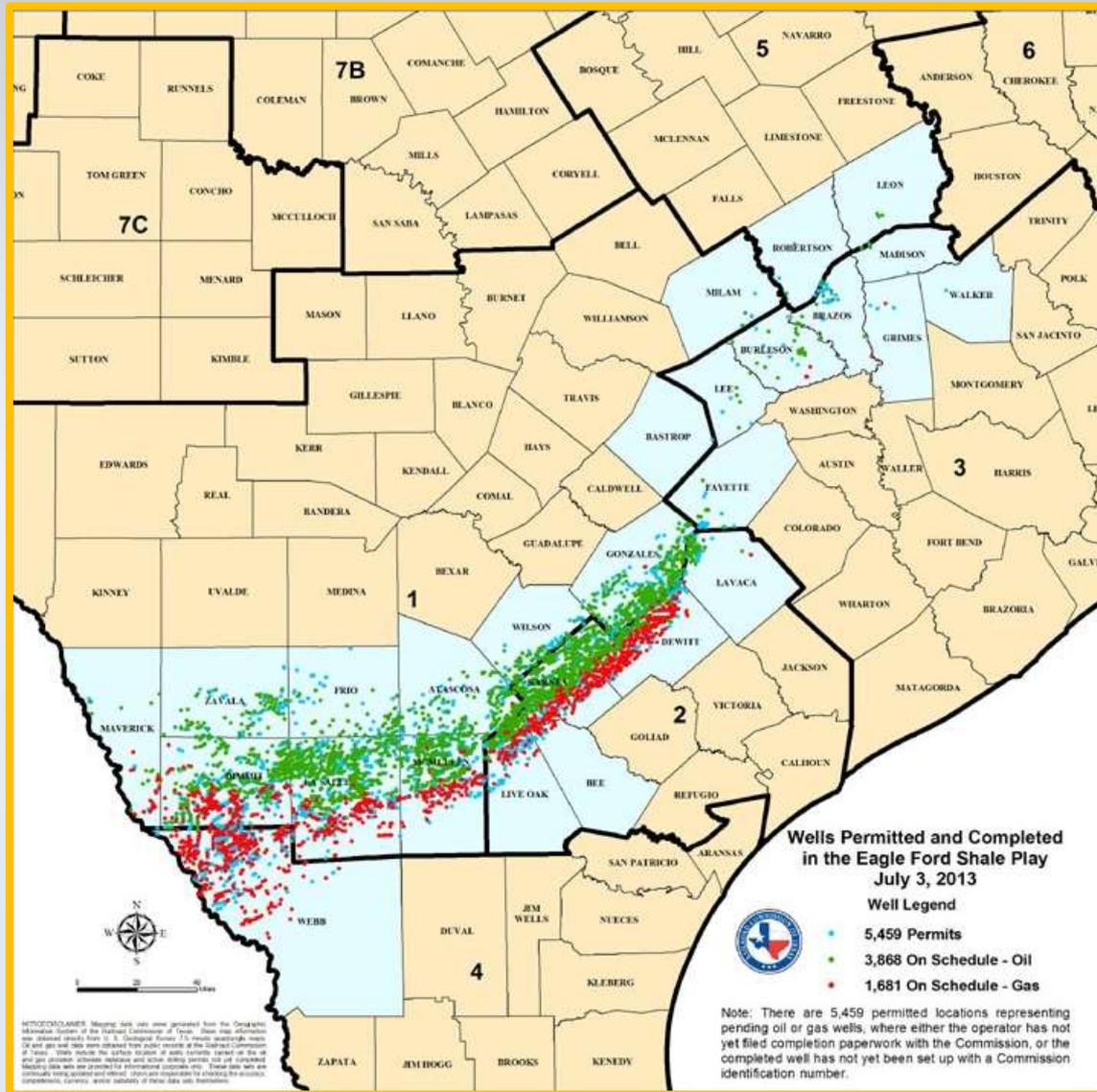
1,681 Producing Gas Wells

An Increase of:

2,178 Producing Oil Wells

971 Producing Gas Wells

Total Increase: 3,149 wells



Completed Wells in the Eagle Ford

12 Months Later...

As of July, 2014:

6,414 Producing Oil Wells

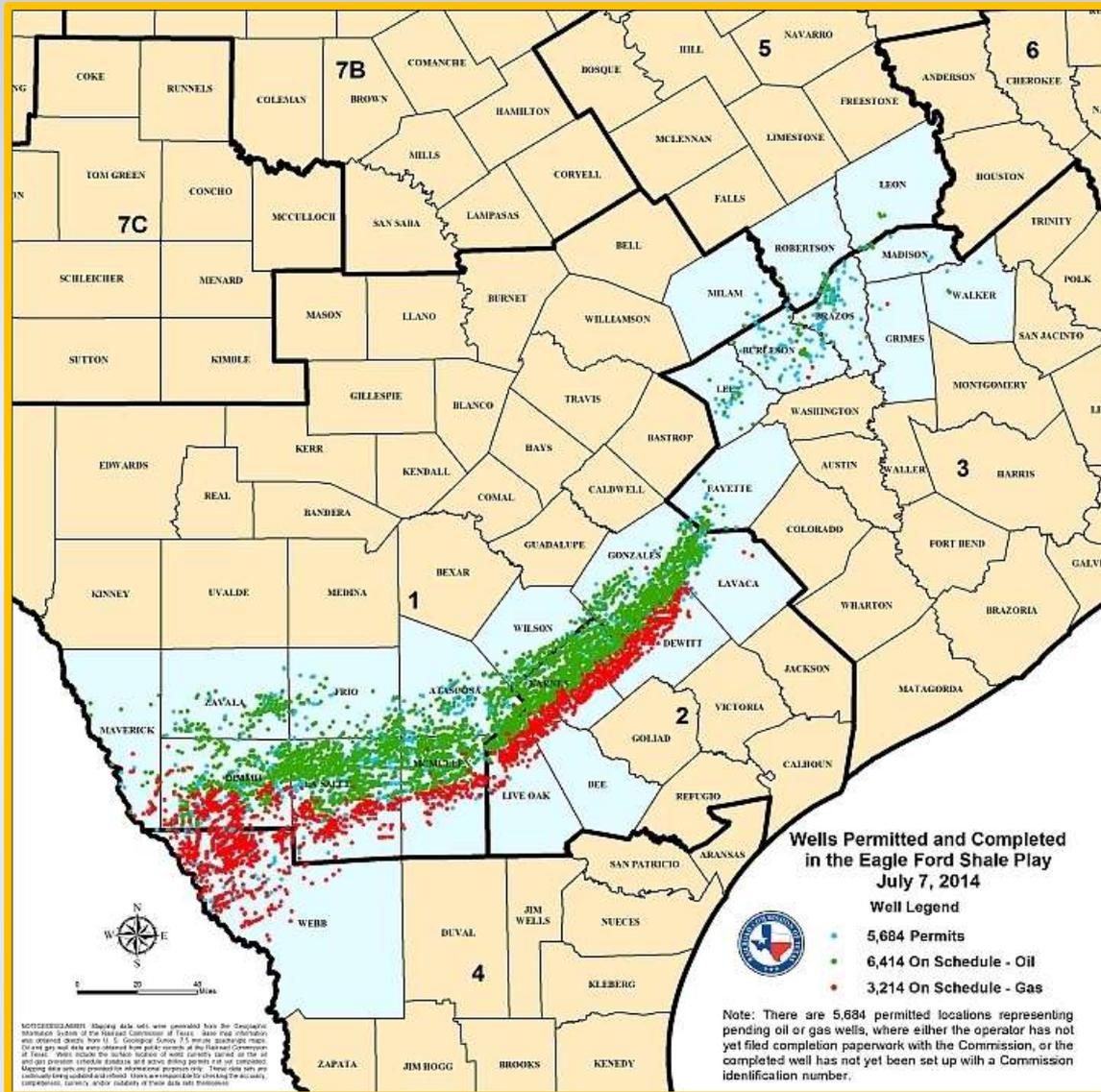
3,214 Producing Gas Wells

An Increase of:

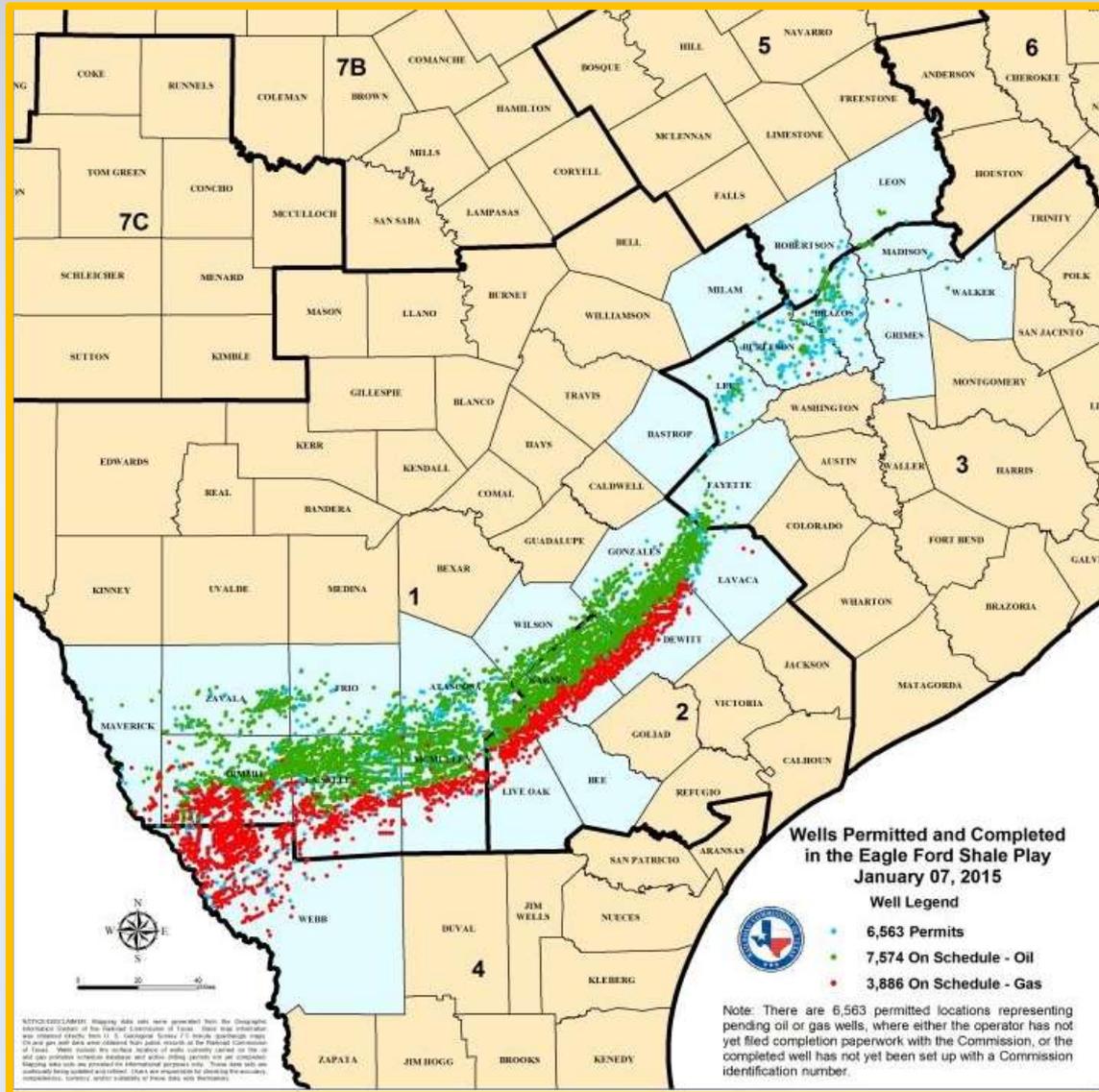
2,546 Producing Oil Wells

1,533 Producing Gas Wells

Total Increase: 4,079 wells



Completed Wells in the Eagle Ford



6 Months Later...

As of Jan., 2015:

