



Louisiana Department of Natural Resources

Perspective on Energy Issues

Amite Chamber of Commerce

**DNR Secretary Scott A. Angelle
February 8, 2012**



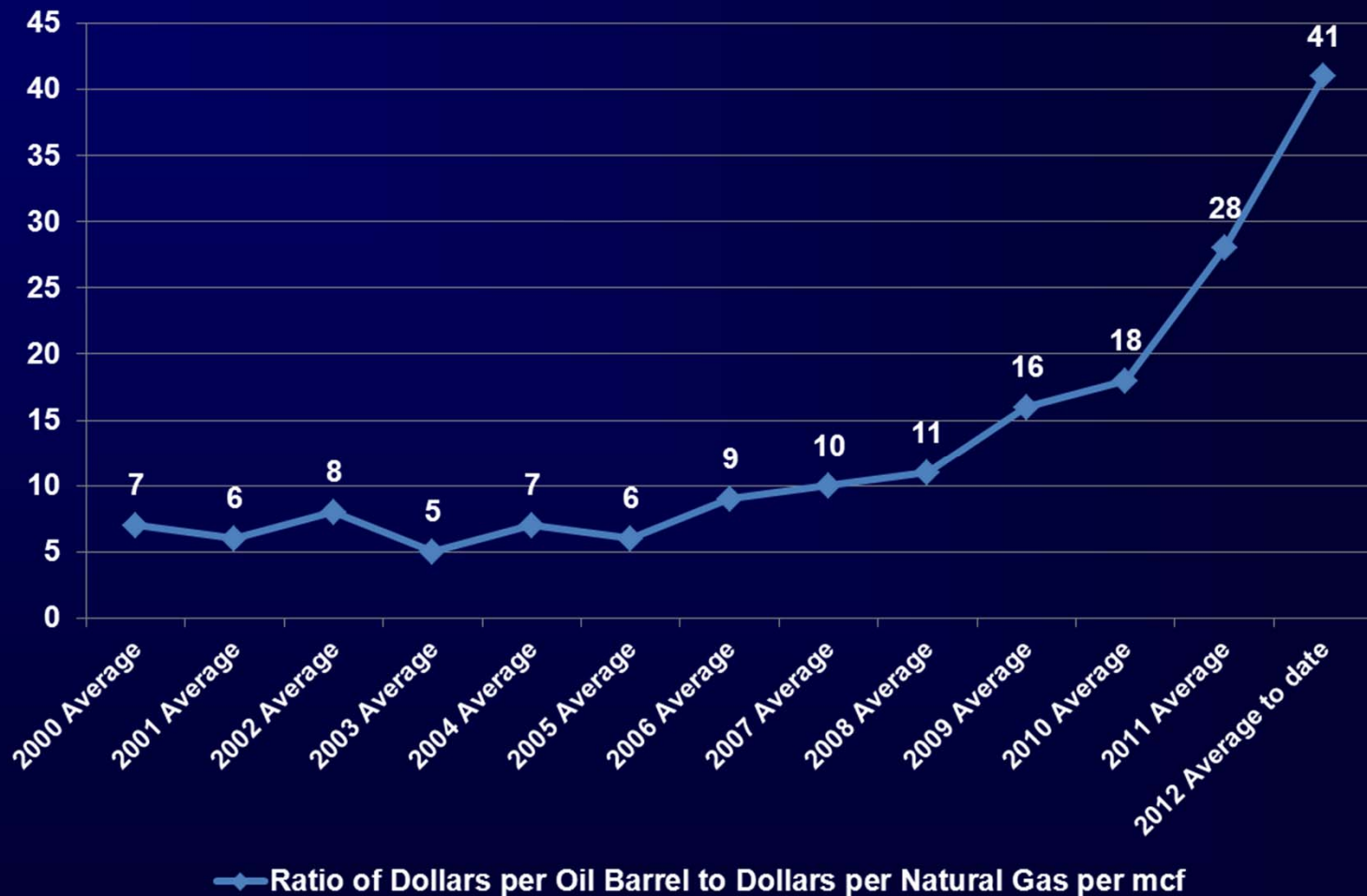
Oil and Gas Prices Decoupling





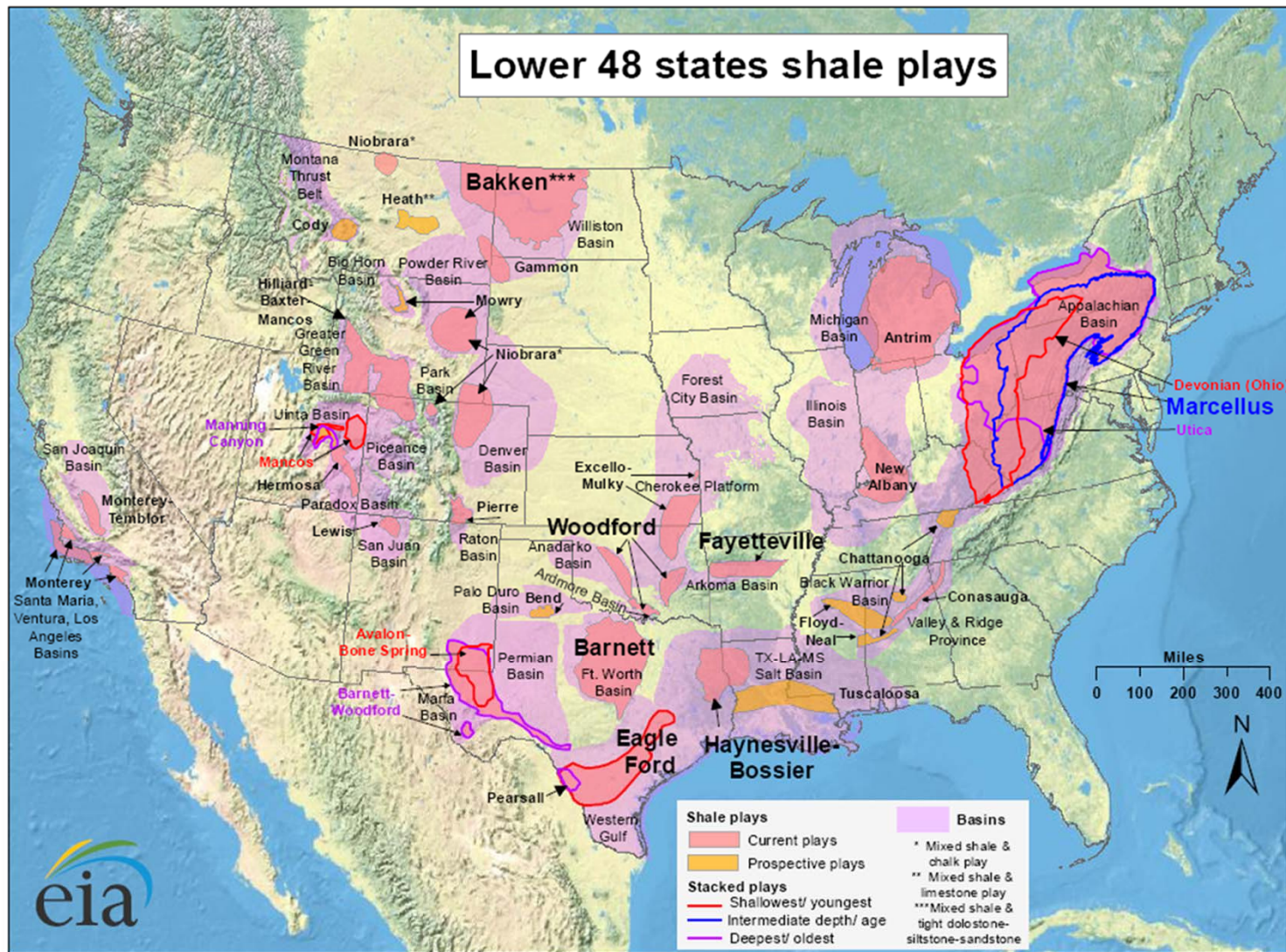
