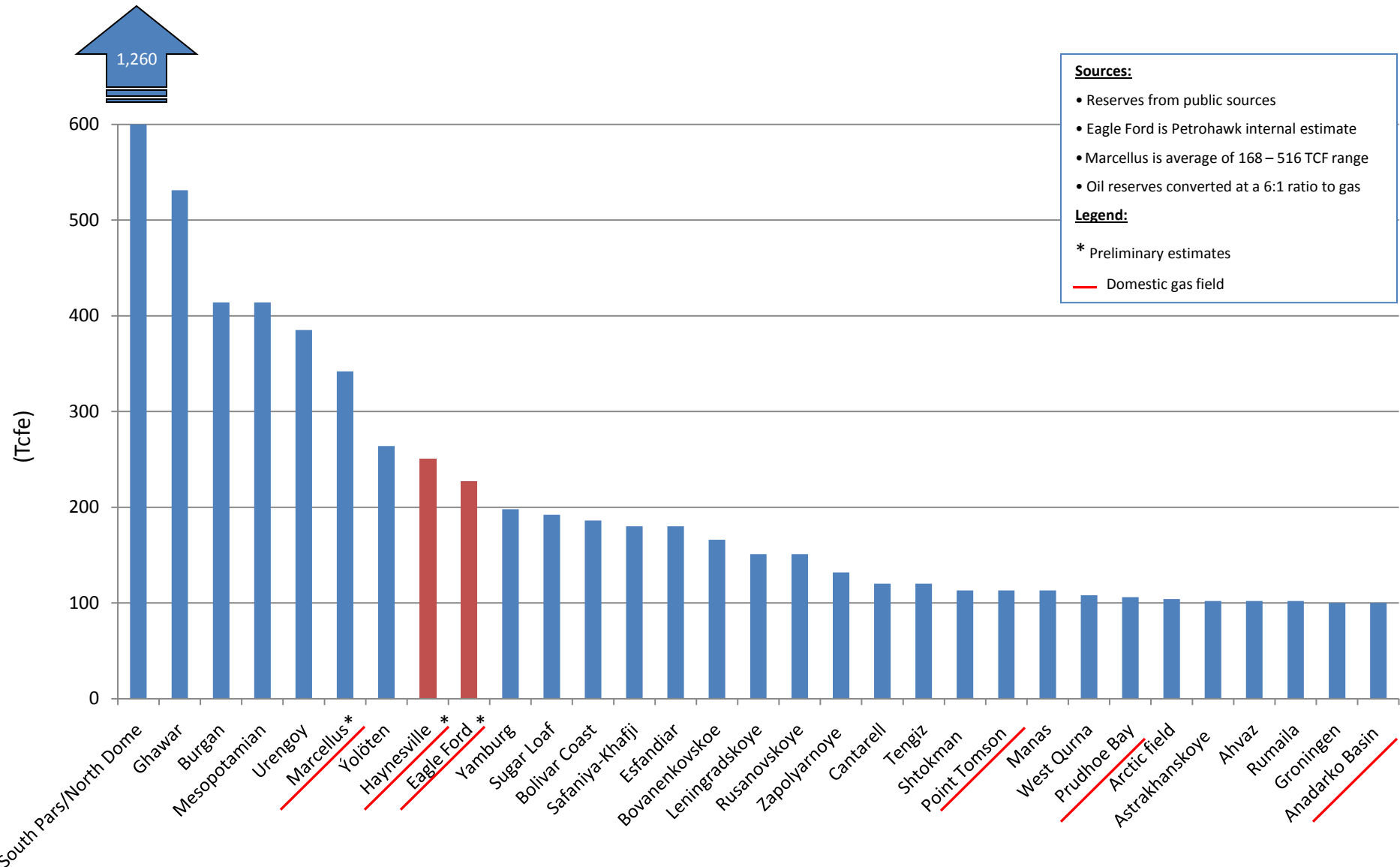




# Operations: Haynesville Shale and Bossier Shale

# Largest Oil and Gas Fields in the World in TCFE



# Haynesville Shale Major Themes



~368,000 net acres under lease

- Petrohawk is on track to hold its prospective leasehold within the current drilling plan
- Core defined as area in northwest Louisiana >4 Bcfe EUR
- We believe restricted rate program could enhance well performance over time and create a stable production base for HK
- Current 7.5 Bcfe per well EUR average may improve through production practices <sup>(1)</sup>
- 2010 well costs expected to average \$8.5 - \$9.5 million for ~4,700' laterals
- Currently producing ~500 Mmcfe/d from ~110 gross operated wells
- Current rig count at 16; reducing to 14 rigs planned for second half of 2010