7,574 Producing Oil Wells

3,886 Producing Gas Wells

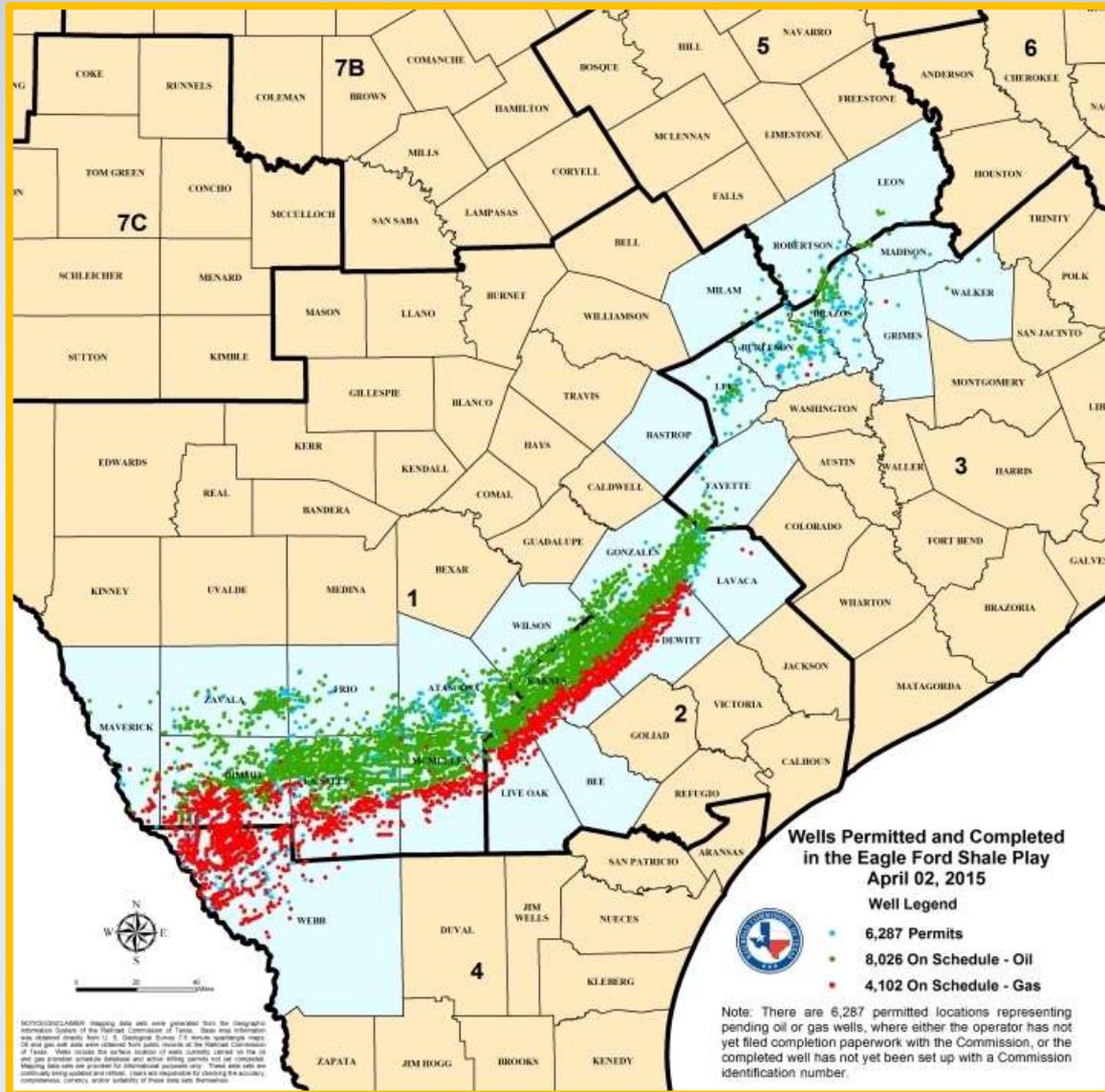
An Increase of:

1,160 Producing Oil Wells

672 Producing Gas Wells

Total Increase: 1,832 wells

Completed Wells in the Eagle Ford



3 Months Later...

As of Apr., 2015:

8,026 Producing Oil Wells

4,102 Producing Gas Wells

An Increase of:

452 Producing Oil Wells

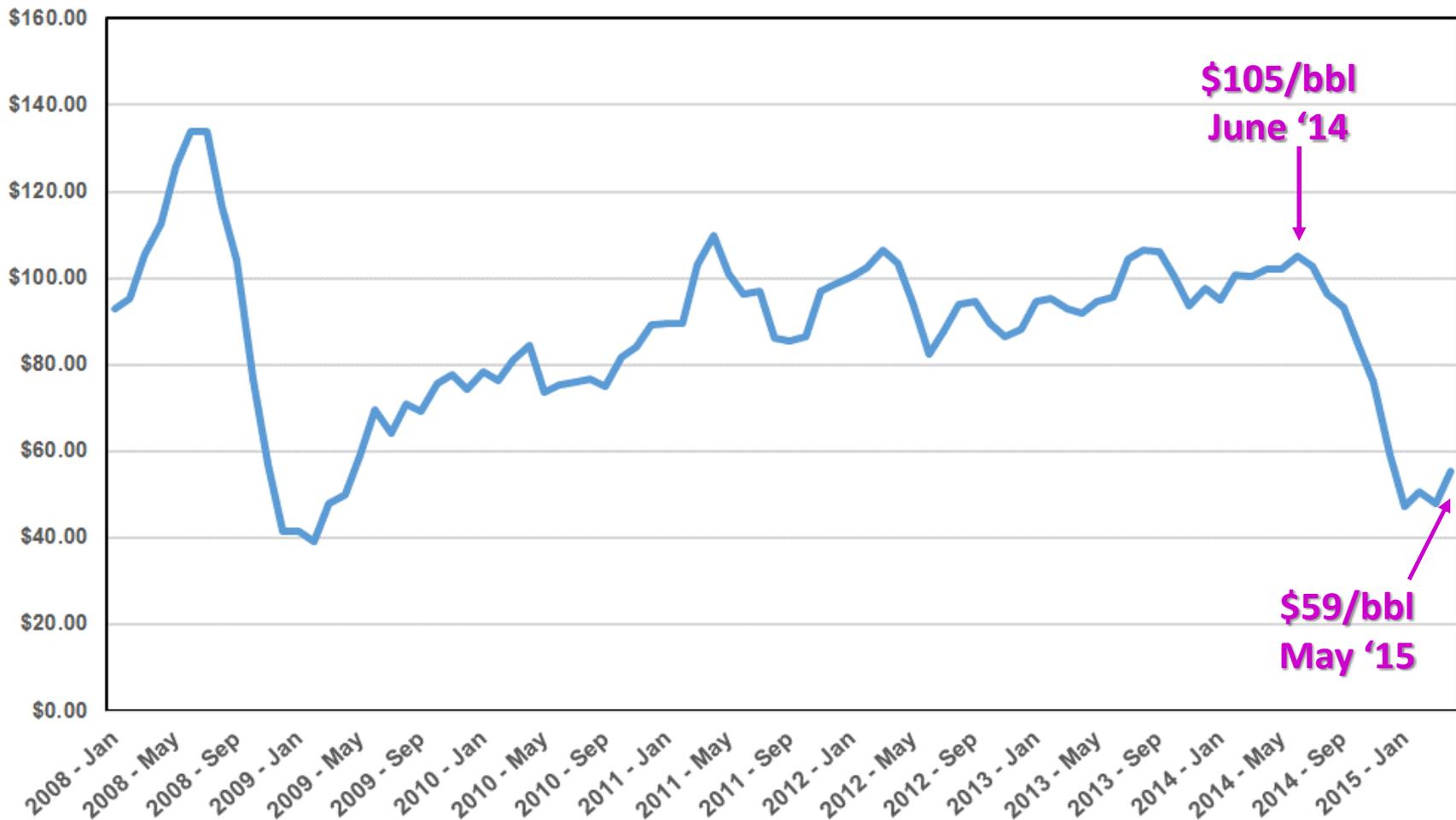
216 Producing Gas Wells

Total Increase: 668 wells

Where We Are Today

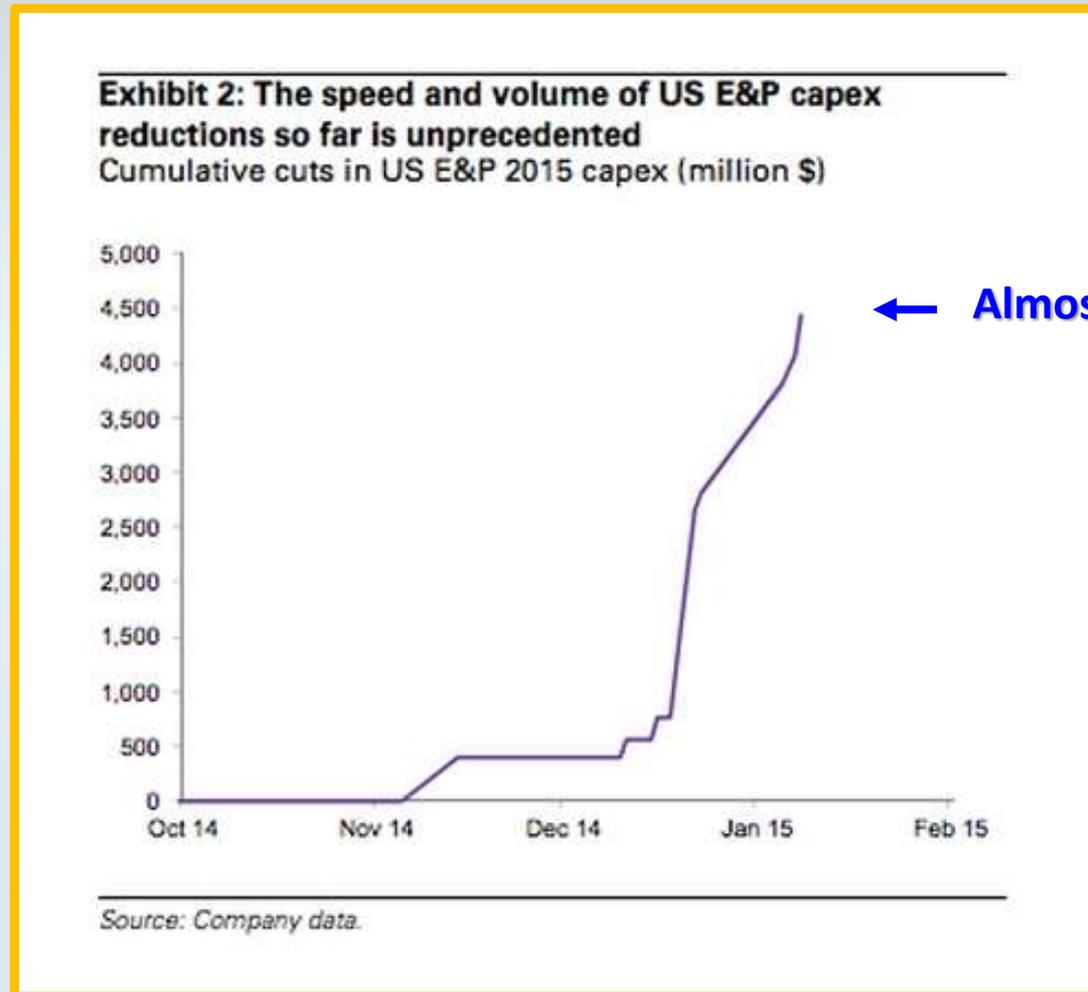
After a >50% Drop, Crude Price is Coming Up Gradually

Spot Price for West Texas Intermediate Crude
(Monthly Average)



Source: Haver Analytics

Price Drop Has Led to **Big Cuts** in **2015 CapEx Spending**



Big Drop in Rig Counts

(Looking at **October 17th, 2014** vs **May 15th, 2015**)

Area	Total Rigs		Gas Rigs		Oil Rigs		% Horizontal Rigs	
	Oct. '14	May '15	Oct. '14	May '15	Oct. '14	May '15	Oct. '14	May '15
U.S.	1,918	888	328	223	1,590	665	71%	77%
Texas	898	373	80	49	818	324	67%	77%
Permian	561	233	3	0	558	233	59%	73%
Eagle Ford	269	108	12	20	197	88	92%	96%

Big Drop in Rig Counts

(Looking at **October 17th, 2014** vs **May 15th, 2015**)

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	Oct. '14	May '15	Oct. '14	May '15	Oct. '14	May '15	Oct. '14	May '15
U.S. - 54%	1,918	888	328	223	1,590	665	71%	77%
Texas - 58%	898	373	80	49	818	324	67%	77%
Permian - 58%	561	233	3	0	558	233	59%	73%
Eagle Ford - 60%	269	108	12	20	197	88	92%	96%

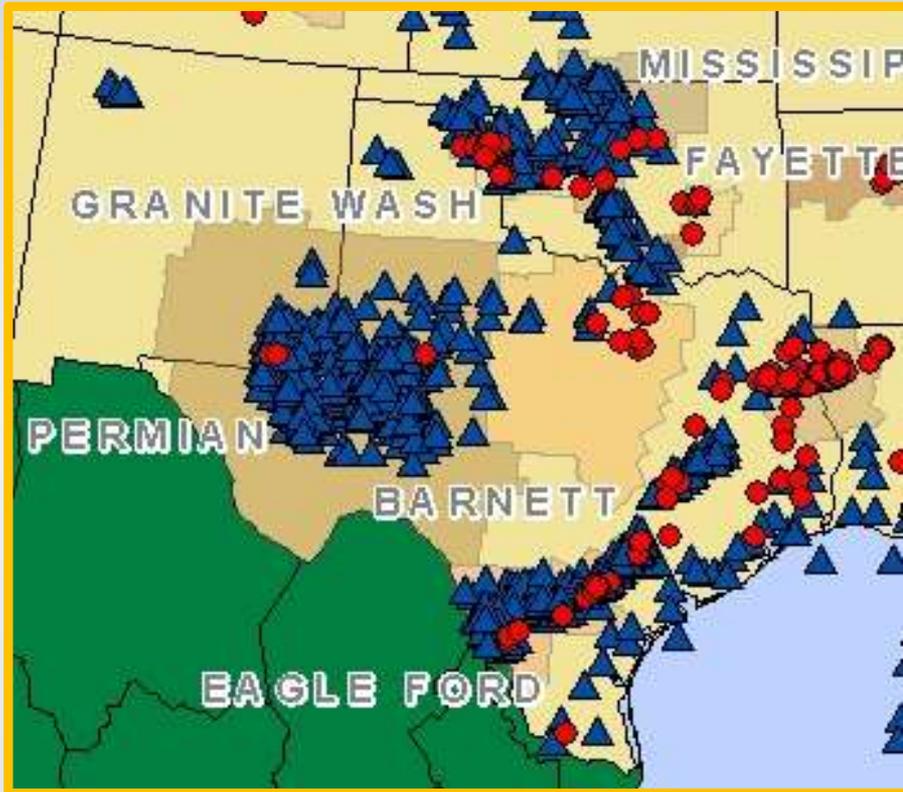
Horizontal Rig Count Increases

(Looking at **October 17th, 2014** vs **May 15th, 2015**)

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Active Drilling Rigs in Texas