Price Dynamics Changing Faster

Historic Pricing Ratio: Oil vs Natural Gas





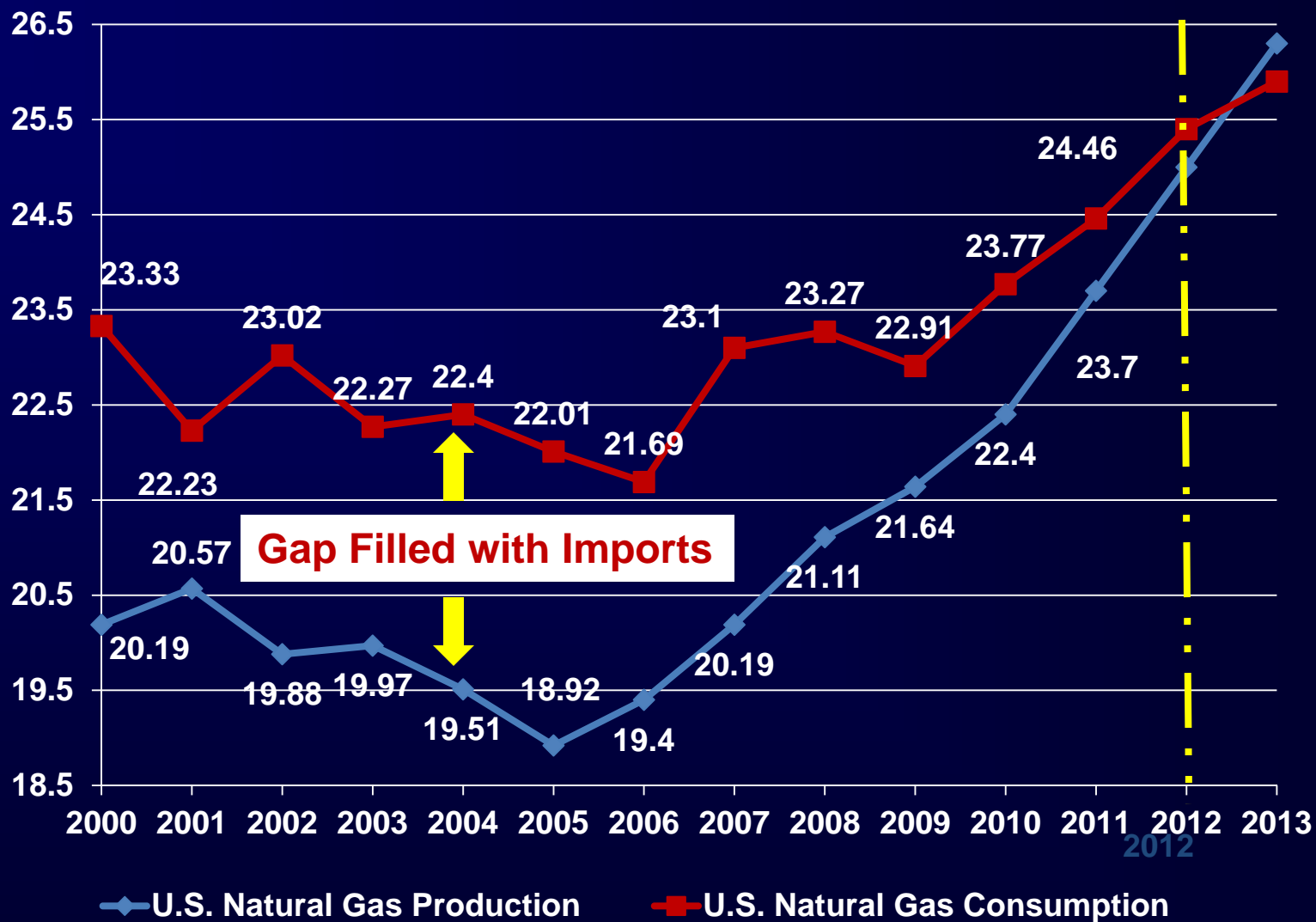
Shale Plays in Lower 48 States



Source: Energy Information Administration based on data from various published studies.
 Updated: May 9, 2011