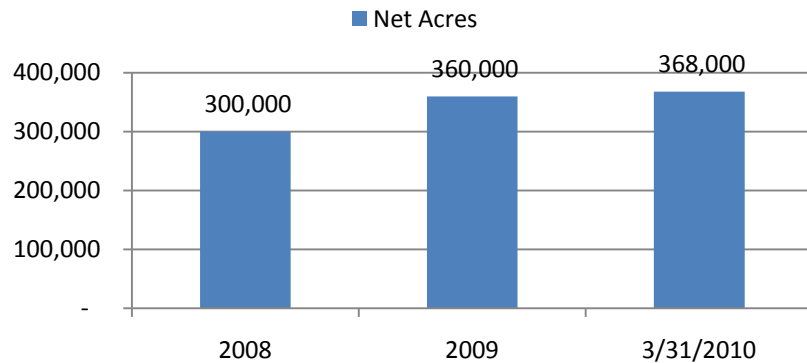
■ Petrohawk acreage under lease

(1) Current Petrohawk gross estimate.

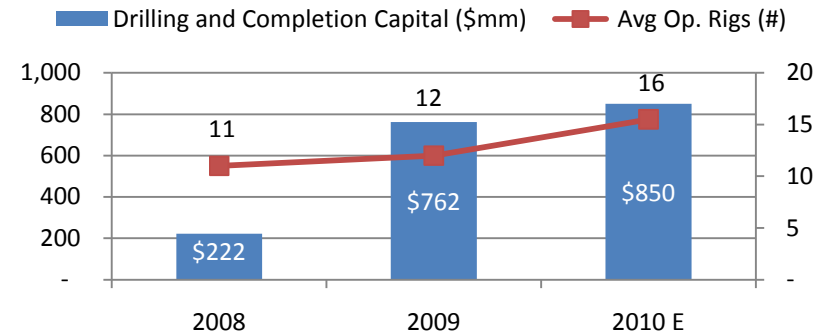
# Haynesville: A Stable Asset for HK



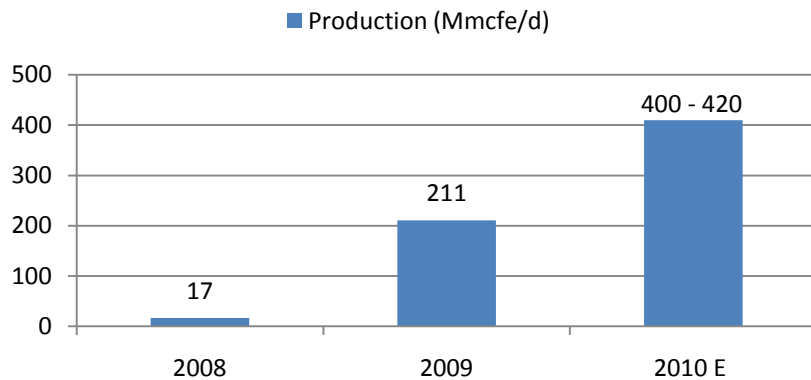
Haynesville Net Acreage



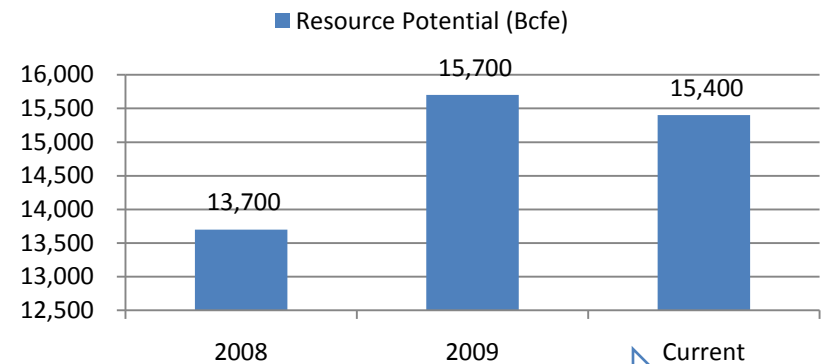
Haynesville Drilling and Completions Budget