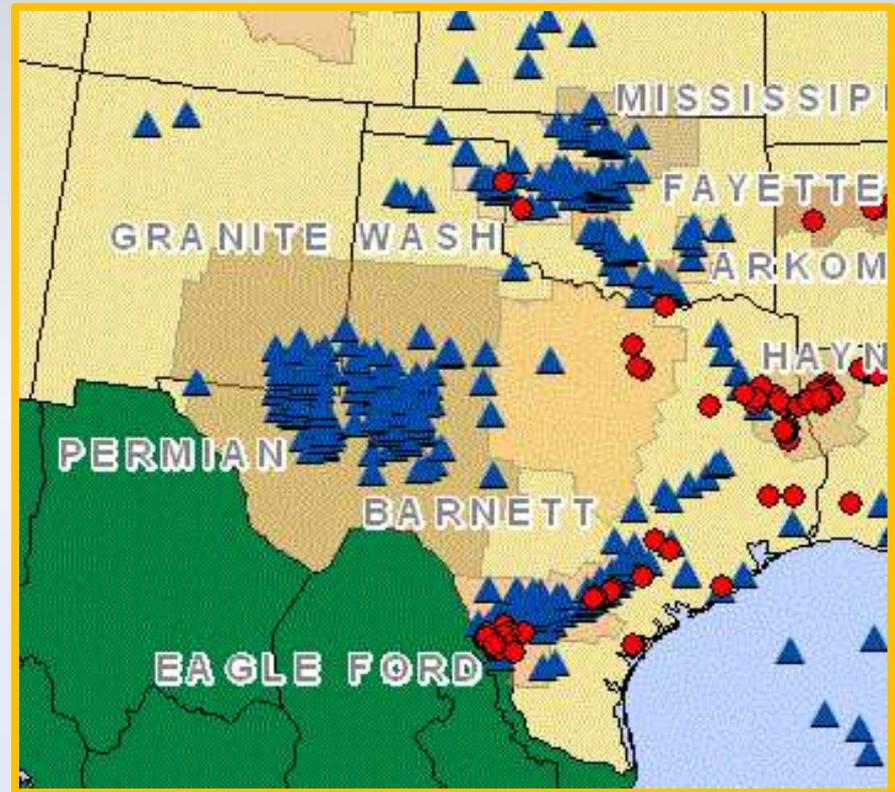
Oct. 17th, 2014 **898** Active Rigs



Permian: **561** rigs

Eagle Ford: **269** rigs

May 15th, 2015 **373** Active Rigs

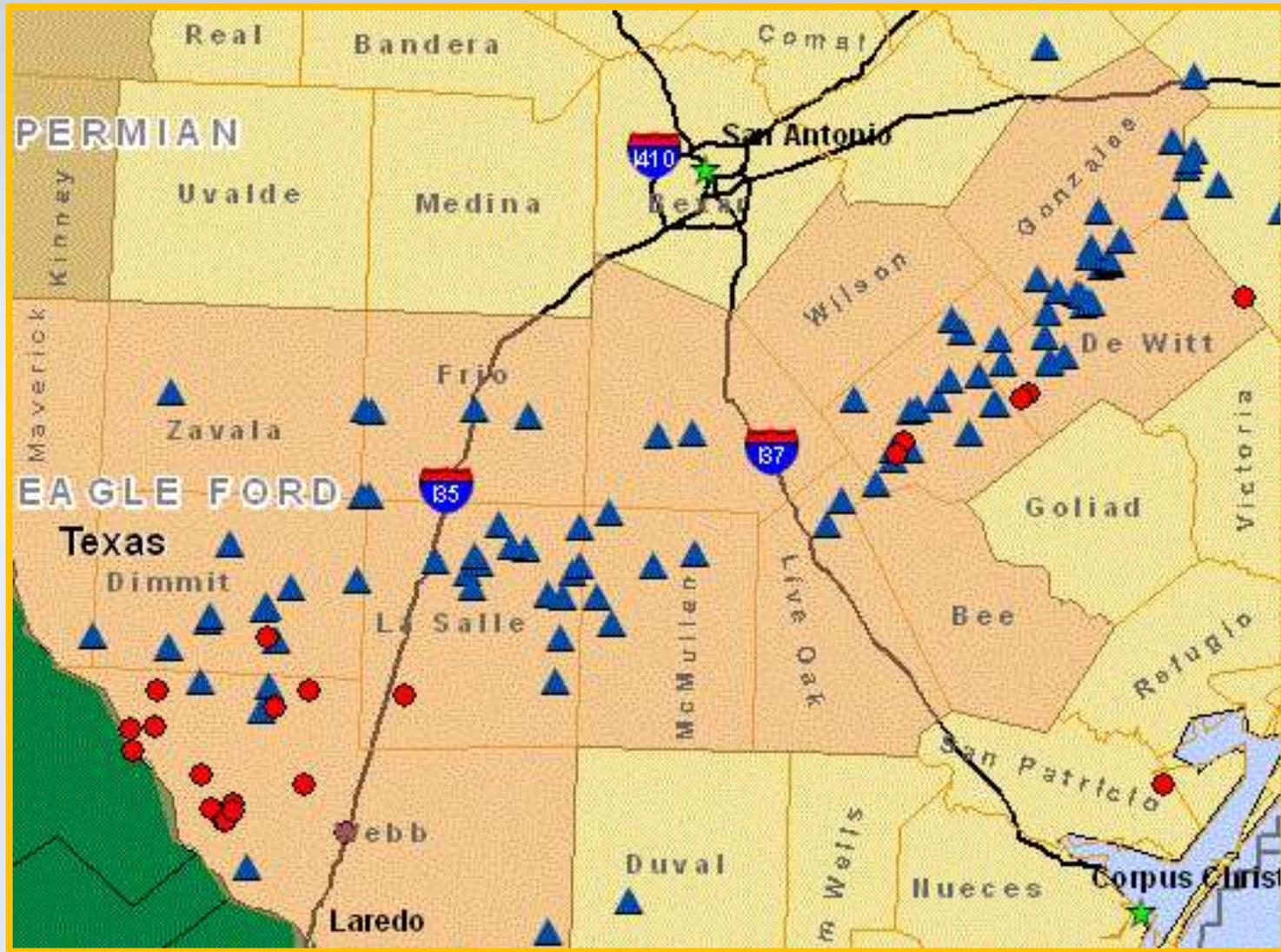


Permian: **233** rigs

Eagle Ford: **108** rigs

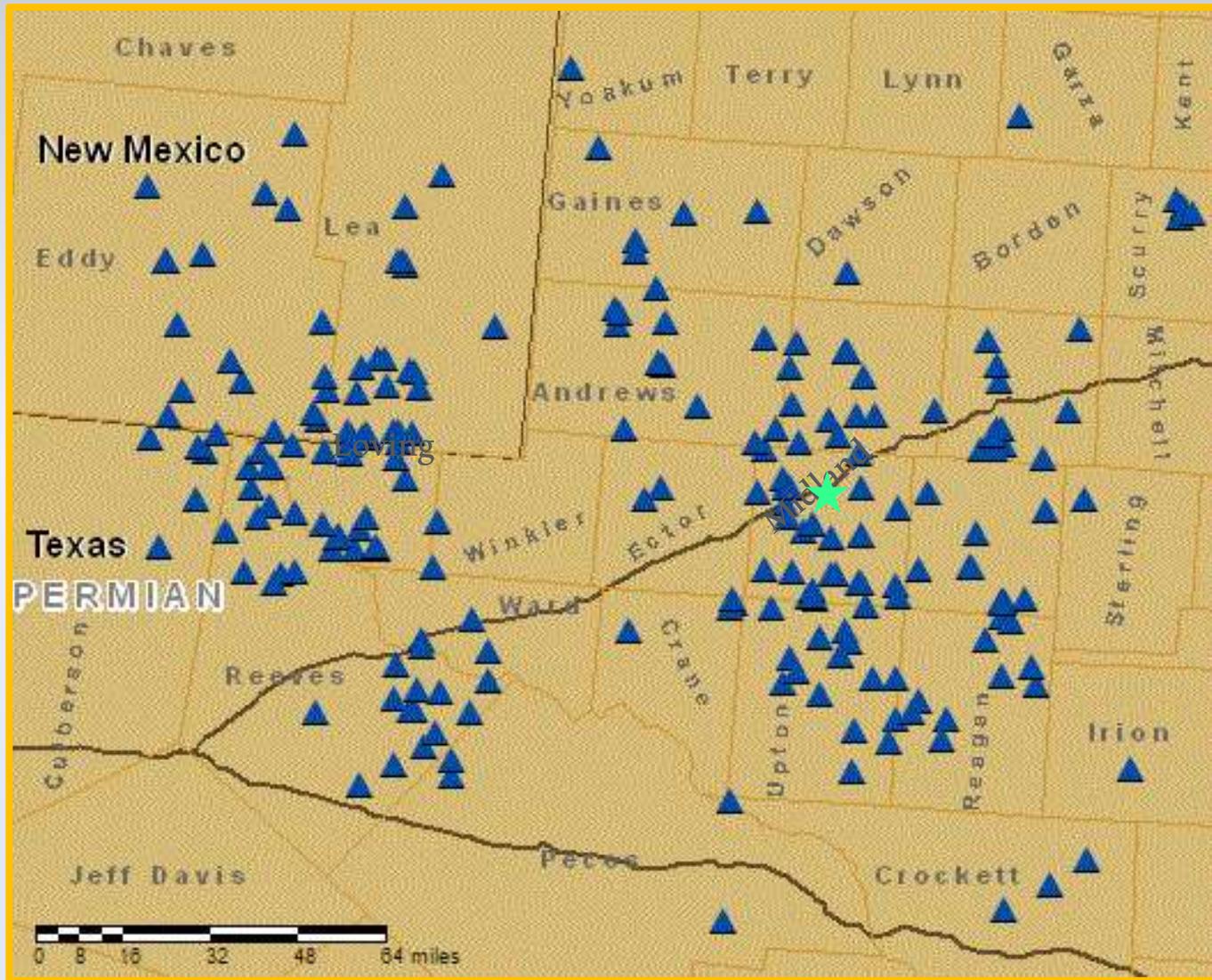
Active Rigs in the Eagle Ford

(108 rigs as of May 15th, 2015)



Active Rigs in the Permian

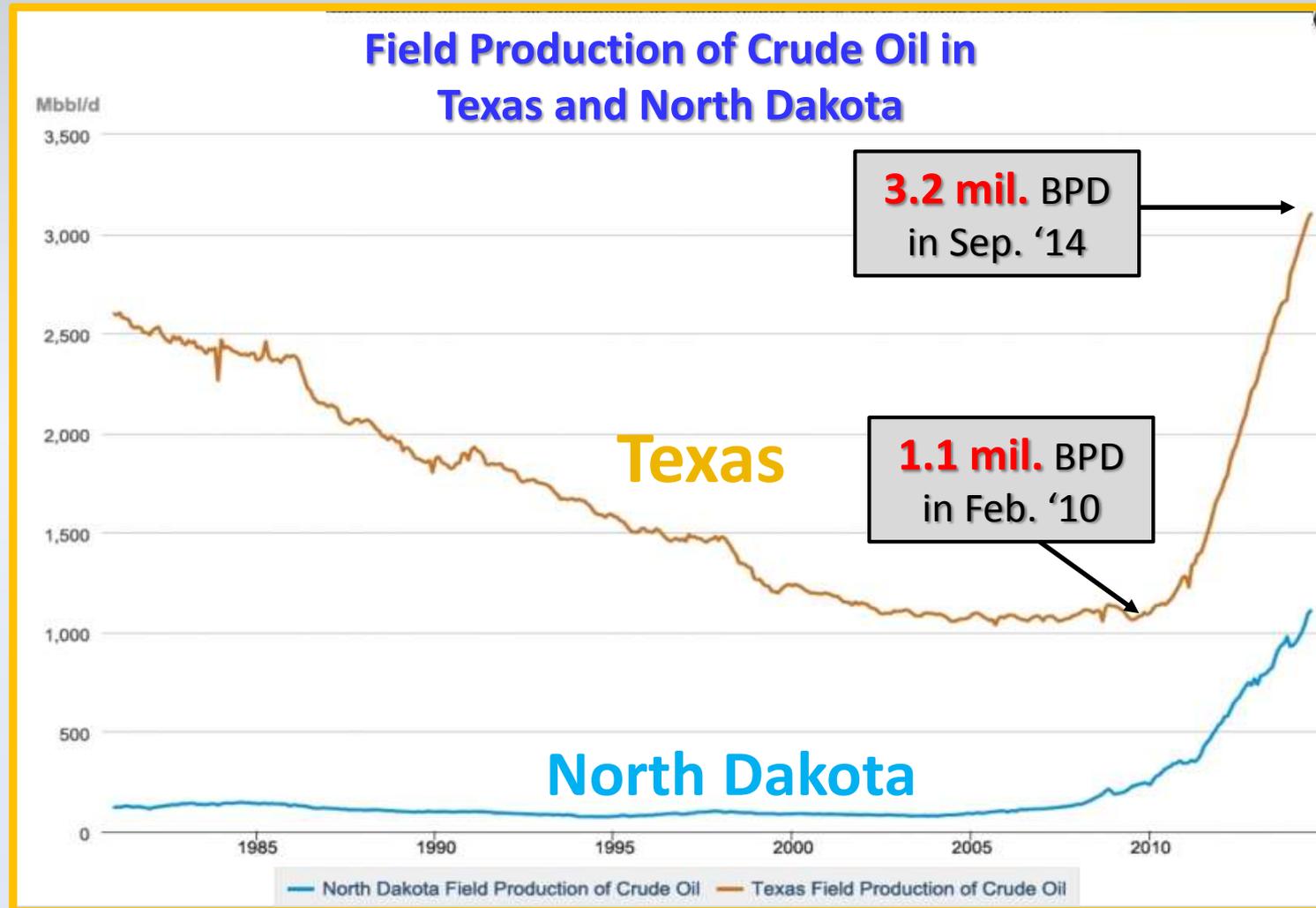
(233 rigs as of May 15th, 2015)