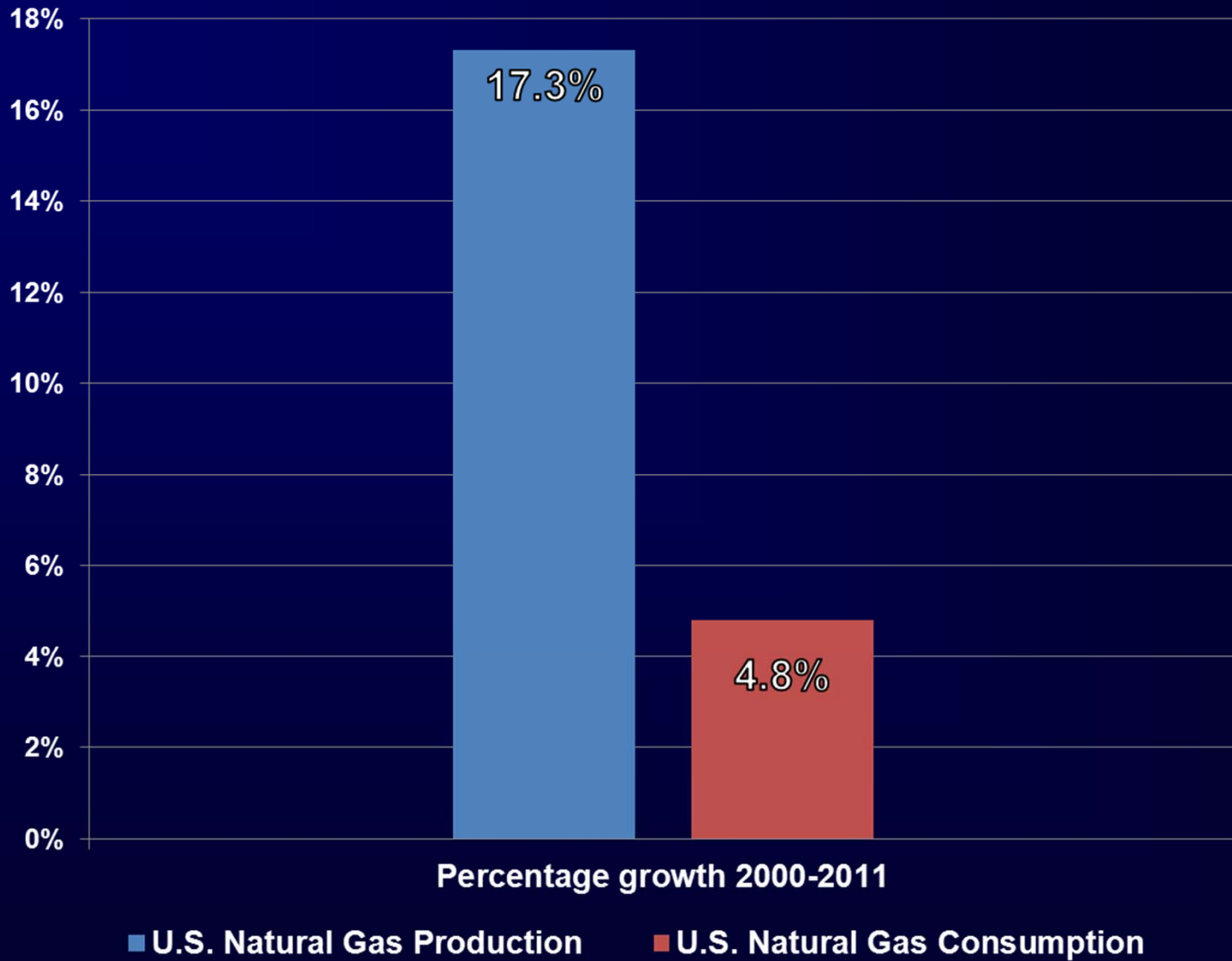


Domestic Gas Production/Consumption Trillion Cubic Feet Per Year





Production Growth Rate 3X Consumption Growth Rate

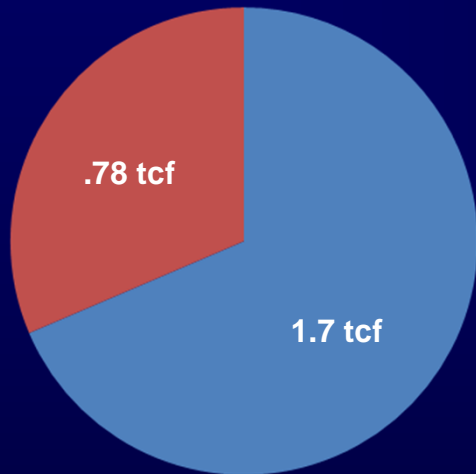




2011 Natural Gas Production

Louisiana total –
2.49 tcf from **19,845** wells

Haynesville only –
1.7 tcf from **1,805** wells

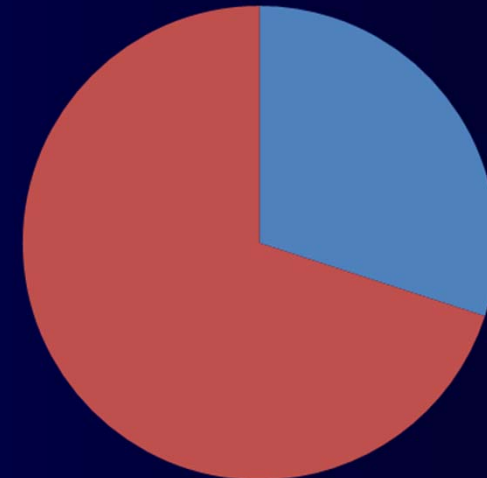


■ Haynesville Only
■ Rest of Louisiana Gas Production

Haynesville accounts for **9 percent** of state gas wells and **68 percent** of state gas production

U.S. total –
23 tcf from **480,000+** wells

Shale only – approx.
7 tcf from less than **40,000** wells



■ U.S. Shale Gas Production
■ Other U.S. Natural Gas Production

U.S. shale wells account for **less than 10 percent** of U.S. gas wells and **30 percent** of national gas production



Global price impact - headlines

platts

PRODUCTS & SERVICES | NEWS & ANALYSIS | METHODOLOGY

Overview | Oil | Natural Gas | Electric Power | Coal

Home | News & Analysis | RSS Information and Widget | Nigeria crude theft threatens 140,000 b/d of crude exports: Shell

Nigeria crude theft threatens 140,000 b/d of crude exports: Shell

Lagos (Platts)--7Feb2012/628 am EST/1128 GMT

Shell said Tuesday exports of 140,000 b/d of Bonny Light crude oil from OPEC member Nigeria following repeated sabotage of a pipeline by suspected thieves.

Forbes

- Apple Growing Faster Than Facebook
- Best Exercises To Do At Your Desk
- Careers Headed For The Dustbin

Christopher Helman, Forbes Staff
From Houston, I focus on oil, gas and the Big Oil.
[+ Follow on Forbes](#)

1/31/2011 @ 3:45PM (6,961 views)

Will Egypt's Revolution Mean Oil Armageddon?

[+ Comment now](#)

BBC Mobile | News | Sport | Weather | Travel | TV

NEWS BUSINESS

Home | US & Canada | Latin America | UK | Africa | Asia | Europe | Mid-East | Business | Health | Sci/Environment

Asia Business | Market Data | Economy | Companies

22 February 2011 Last updated at 01:40 ET



Libya unrest leads to rise in oil price

The price of oil has risen in response to the turmoil in Libya.

Brent crude had jumped 2.6% by late afternoon to \$105.2 a barrel, its highest level since before the 2008 financial crisis.

European energy companies are evacuating some staff from the country, which is a major oil and gas producer for the European market.

Meanwhile shares in Italian oil firm ENI - which is



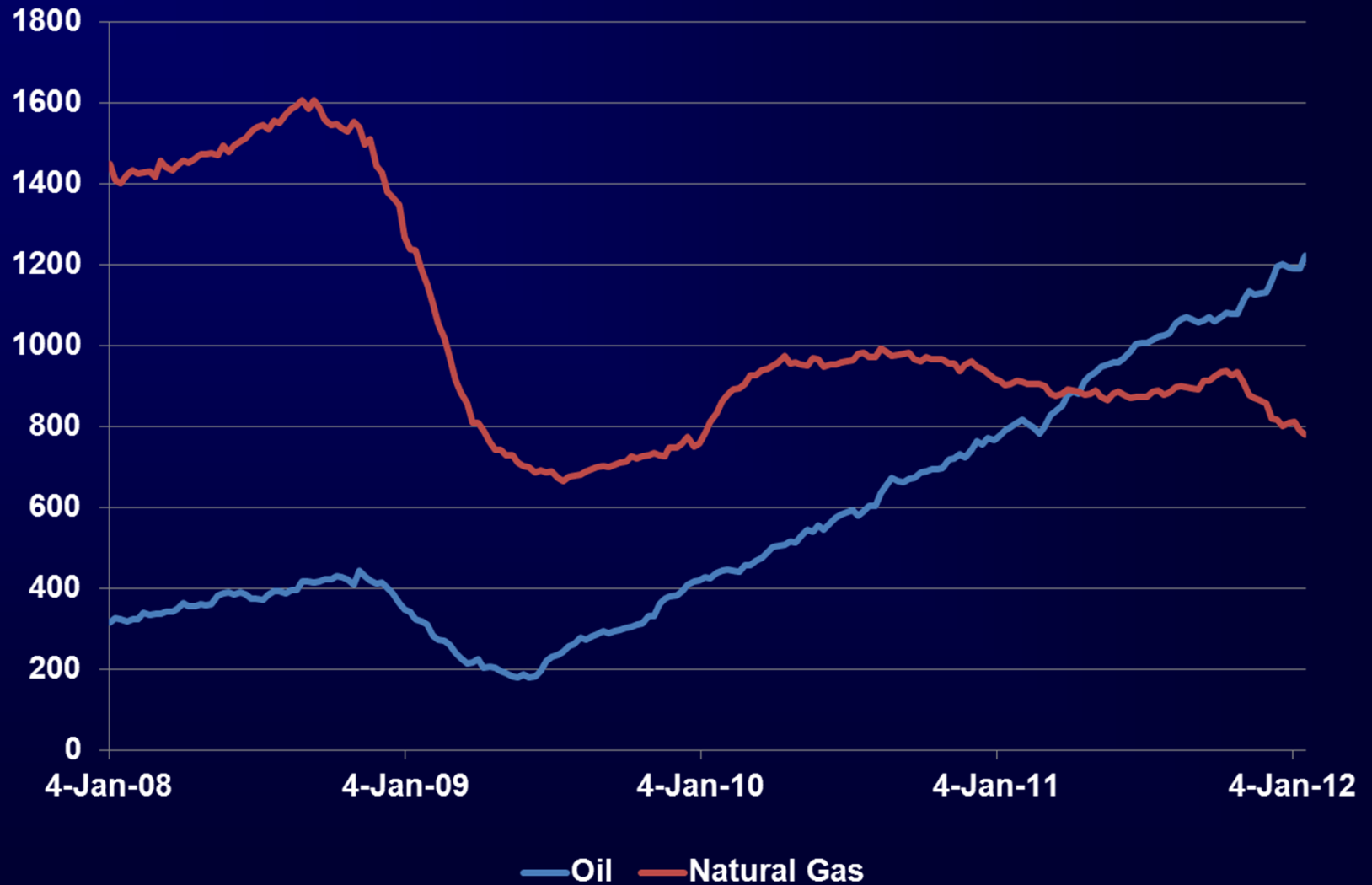
As violence has spread across Libya, European oil companies have begun to evacuate expatriate staff

potential effects of due to repeated

which is



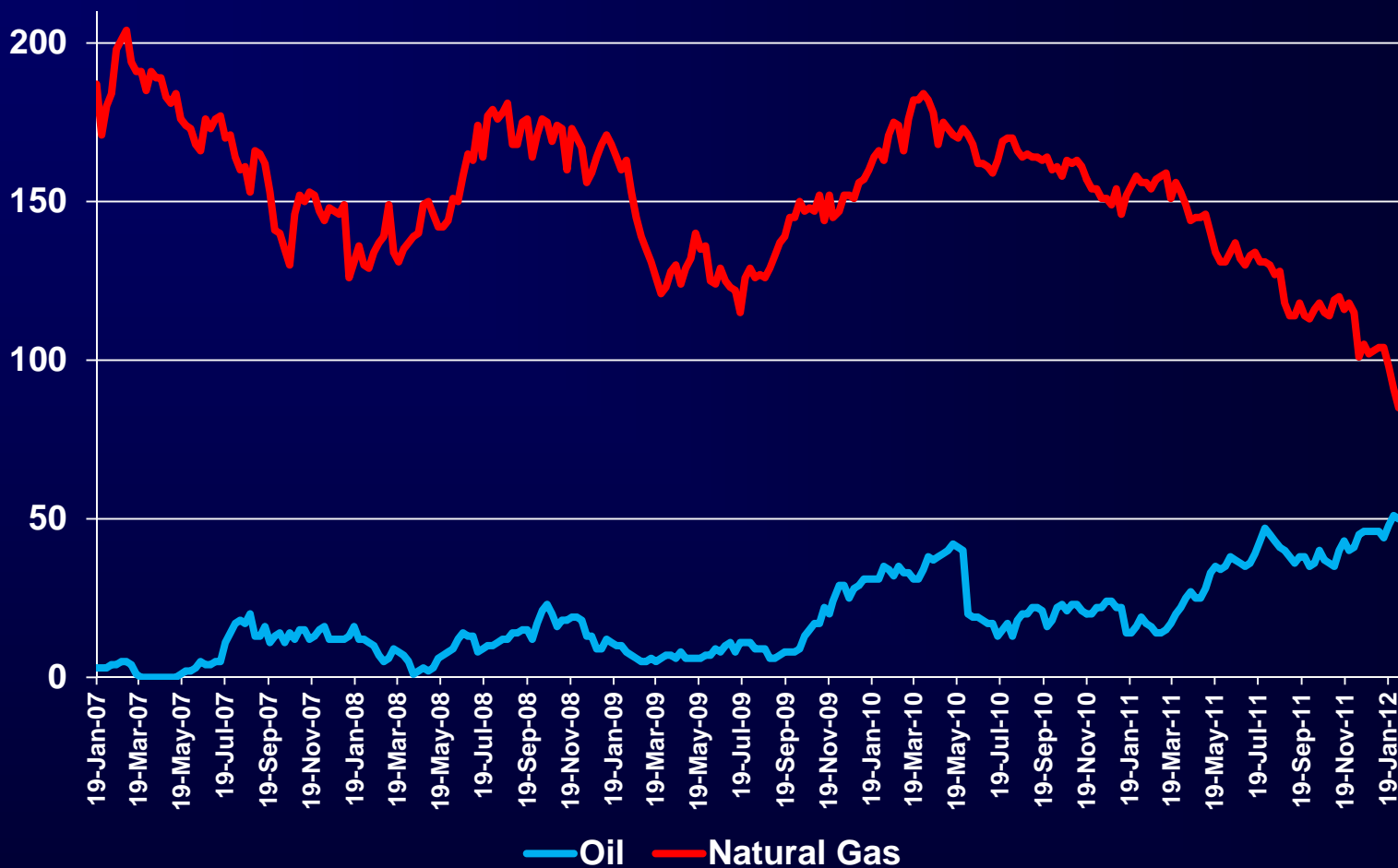
Oil vs Gas Rigs in U.S. Drilling





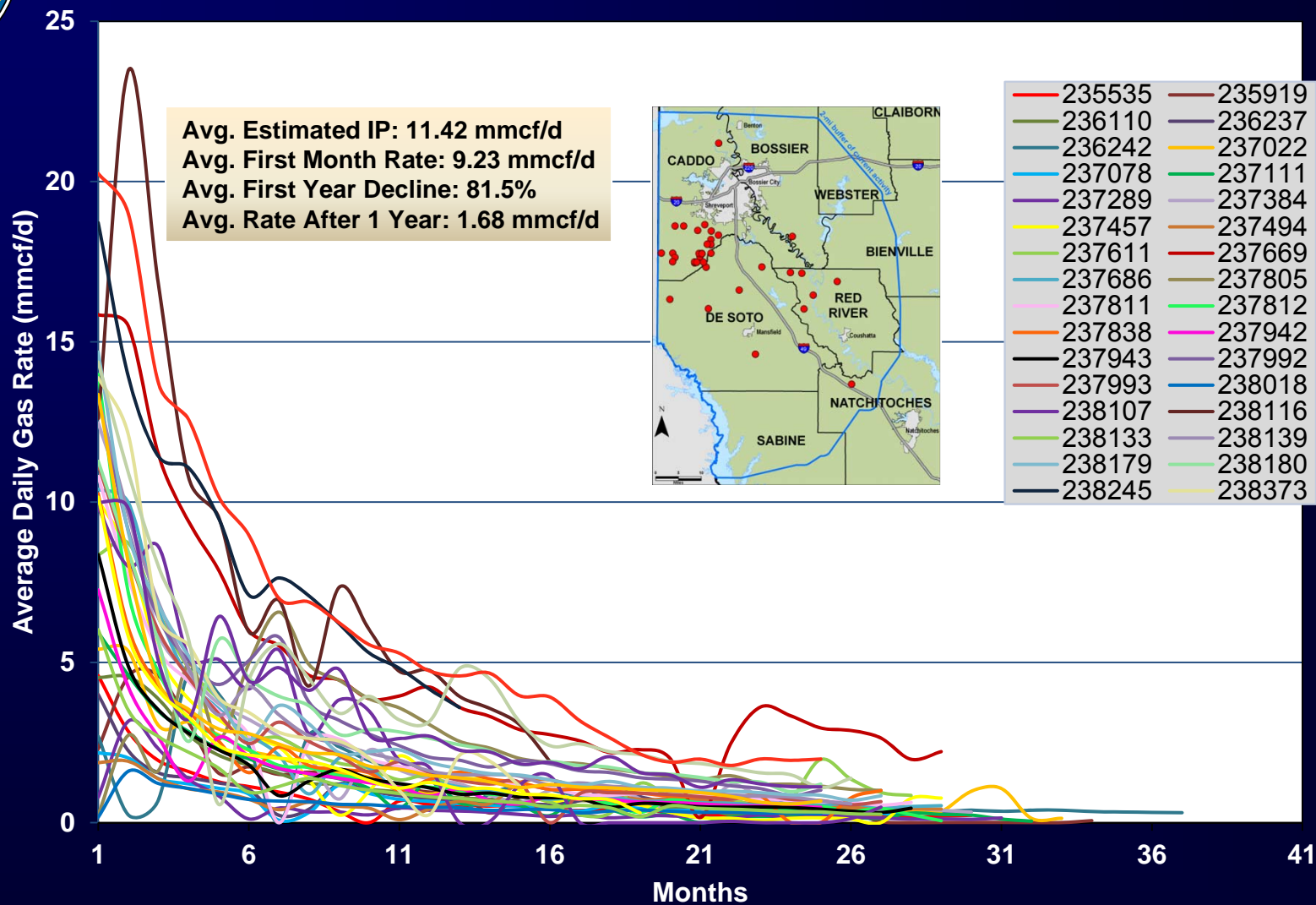
Oil vs. Gas Rigs in Louisiana Drilling

Weekly rig counts 2007 - 2012





Haynesville Shale Production Decline



Updated: 03/31/2011 CS



Petrochem on the ropes: 2008-2009

THE
ADVOCATE

Ga. Gulf cuts 100 at La. plant

The Advocate June 6, 2009

Before Wednesday's announcement by Dow, the Louisiana Chemical Association anticipated losing about 1,000 chemical jobs in the next year...

The Advocate December 11, 2008

THE
ADVOCATE

50 face layoffs at BR offices

Albemarle Corp. starts Restructuring

The Advocate January 30, 2009

THE
ADVOCATE

Dow trimming La. jobs

260 laid off around area

The Advocate January 31, 2009



Shale Natural Gas Has Brought on Louisiana Renaissance

THE
ADVOCATE

**Plants, oil work to
boost BR jobs**

October 6, 2011

THE
ADVOCATE

Natural gas prices boon to La.

December 16, 2011