Source: Baker Hughes

We Are a Victim of Our Own Success

Texas Crude Production Tripled in 4½ Years



* U.S. crude production was: **5.5** mil. BPD in Feb. 2010 vs **9.0** mil. BPD in Sep. 2014

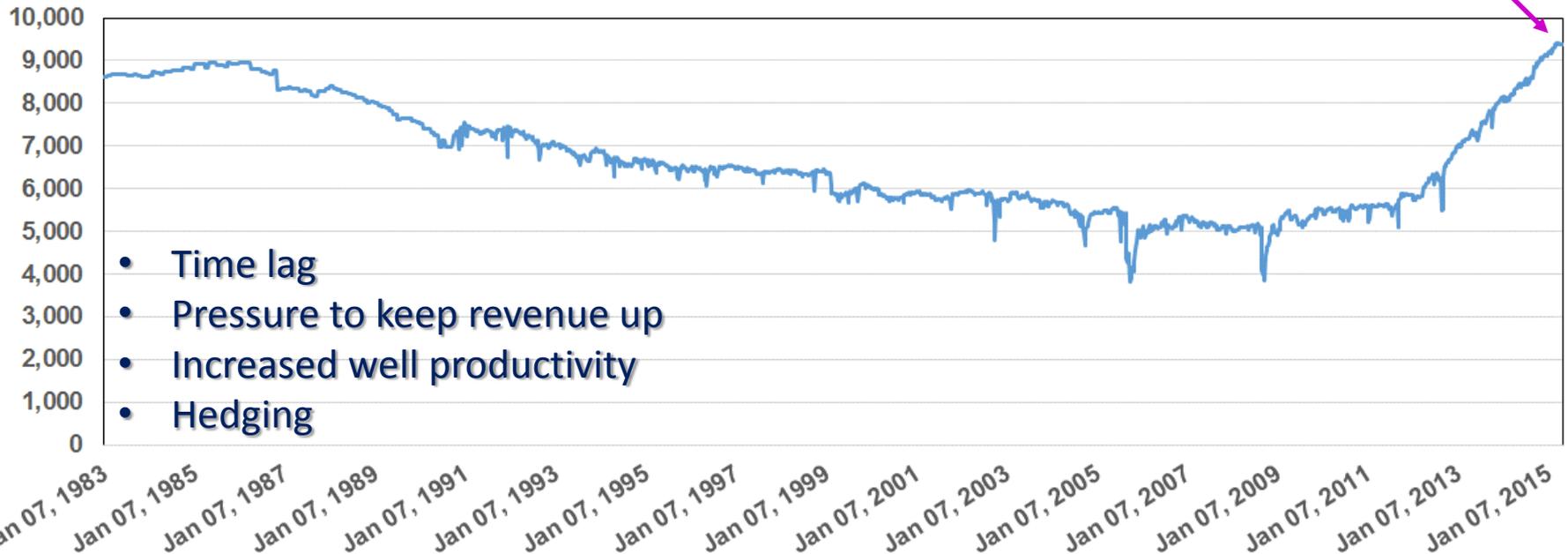
Source: U.S. Energy Information Administration & Haver Analytics

U.S. Crude Production is Still Slow to Fall

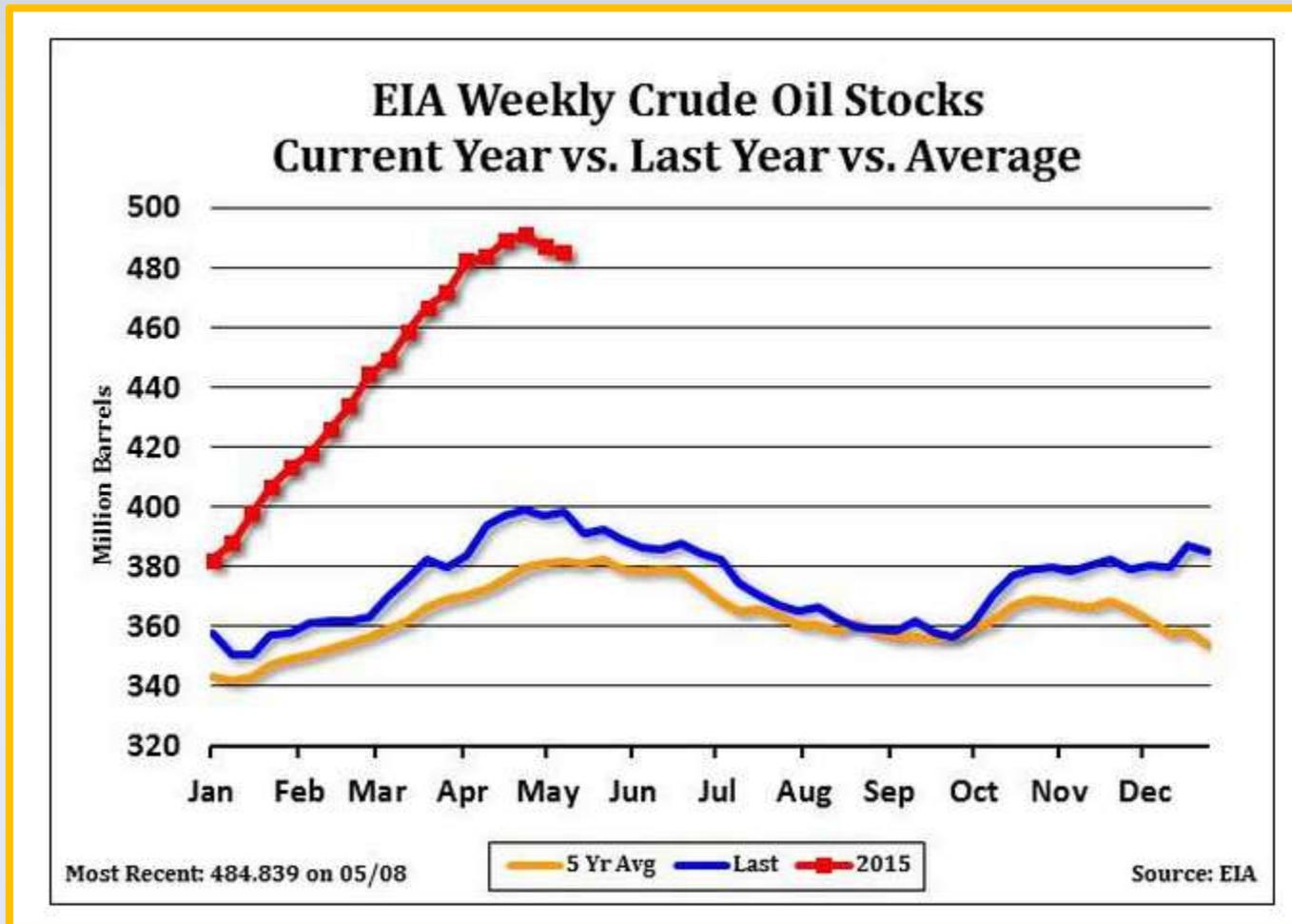
9.37 mil. BPD
May 8th, 2015

U.S. Crude Production

(Barrels Per Day Through May 8, 2015)

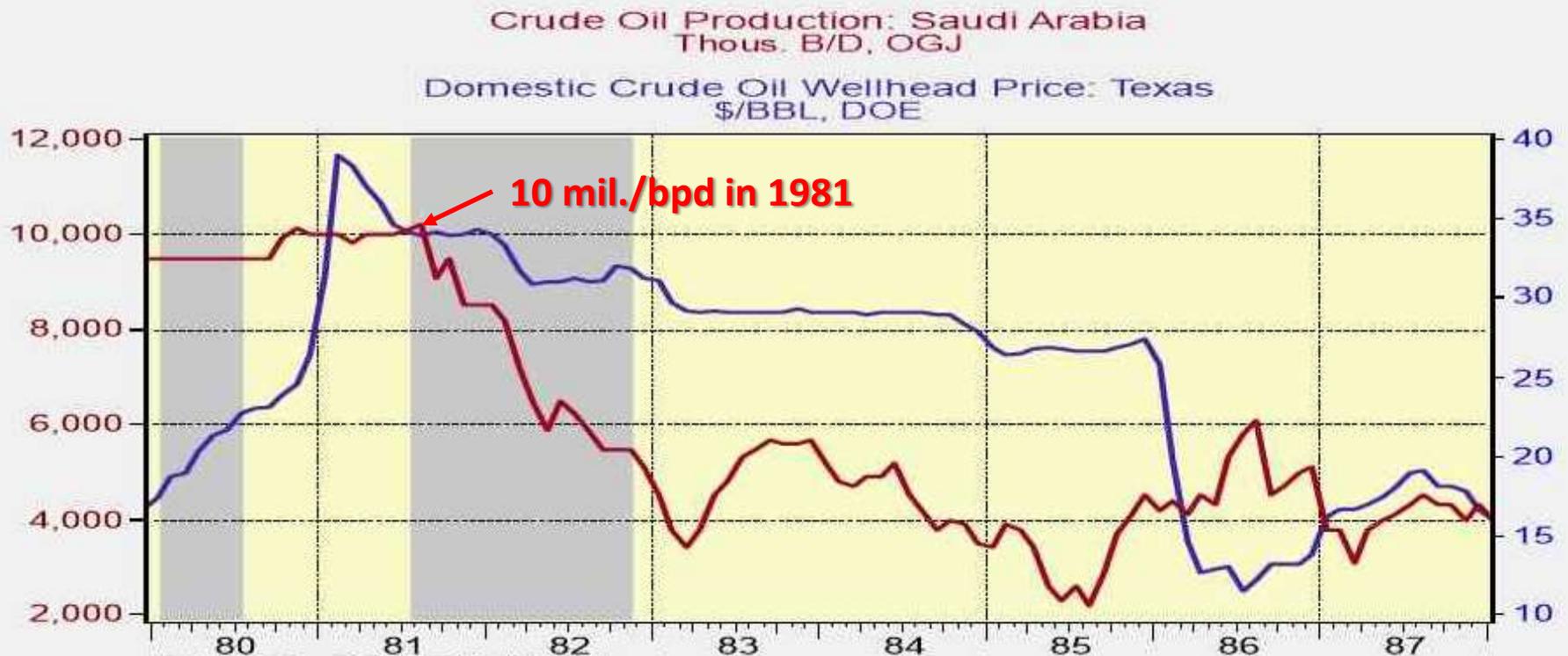


Crude Stocks Hit All-time Highs

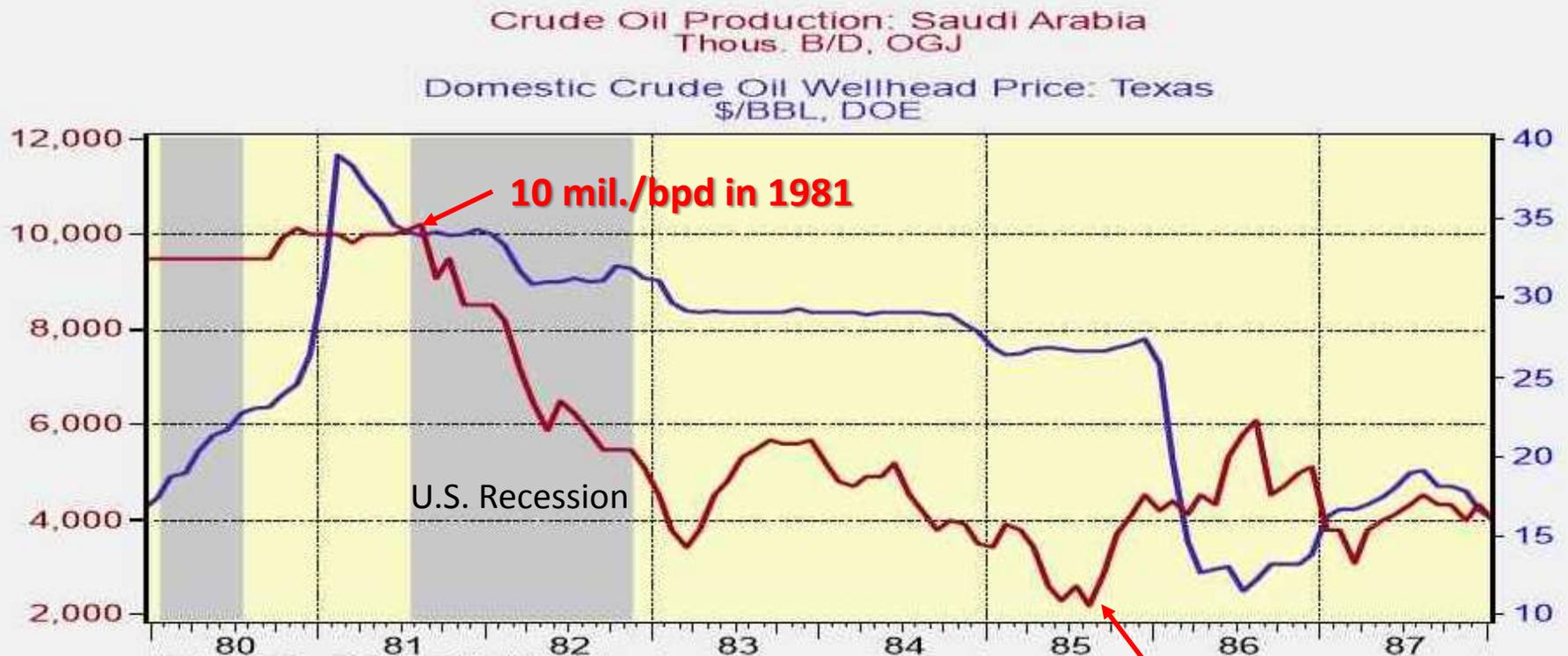


Why did we think this O&G boom would
be different than the 80's?

Saudis Controlled the Market in 1980's (They were the "low-cost" producer)



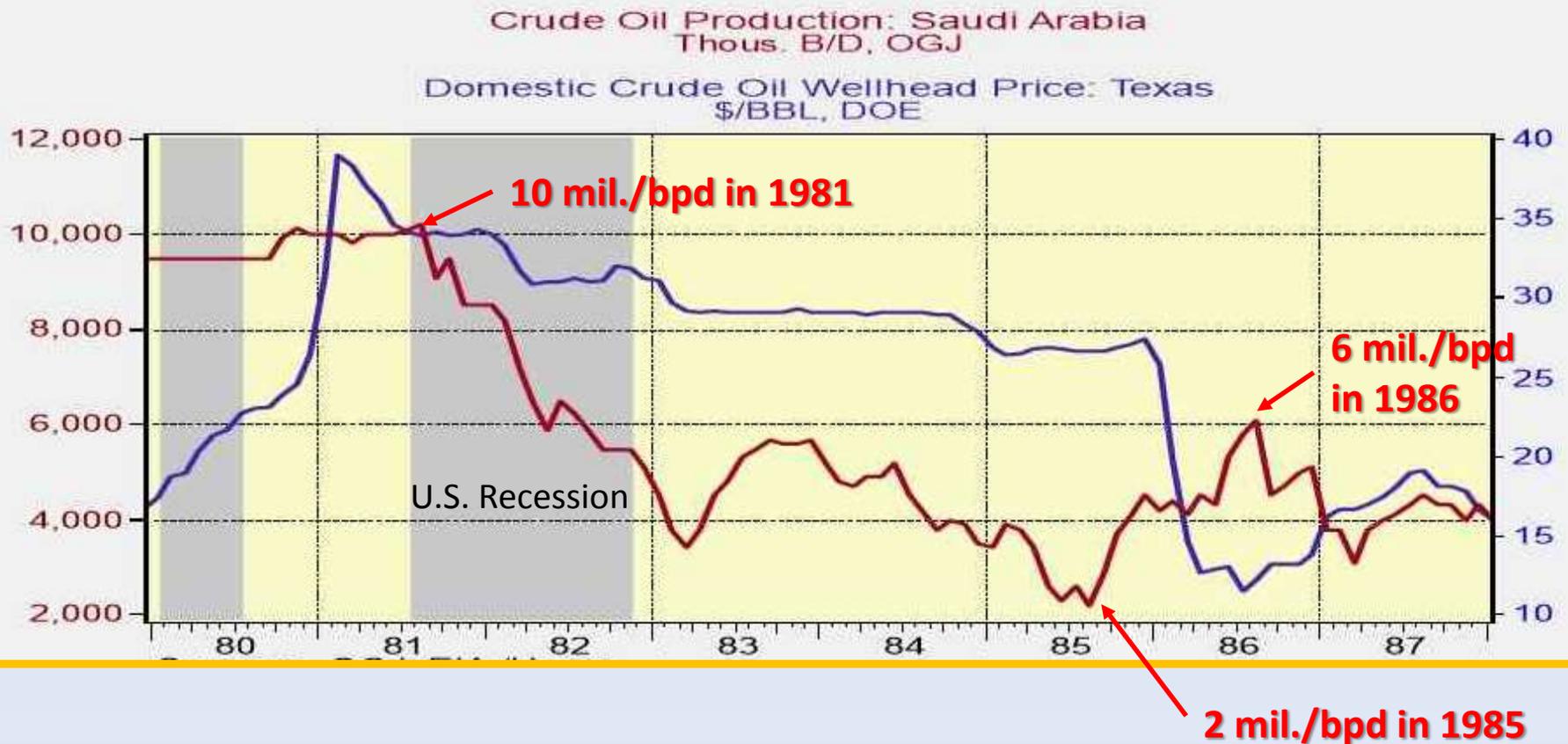
Saudis Controlled the Market in 1980's (They were the "low-cost" producer)



2 mil./bpd in 1985

Source: Haver Analytics

Saudis Controlled the Market in 1980's (They were the "low-cost" producer)



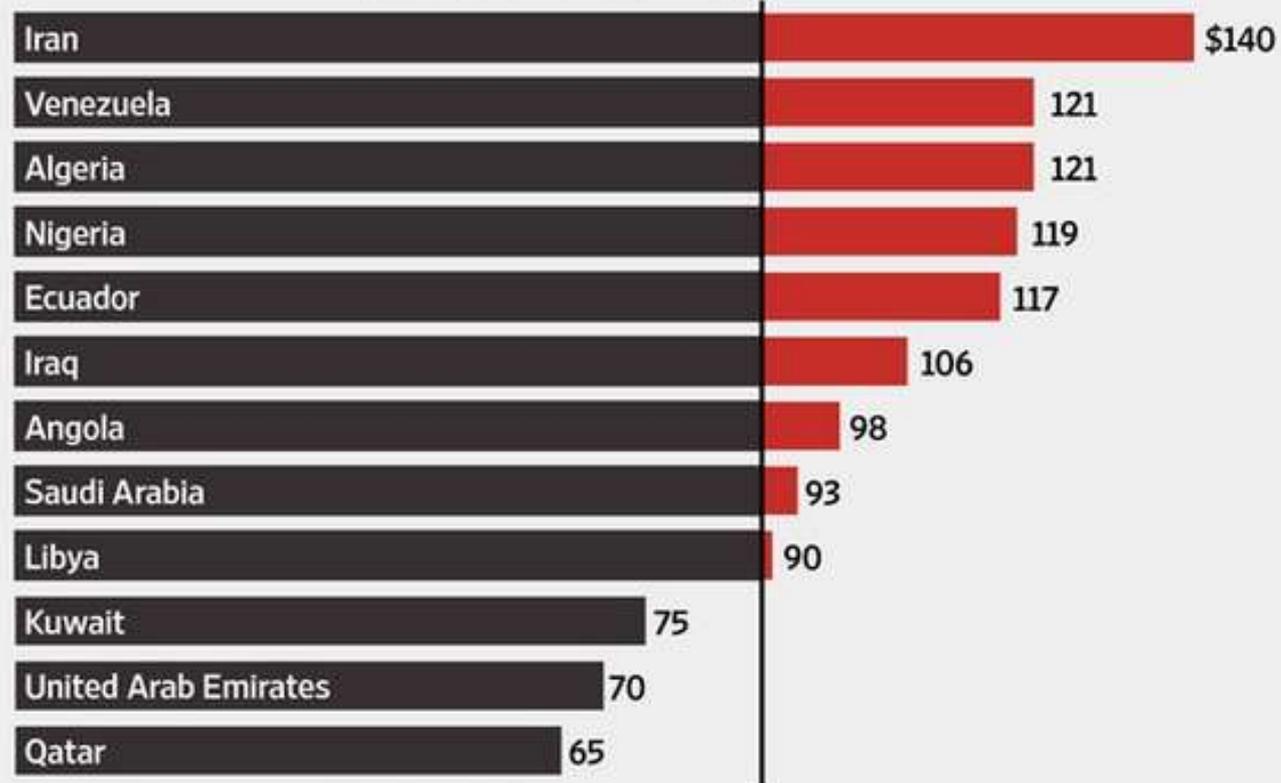
Source: Haver Analytics

Today, Most OPEC Countries Rely on Oil Revenue for Their Budgets (a lot)

OPEC's Price Crunch

Estimated breakeven oil price for 2014 government budgets

Oct. 10 Brent Crude Price: \$89



Sources: Libyan government; Angolan ministry of finance; International Monetary Fund; Arab Petroleum Investments Corp; Deutsche Bank
The Wall Street Journal

Now Playing The “Plastic Bag” Game

- We are witnessing a “high-stakes games of chicken” between U.S. shale oil producers and some OPEC members.
 - Who holds out longer at lower prices:
 - Will yield-hungry investors continue funding U.S. drilling?
 - (Avg. drilling budget cut in 2015 is about 30%)
 - Can budget-strapped OPEC countries keep running deficits?
- Many U.S. producers could hedge production, softening the blow
- The service co’s had no protection and have been hit hard

Where is **Crude Price** Headed?

These Experts Know Exactly Where Oil Prices Are Headed

Somewhere Between \$20 and \$200 a Barrel

ENERGY

Get Ready for \$10 Oil

376 FEB 16, 2015 6:00 PM EST

By [A. Gary Shilling](#)

I Have No Idea Where Oil Prices Are Going (And Neither Do You)

Mar. 5, 2015 12:31 AM ET | 36 comments | Includes: AAL, CVX, DAL, F, GM, LUV, OIL, USO, XOM

Why The Price Of Oil Is More Likely To Fall To \$20 Rather Than Rise To \$80

Feb. 16, 2015 3:36 AM ET | 10 comments | Includes: BNO, DBO, DNO, DTO, DWTI, OIL, OLEM, OLO, SCO, SZO, U...

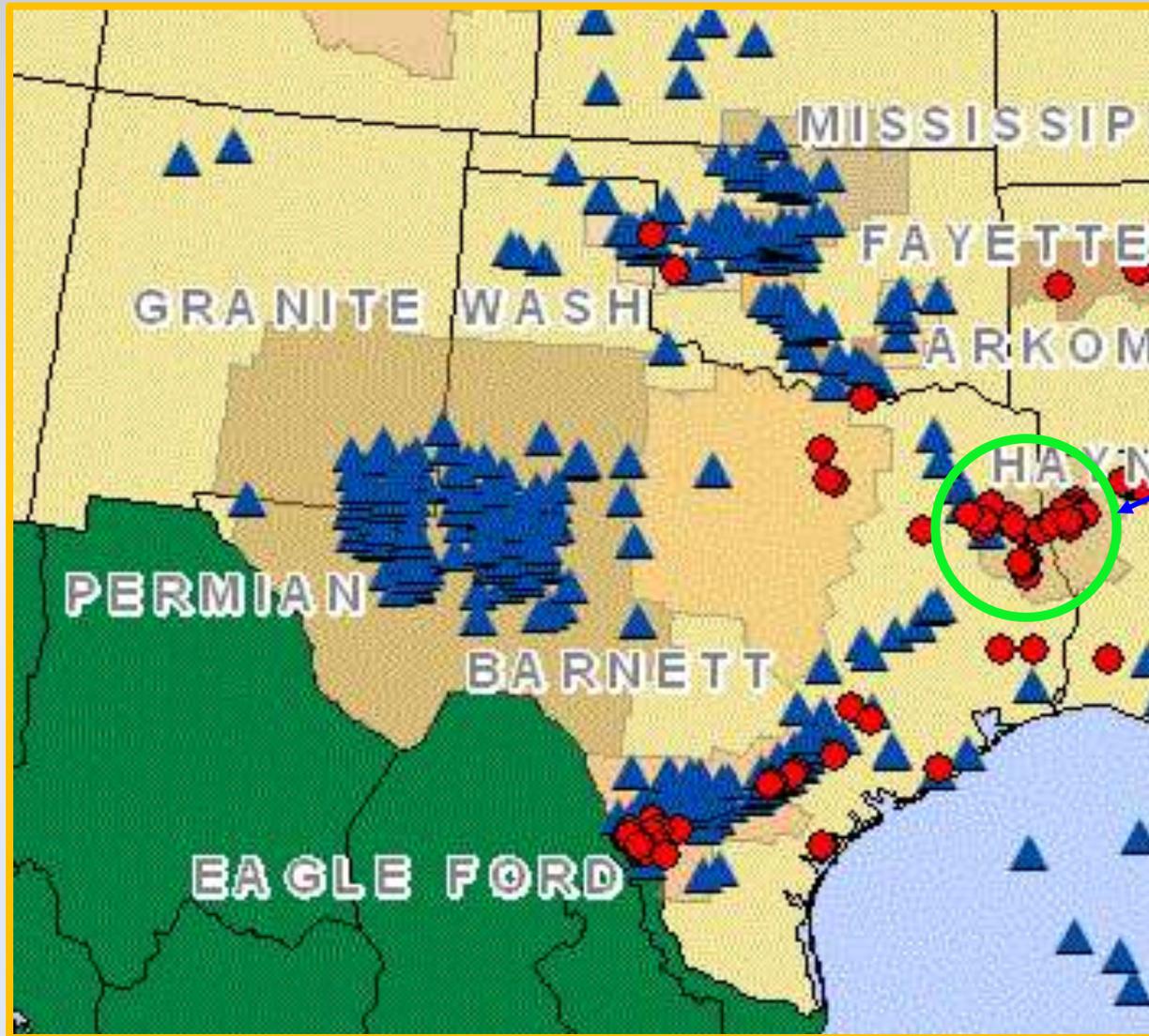
Will Technology Be a Game-Changer?

A Game-Changing Unknown

- 1) Will a core of the best companies **improve technology & cut costs** in crude drilling, similar to what seems to have happened in the Haynesville with natural gas?
- 2) If so, what are the **implications** for future rig count and upstream employment?