"The new natural gas reality translates into billions of dollars in new investments and re-investments in the Louisiana chemical industry, creating a lot of jobs along the way."

The Advocate - December 16, 2011

The Times-Picayune

IT'S A GAS –

An abundance of cheap natural gas promises January

22, 2012



Gas-to-Liquids Opportunity

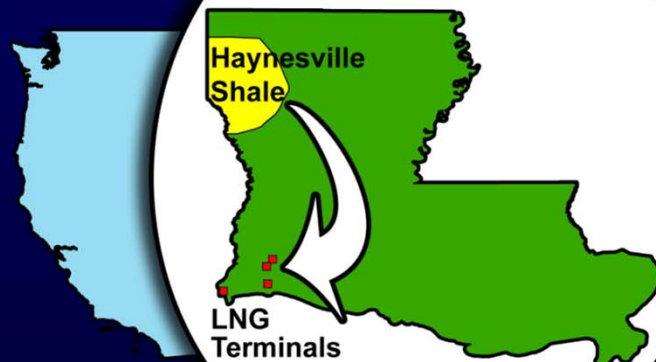
- **Sasol proposed Gas-To-Liquids plant in Calcasieu Parish**
- **Potential \$10-billion direct investment and 800-plus direct jobs that are associated with it**
- **Designed to produce highway-grade diesel fuel**
- **Sasol has stated economics work at 20-to-1 oil-gas price ratio**
- **Already began expansion of petrochemical facility in the area**





Northwest – Southwest Global Expressway

LOUISIANA



- Cheniere – Sabine Pass
- Sempra – Cameron LNG
- BG – Lake Charles Export

ASIA





Fuel prices in your backyard

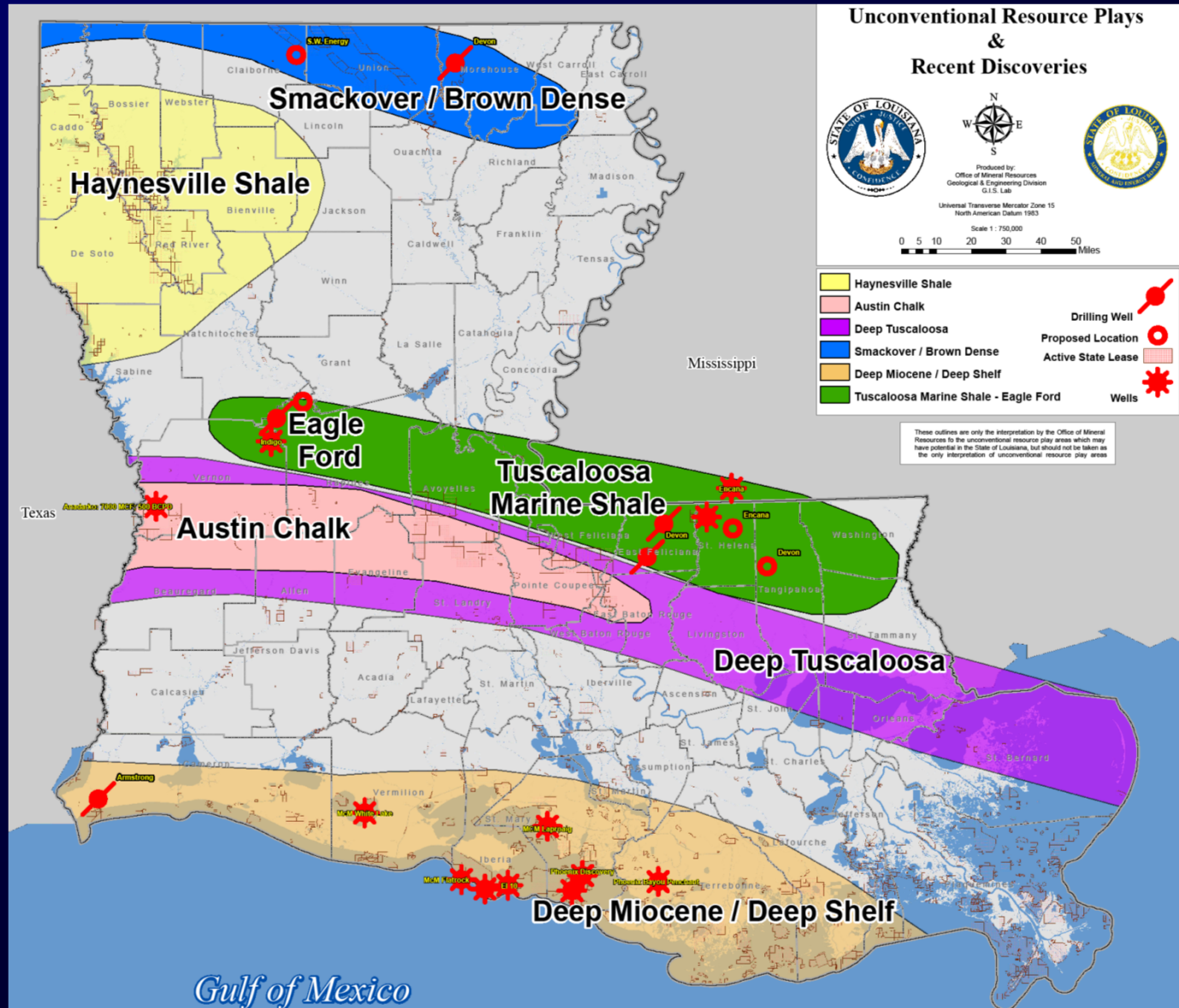


Fuel prices somewhere else





Louisiana's New Energy Map





TUESDAY

FEBRUARY 7, 2012

BATON ROUGE

theadvocate.com

75 cents

THE ADVOCATE

THE INDEPENDENT VOICE OF SOUTH LOUISIANA



TODAY'S WEATHER

Cool.