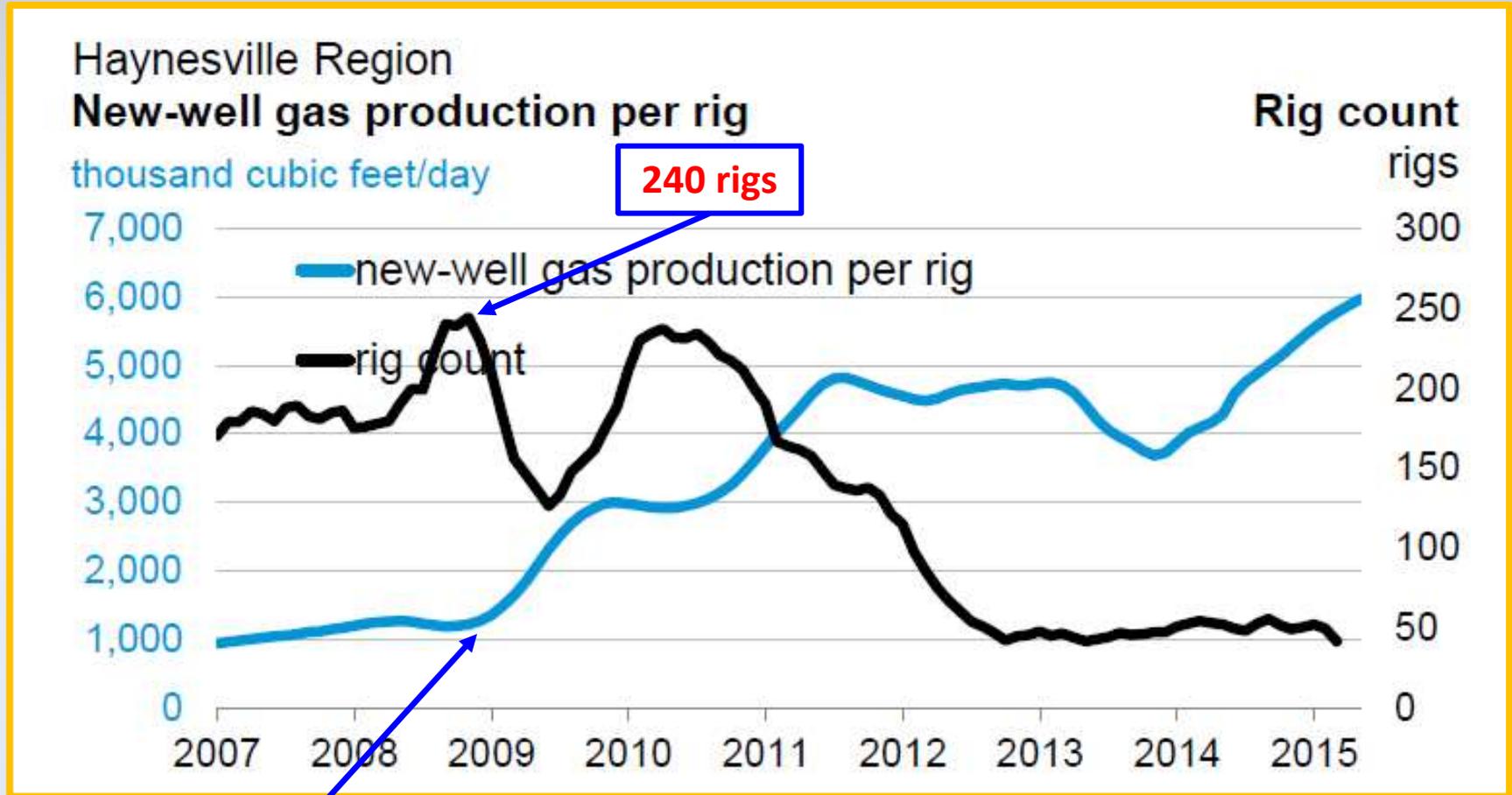
Red Dots Show Active Gas Rigs

(As of May 15th, 2015)

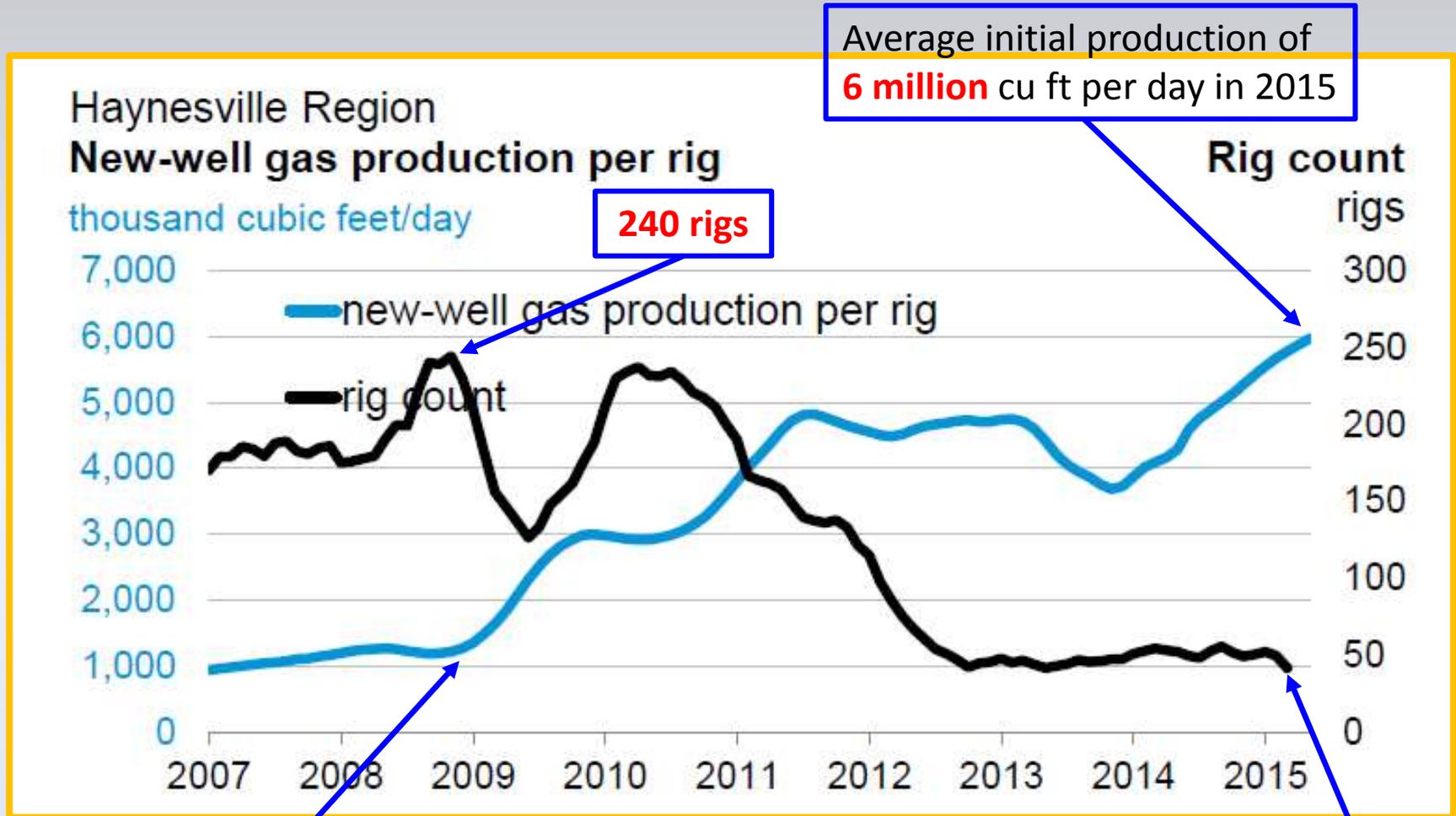


Source: Baker Hughes

Strong Rigs Surviving in the Haynesville



Strong Rigs Surviving in the Haynesville



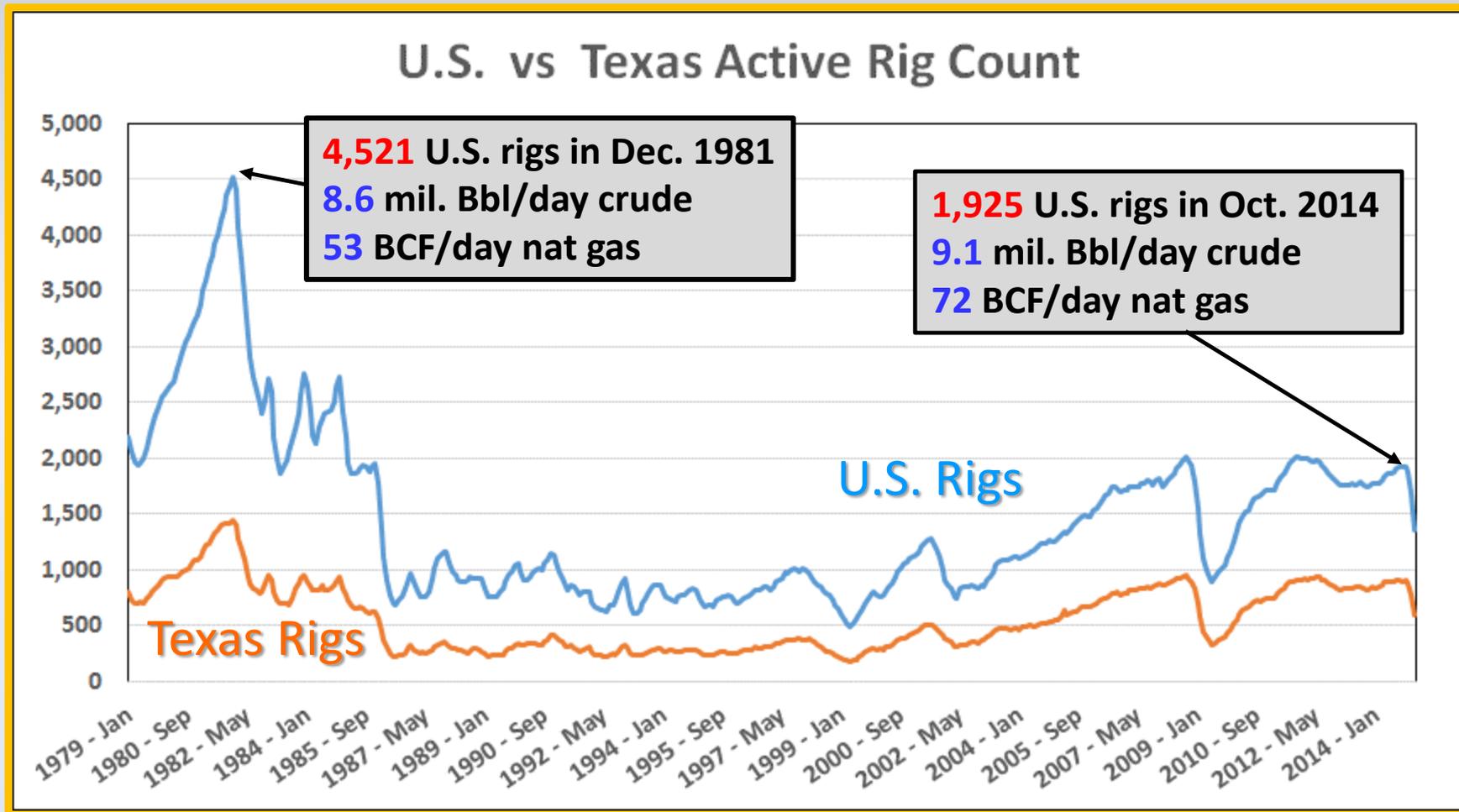
Average initial production of
1 million cu ft per day in 2009

Average initial production of
6 million cu ft per day in 2015

240 rigs

50 rigs

Historical Active Rig Count (1979 to Present)



A Future of Lower Costs and Higher Production?

- What if a core of U.S. producers adjust to make an “adequate rate of return” under these lower crude prices:

Apache Corp. CEO:

“We're able to come in now and contract what prices for drilling should be in a \$50 price environment and the same thing applies on the frac crews.”

“ And it gives us a chance to really look at our processes, our efficiencies, our inventory and really spend some time grading that. I promise you, we will do it differently than the way we are doing it right now when we ramp up again.”

Low-cost **Re-fracking** May Also Bring the Cost of Production Down a Lot

Another shift that is going on is to re-frack existing wells, instead of new wells. The first is significantly cheaper:

“ Beset by falling prices, the oil industry is looking at about 50,000 existing wells in the U.S. that may be candidates for a second wave of fracking, using techniques that didn't exist when they were first drilled. New wells can cost as much as \$8 million, while re-fracking costs about \$2 million, significant savings when the price of crude is hovering close to \$50 a barrel, according to Halliburton Co., the world's biggest provider of hydraulic fracturing services. [Bloomberg]

A World of Fewer Rigs?

- The future could be **permanently lower rig count**, leading to **permanently lower upstream employment**.

If so:

What areas of Texas will be **most vulnerable** to the employment downturn?