High: 64. Low: 45.

★ DETAILS: 8B

Tuscaloosa shale promising

St. Helena well's initial production spurs interest

BY TED GRIGGS

Advocate business writer

It's still early in the Tuscaloosa Marine Shale's development, but energy industry members say a St. Helena Parish well's initial production, nearly 800 barrels a day, is encouraging.

well, completed in November, averaged 784 barrels of oil per day and 309,000 cubic feet of natural gas, according to Encana's filing with the state Department of Natural Resources.

"This is certainly a key well.

lins, a Baton Rouge landman who spent much of last year negotiating lease agreements with landowners in the shale.

"You know, 800 of anything coming out of the ground daily is a lot," Collins said.

That's especially true when

nearly \$100 a barrel.

Around two dozen wells have been drilled or are being drilled in the Tuscaloosa Marine Shale, an oil-rich formation that covers Louisiana's midsection. Energy companies have leased more than 1 million acres in the

aren't sharing much of their early production figures.

Kirk A. Barrell, president of Amelia Resources, of Texas, said before the formation can be considered economically viable, 10 to 20 wells will have to





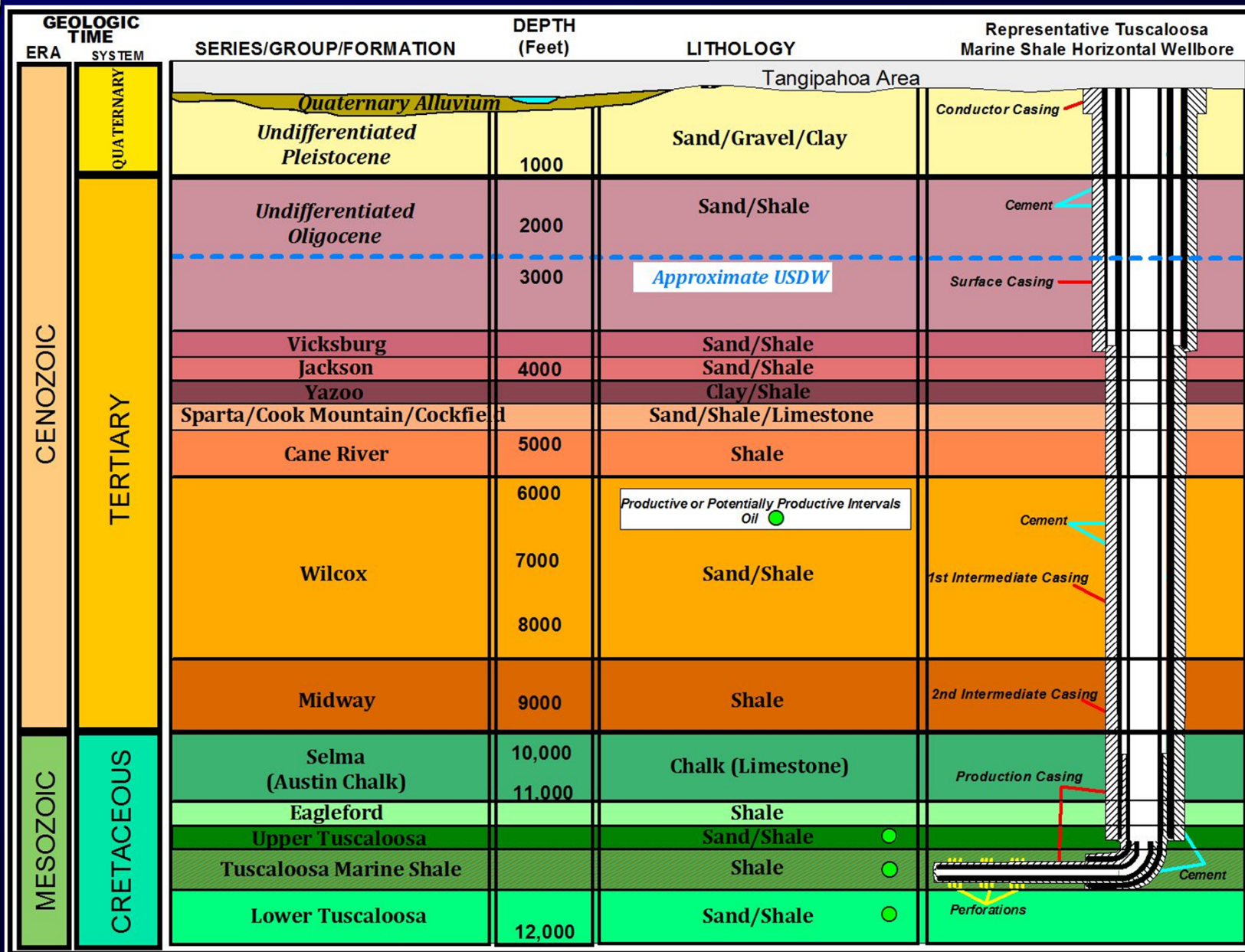
TUSCALOOSA MARINE SHALE

- **250 (+/-) feet thick**
- **Spread across Louisiana and much of Gulf coast**
- **11,000 (+/-) feet deep in the Amite area**
- **Primarily oil-producing play**
- **First Louisiana TMS wells drilled in 1970s**
- **Older conventional methods not successful**
- **Requires horizontal, hydro-fractured wells**
- **1997 LSU study estimated up to 7 Billion BBLS of oil**



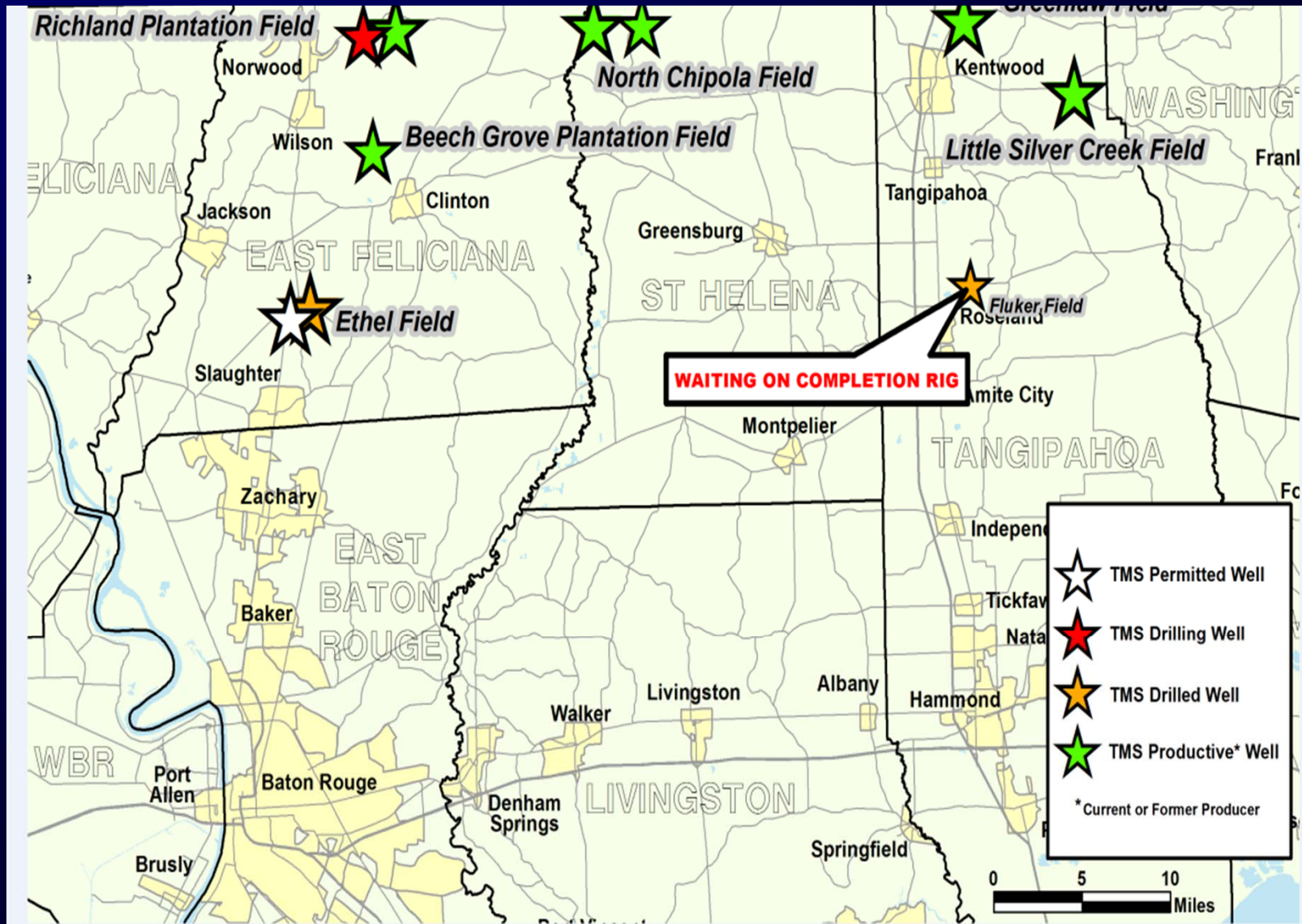
Tuscaloosa Marine Shale

Generalized Lithostratigraphic Chart With Representative Wellbore Diagram



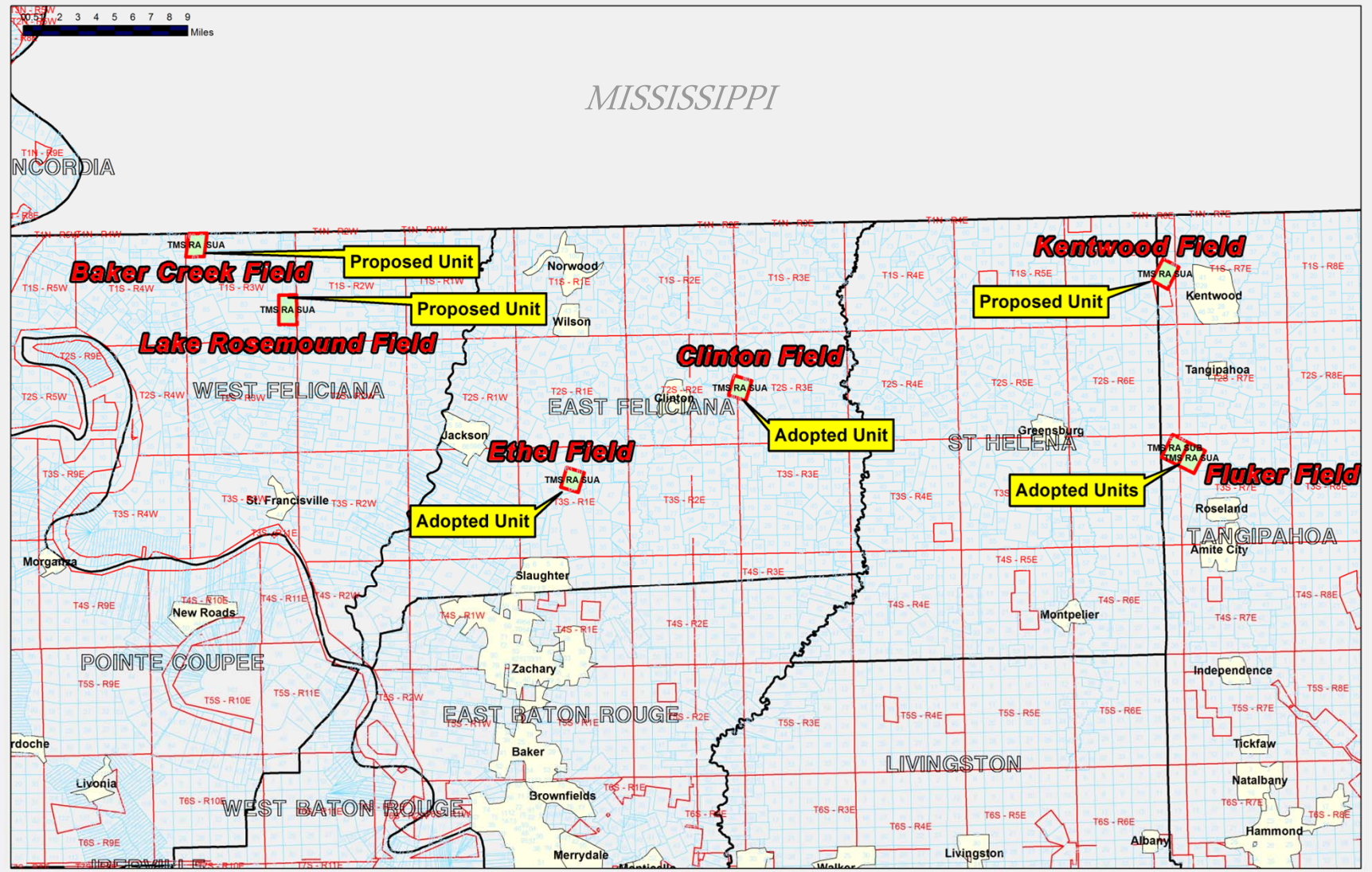


TMS Well Activity





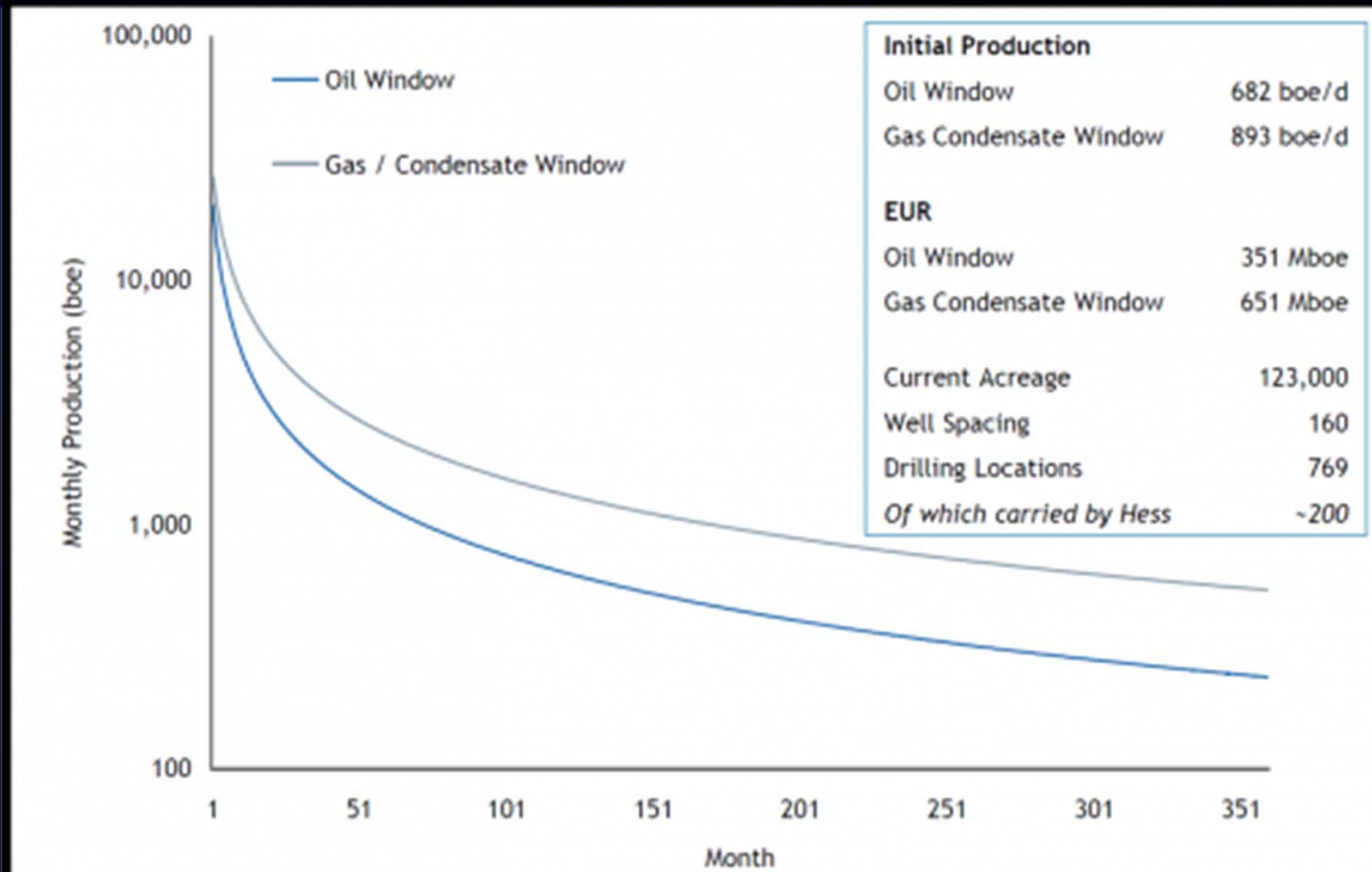
TMS Unitization





Texas' Eagle Ford Shale Decline Curve

40 percent well total production in first 5 years





TMS Promising



TMS Definite

Issues to watch



DNR REGULATES O/G Operations, Water Resources and E&P Waste Disposal

WATER RESOURCES MANAGEMENT

- water well permitting and inspections
- aquifer evaluation
- licensing of water well drillers
- requirements of users to report and monitor
- well construction requirements

COMMISSIONER ISSUED WATER MANAGEMENT DIRECTIVE FOR TMS

- operators to seek and use surface water resources
- surface water withdrawal requests made to DNR
- multiple agency review

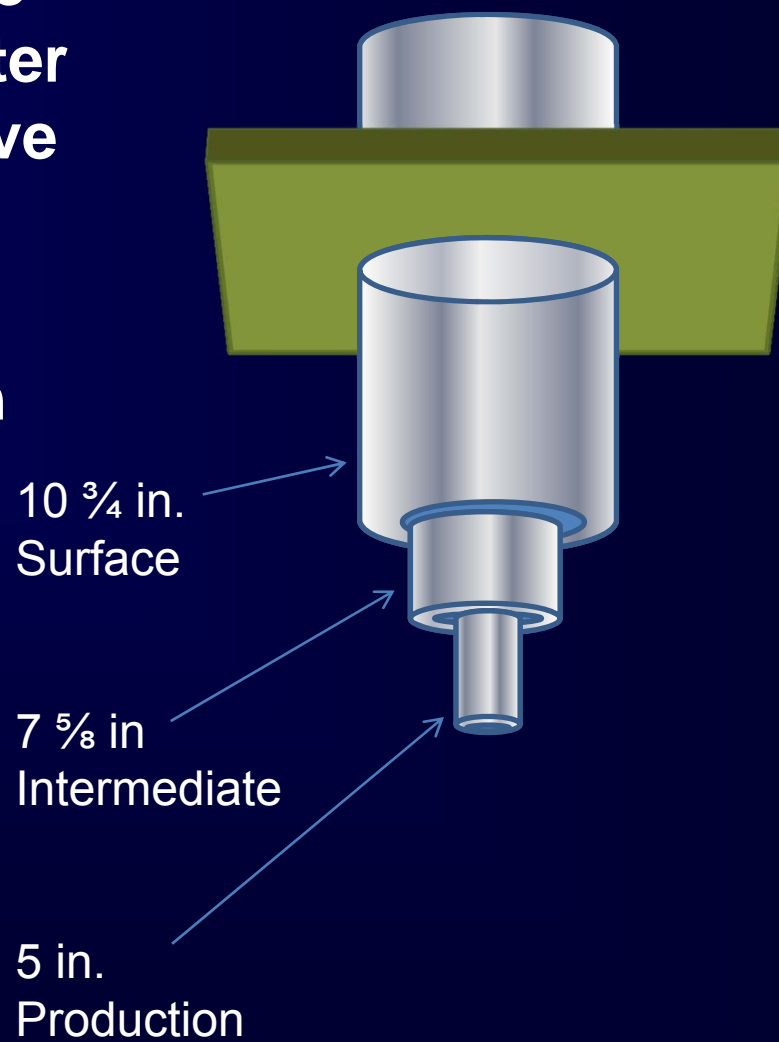
E&P WASTE MANAGEMENT

- regulates and handles waste storage and treatment
- regulates waste disposal facilities/transport of materials to facilities
- enforcement and inspection on all injection well operations



Well Construction rules protect water

- Construction rules require protection of drinking water and isolation of productive zones.
 - Multiple casing strings
 - Minimum setting depth
 - Cement requirements
 - Pressure testing





Louisiana Fracturing Fluid Rule

DNR Office of Conservation Adopts New Regulation for Hydraulic Fracture Operations in Louisiana

Thursday, October 20, 2011— Today, the Louisiana Department of Natural Resources (DNR) Office of Conservation adopted a new rule requiring oil and gas operators to obtain a work permit and disclose the types of fluids used in the hydraulic fracturing process of wells in Louisiana.

Operators are required to disclose the composition of the fracturing fluids and volumes used after completing the well to the Office of Conservation or to a public registry, such as FracFocus - <http://www.fracfocus.org/>, which was developed by the national Ground Water Protection Council and the Interstate Oil and Gas Compact Commission.

Louisiana oil and gas regulations are found in Title 43 of the Louisiana Revised Statutes, under Subpart 1, Statewide Order No. 29-B.

La. Commissioner of Conservation James Welsh said the new rule provides for more disclosure of information and allows the office to collect technical data not required before.

"With the intense development of the Haynesville Shale and in the interest of being protective of the environment, revising our rules provides substance and transparency," Welsh said.

Welsh explained that the STRONGER, Inc. report issued in March 2011 also recommended this type of amendment to Louisiana's existing regulations.

Since June of this year, the amended rule has made its way through the necessary administrative rule-making process, allowing for public comment along the way. Likewise, the states of Arkansas and Texas have similar requirements.