Most Vulnerable U.S. Metros

(Texas Metros)

Metro	% Annual Payroll from Energy*	Metro	% Annual Payroll from Energy*
Midland, TX	41.8	Oklahoma City, OK	8.9
Odessa, TX	22.2	Shreveport, LA	7.6
Farmington, NM	16.0	Greeley, CO	7.2
Lafayette, LA	13.3	Victoria, TX	7.1
Casper, WY	12.7	Abilene, TX	6.8
Houma-Thibodaux, LA	12.3	Houston, TX	6.5
Grand Junction, CO	10.0	Wichita Falls, TX	6.2
Corpus Christi, TX	9.8	Tulsa, OK	5.6
Longview, TX	9.4	San Angelo, TX	5.5
Bakersfield, CA	9.3	Tyler, TX	5.0

* NAICS 211111 Crude Petroleum and Natural Gas Extraction, 213111 Drilling Oil and Gas Wells, 213122 Support Activities for Oil and Gas Operations, 333132 Oil and Gas Field Machinery and Equipment Manufacturing

Source: 2012 County Business Patterns

Houston O&G Salaries Are Quite High, Leading to High Job Multipliers

Industry/Sector	Average Annual Wage in Houston
Oil and gas extraction	\$200,044
Drilling oil and gas wells	136,240
Support activities for mining	126,932
Engineering services	118,300
Oil and gas field machinery and equipment	102,544
Finance and insurance	84,448
Wholesale trade	79,144
Construction	66,404
Total, All Industries	60,736
Real estate and rental and leasing	57,980
Health care and social assistance	48,516

Source: Quarterly Census of Employment and Wages, Second Quarter 2014

A Look at Houston Employment Growth

(The Driver of Commercial R.E. Activity)

A Look at Historical Employment Growth

10 BEST YEARS FOR METRO HOUSTON JOB GROWTH*

Year	Net Job Change	Year	Rate of Job Growth (%)
'81	126,900	'81	8.0
'14	120,600	'90	5.3
'12	115,400	'97	5.2
'06	106,000	'89	5.0
'97	104,800	'88	4.8
'90	91,100	'06	4.4
'98	90,200	'12	4.4
'05	89,200	'98	4.3
'07	89,100	'14	4.2
'89	81,800	'05	3.8

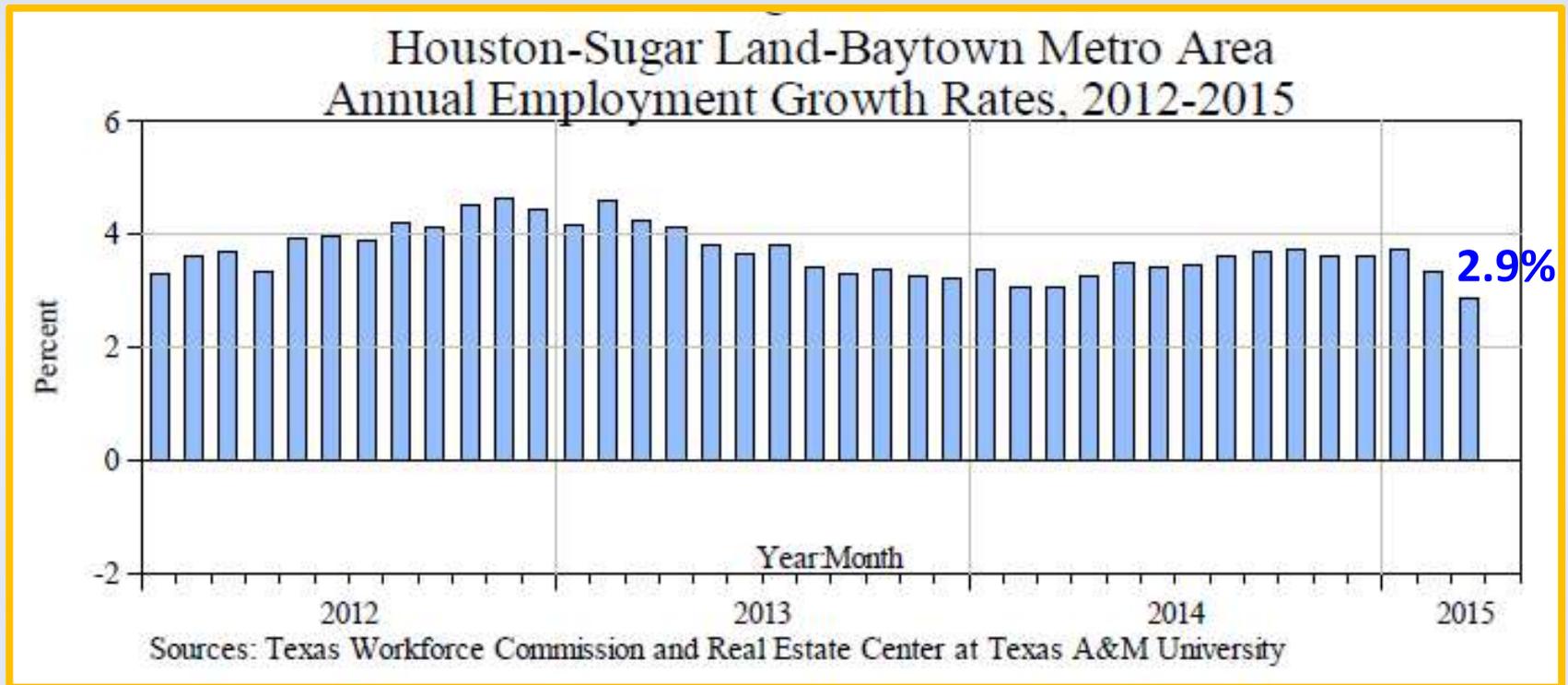
2014 was
second-best in
Total Job Gains
since 1980

*Since 1980

Source: U.S. Bureau of Labor Statistics

Houston Employment Growth is Slowing

(Total Non-farm pct. chg. from same month previous year)



Houston MSA Employment and Annual Employment Growth by Category (March, 2014 to March, 2015 Change)

	No. of Jobs	Ann. % Increase	Ann. Increase
Trade, Transp. & Utilities	601,700	+ 2.7%	+ 15,900
Prof. & Bus. Services	466,100	+ 2.3%	+ 10,700
Government	386,200	+ 1.8%	+ 6,700
<u>Educ. & Health Services</u>	362,100	+4.8%	+ 16,500
Leisure & Hospitality	295,100	+ 4.6%	+ 12,900
Manufacturing	254,700	+ 0.9%	+ 2,300
Construction	206,900	+ 4.3%	+ 8,600
Financial Activities	148,800	+ 2.1%	+ 3,000
<u>Mining & Logging</u>	113,000	+ 5.1%	+ 5,500
Other Services	103,400	+ 0.3%	+ 300
Information	33,200	+ 0.3%	+ 100
Total Jobs	2,971,200	+2.9%	

Biggest absolute increase in jobs

Biggest percent increase in jobs

No negative sectors

Houston MSA Employment and 2-month Employment Growth by Category (January, 2015 to March, 2015 Change)

**Four
negative
sectors**

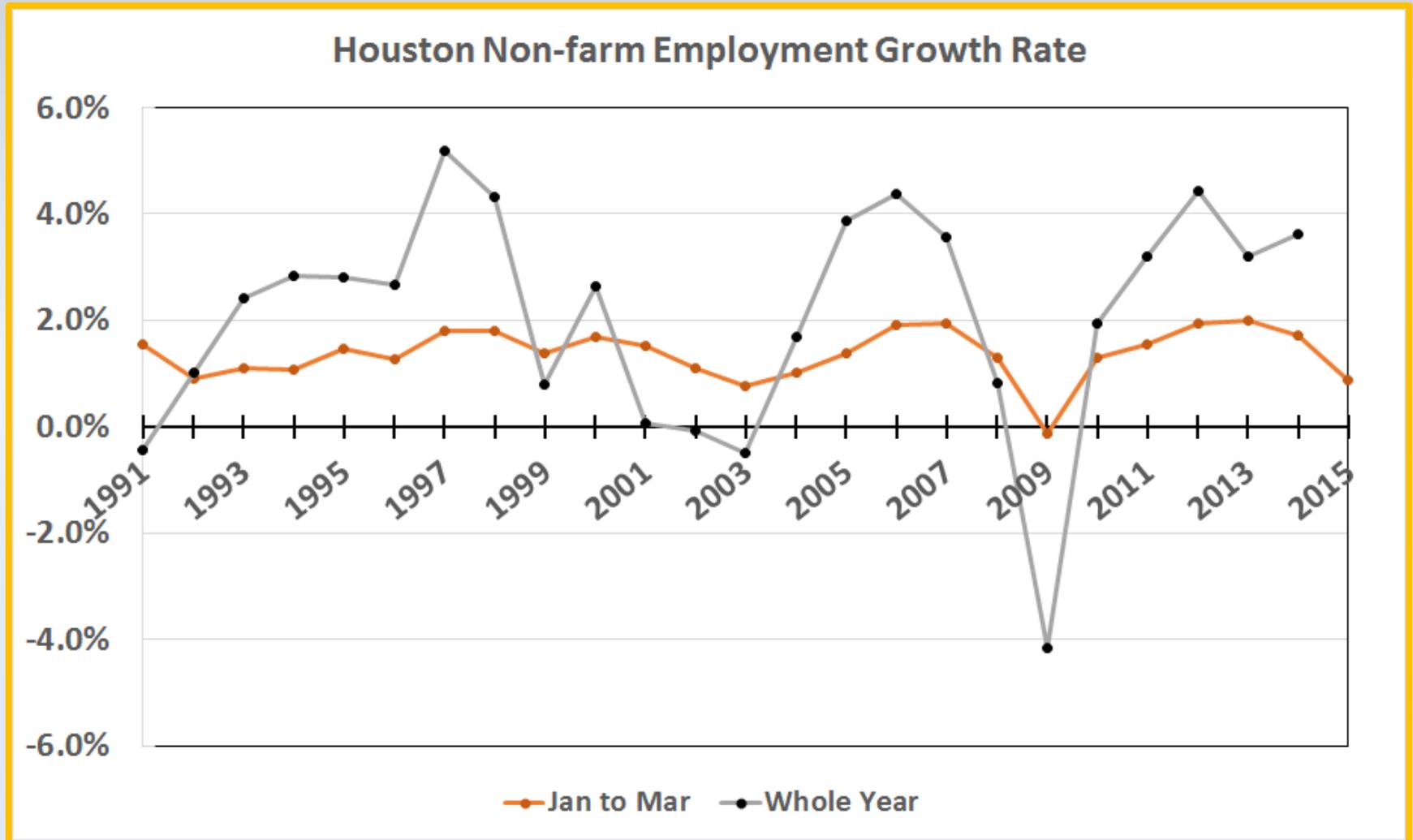
	No. of Jobs	Ann. % Increase	Ann. Increase
<u>Trade, Transp. & Utilities</u>	601,700	- 0.2%	- 1,100
Prof. & Bus. Services	466,100	+ 0.1%	+ 600
Government	386,200	+ 2.7%	+ 10,000
Educ. & Health Services	362,100	+ 1.3%	+ 4,500
Leisure & Hospitality	295,100	+ 3.3%	+ 9,300
<u>Manufacturing</u>	254,700	- 0.4%	- 1,000
Construction	206,900	+ 1.0%	+ 2,000
Financial Activities	148,800	+ 1.0%	+ 1,500
<u>Mining & Logging</u>	113,000	- 0.4%	- 500
<u>Other Services</u>	103,400	- 0.2%	- 200
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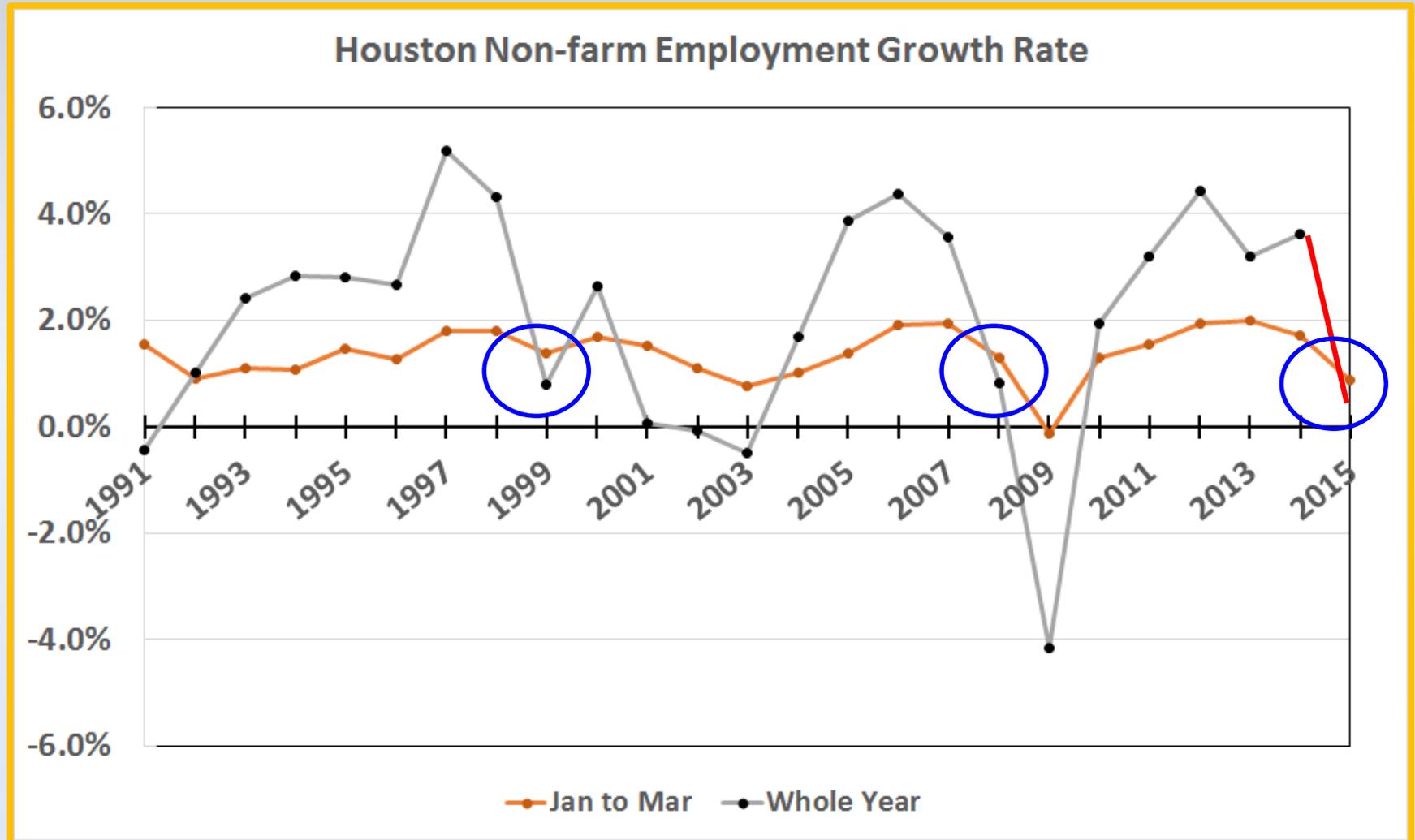
Two Highly
Positive
sectors

	No. of Jobs	Ann. % Increase	Ann. Increase
Trade, Transp. & Utilities	601,700	- 0.2%	- 1,100
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Total Jobs	2,971,200	+ 0.9%	

Is the 2-Month Employment Growth a Good Indicator of Annual Employment Growth?



Is the 2-Month Employment Growth a Good Indicator of Annual Employment Growth?



Will downstream construction jobs **buffer**
the downturn in upstream activity for
Houston?

Downstream Construction Projects in the Houston Area (\$50 mil. or greater)

Houston Area Industrial Projects (Page I)

(\$60 Billion Announced Since 2012)

Company	County	State	Product	Date Complete	Capital Inv.	Perm. Jobs
Freeport LNG	Brazoria	TX	LNG export facility	2018	\$13,000,000,000	160
NextDecade	Galveston	TX	Liquified natural gas facility	2016	\$6,000,000,000	
Fund Connell USA Energy	Galveston	TX	Methanol plant	Undisclosed	\$4,500,000,000	500
Dow Chemical Company	Brazoria	TX	Ethylene production plant	2017	\$4,000,000,000	
Chevron Phillips Chemical Co. LP	Harris	TX	Two Polyethylene facilities	2017	\$2,500,000,000	
Freeport LNG Oyster Creek	Brazoria	TX	Natural Gas Liquefaction-Train 2	Nov-18	\$1,800,000,000	52
Dow Chemical Co.	Brazoria	TX	Ethylene production plant	2017	\$1,700,000,000	
Freeport LNG Oyster Creek	Brazoria	TX	Natural Gas Liquefaction-Train 1	Nov-17	\$1,700,000,000	88
Enterprise Products Partners LP	Harris	TX	World's largest refrigerated ethane export facility	3Q 2016	\$1,300,000,000	12
Freeport LNG Oyster Creek	Brazoria	TX	Natural Gas Liquefaction-Train 3	Nov-19	\$1,300,000,000	23
LyondellBasell	Harris	TX	Expansion of ethylene capacity	Summer 2014	\$1,300,000,000	
Ascend Performance Materials LLC	Brazoria	TX	Propane dehydrogenation facility	Undisclosed	\$1,200,000,000	100
C3 Petrochemicals LLC	Brazoria	TX	Propane Dehydration	Q42015	\$1,200,000,000	
Dow Chemical Company	Brazoria	TX	Propane dehydrogenation unit	2015	\$1,000,000,000	80
Chevron Phillips Chemical Co.	Brazoria	TX	Polyethylene plants and rail storage facility	2017	\$1,000,000,000	92
Golden Pass Products LLC	Harris	TX	Proposed LNG export facility	2020	\$1,000,000,000	200
NRG Energy Inc. / Petra Nova	Fort Bend	TX	World's largest carbon capture project	Late 2016	\$1,000,000,000	
Phillips 66	Brazoria	TX	Expansion of \$1 Billion LPG Export Terminal	Mid-2016	\$1,000,000,000	
Enterprise Products Partners	Chambers	TX	Propylene expansion	4Q2014	\$944,000,000	
Dow Chemical Co.	Brazoria	TX	New polyolefins and elastomers plant	2017	\$846,000,000	96
Valero Energy Corporation	Harris	TX	Process an additional 90k BPD of light sweet crude	Undisclosed	\$805,900,000	12
Celanese Corporation/Mitsui & Co. Ltd.	Harris	TX	Manufacturing plant-methanol	Mid-2015	\$800,000,000	
Onok Hydrocarbon	Chambers	TX	Expansion of the company's fractionator facility	Undisclosed	\$800,000,000	
BASF Corporation	Brazoria	TX	Ammonia plant with capacity of 750,000 metric tons	2016	\$750,000,000	10
Celanese Corporation	Harris	TX	Petrochemical plant	3Q2015	\$640,000,000	30
Mitsubishi Chemical Holdings America	Brazoria	TX	Acrylic acid plant	2017	\$590,000,000	
LyondellBasell Industries NV	Harris	TX	Plastic Resin and Synthetic fiber manufacturing	Undisclosed	\$500,000,000	80
Alpha Olefin Chemical Company, LLC	Brazoria	TX	Industrial organic chemicals	2016	\$496,000,000	55
Kinder Morgan	Harris	TX	52 storage tanks with capacity of 6.5 million bbls	3Q2013	\$430,000,000	
INEOS Olefins & Polymers USA	Harris	TX	High-density polyethylene (HDPE) mfg plant	2016	\$427,900,000	25+
Air Liquide	Harris	TX	Hydrogen plant, steam methane reformer plant	Apr-12	\$400,000,000	
Valero Energy Corporation	Harris	TX	Refinery expansion for increased light sweet crude	Dec-15	\$390,000,000	
Kinder Morgan Energy Partners L.P.	Harris	TX	Mini-refinery that will split condensate	Fall 2014	\$360,000,000	
OilTanking partners	Harris	TX	LPG capacity expansion, storage, P/L & dock	Undisclosed	\$340,000,000	

Houston Area Industrial Projects (Page II)

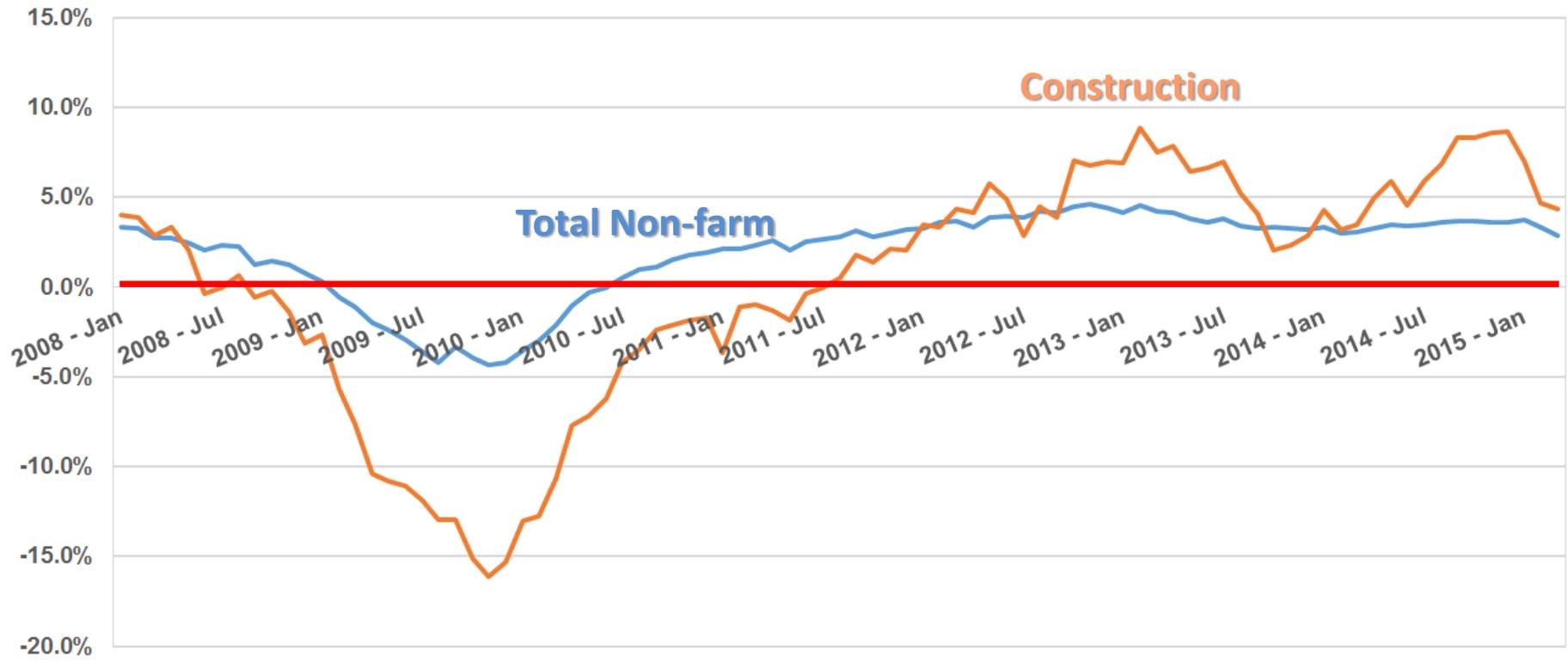
(\$60 Billion Announced Since 2012)

Company	County	State	Product	Date Complete	Capital Inv.	Perm. Jobs
Lone Star NGL LLC	Chambers	TX	New natural gas processing plant	Undisclosed	\$325,000,000	
FMC Technologies - Phase 1	Harris	TX	HQ & manufacturing campus	Undisclosed	\$316,000,000	680
Kuraray America Inc.	Harris	TX	New polyvinyl alcohol plant	2014	\$250,000,000	100
Targa Resources Partners LP	Harris	TX	Exports propane and butane	3Q2013/3Q2014	\$240,000,000	
Air Liquide	Harris	TX	Upgrade of cogeneration and air separation units	2016	\$230,000,000	
American Air Liquide	Harris	TX	Industrial gas manufacturing	Undisclosed	\$230,000,000	
Linde North America	Harris	TX	Synthetic gas operations/Air separation unit	Feb-15	\$230,000,000	15
Valero Energy Corp.	Harris	TX	Crude oil topper at its 90,000 barrels/day refinery	Undisclosed	\$220,000,000	
Linde North America	Harris	TX	New liquefier to produce liquid oxygen, nitrogen and argon	Undisclosed	\$200,000,000	50
Noltex LLC	Harris	TX	Expansion of Ethylene-Vinyl Alcohol Copolymer	Undisclosed	\$180,000,000	25
Kinder Morgan	Harris	TX	Refiner storage facility	Undisclosed	\$170,000,000	
Dow AgroSciences	Brazoria	TX	Dichlorophenol Plant	2014	\$150,000,000	10
Intercontinental Terminals Company	Harris	TX	Tank terminal and ship docking facility	2014	\$150,000,000	
Borusan Mannesmann	Chambers	TX	Steel pipe manufacturer	1Q2013	\$148,000,000	250
Genam Inc.	Harris	TX	Tire recycling facility	2014	\$140,000,000	60
Lubrizol	Harris	TX	Producer of specialty plastics	4Q2014	\$125,000,000	428
Oxiteno	Harris	TX	Specialty chemical plant	1Q2013	\$122,000,000	137
Arkema	Harris	TX	New industrial specialty chemicals	Undisclosed	\$110,000,000	
Kinder Morgan Energy Partners L.P.	Harris	TX	Storage terminal	Undisclosed	\$106,000,000	
NA Industries	Harris	TX	Polymer facility	TBD	\$100,000,000	60
Arkema Inc.	Harris	TX	Industrial Chemical Manufacturing	3Q2013	\$100,000,000	5
BASF Corporation	Brazoria	TX	Emulsion polymers plant	2014	\$90,000,000	20
Oxiteno	Harris	TX	Industrial chemical manufacturing	1Q2014	\$90,000,000	65
Lubline	Harris	TX	Manufacturer of O&G lubricants	4Q2015	\$80,000,000	10
INEOS Olefins & Polymers USA	Brazoria	TX	Ethylene plant expansion	2014	\$75,000,000	5
Kinder Morgan	Harris	TX	5 new tanks for refined products	Undisclosed	\$75,000,000	
Oiltanking Partners, LP-Appelt I	Harris	TX	Expanding crude oil storage capacity	3Q2014	\$70,000,000	100
Lubline	Harris	TX	Manufacturer of lubricants and additives	Undisclosed	\$60,000,000	30
Halliburton Energy Services, Inc.	Harris	TX	Oil & gas field services	3Q2013	\$58,150,000	50
Ashland	Galveston	TX	Basic chemicals company	N/A	\$55,800,000	43
Akzo Nobel Polymer Chemicals LLC	Harris	TX	Specialty chemicals manufacturer	Aug-14	\$55,000,000	49
Solvay North America Inc.	Harris	TX	Alkoxylation unit	2015	\$55,000,000	
Rhodia Group	Harris	TX	Ethylene Oxide Production unit	Undisclosed	\$54,000,000	28
Kaneka North America LLC	Harris	TX	Chlorinated Polyvinyl Chloride expansion	Undisclosed	\$50,000,000	10

Source: Greater Houston Partnership

Houston Construction Employment Growth Increasing, But at a Decreasing Rate

Houston Construction Employment vs Total Non-Farm Employment
(Jan. 2008 to Mar. 2015)



Conclusions

- Expect declines in upstream activity for several years (assuming no “black swans” drive crude prices up.)
 - **Plenty of crude in storage** (and in the ground) waiting for any price bump.
 - **Saudis are not anxious for prices to get too high**, hoping to keep U.S. shale drilling contained. (OPEC is now “every man for himself”)
 - Exploration companies taking a **wait-and-see attitude** regarding crude price before ramping up new drilling rigs again.
 - (Is this lower price a “**new normal**”?)
 - **A core of the best U.S. drilling companies** will learn how to make adequate returns at much lower prices with fewer rigs than once thought possible.

Conclusions

- Upstream O&G workers seem to be **slow to transition** into Houston's downstream construction jobs.
- The positive impact of **temporary** construction jobs not likely to overcome negative impact of **permanent** O&G job losses upstream in 2015.
- Houston job growth in 2015 will slow compared to 2014, but **economic diversity** will prevent negative job growth.
- Tell me the **price of oil** & I'll tell you how good 2016 will be.

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