Haynesville Daily Production



Haynesville Resource Potential – HK net risked estimates



Conversion of potential to proved



# LA Haynesville: The Statistics of Lease Capture



- 368,000 net acres under lease in the play (~74,000 net acres in Texas primarily in non-op JVs)

- Do not expect to drill

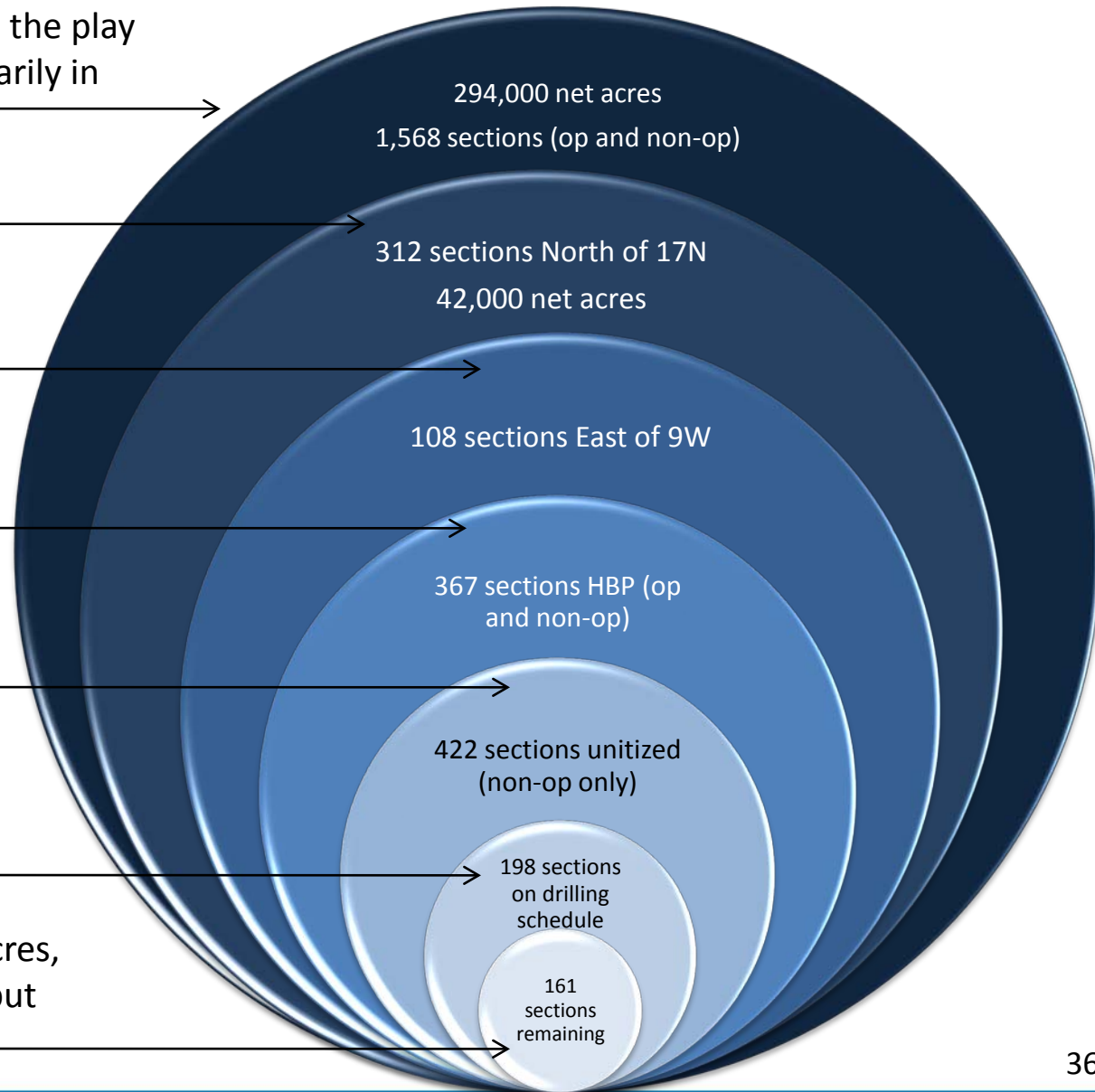
- Still prospective, but the area is not de-risked

- Approximately 110 are operated

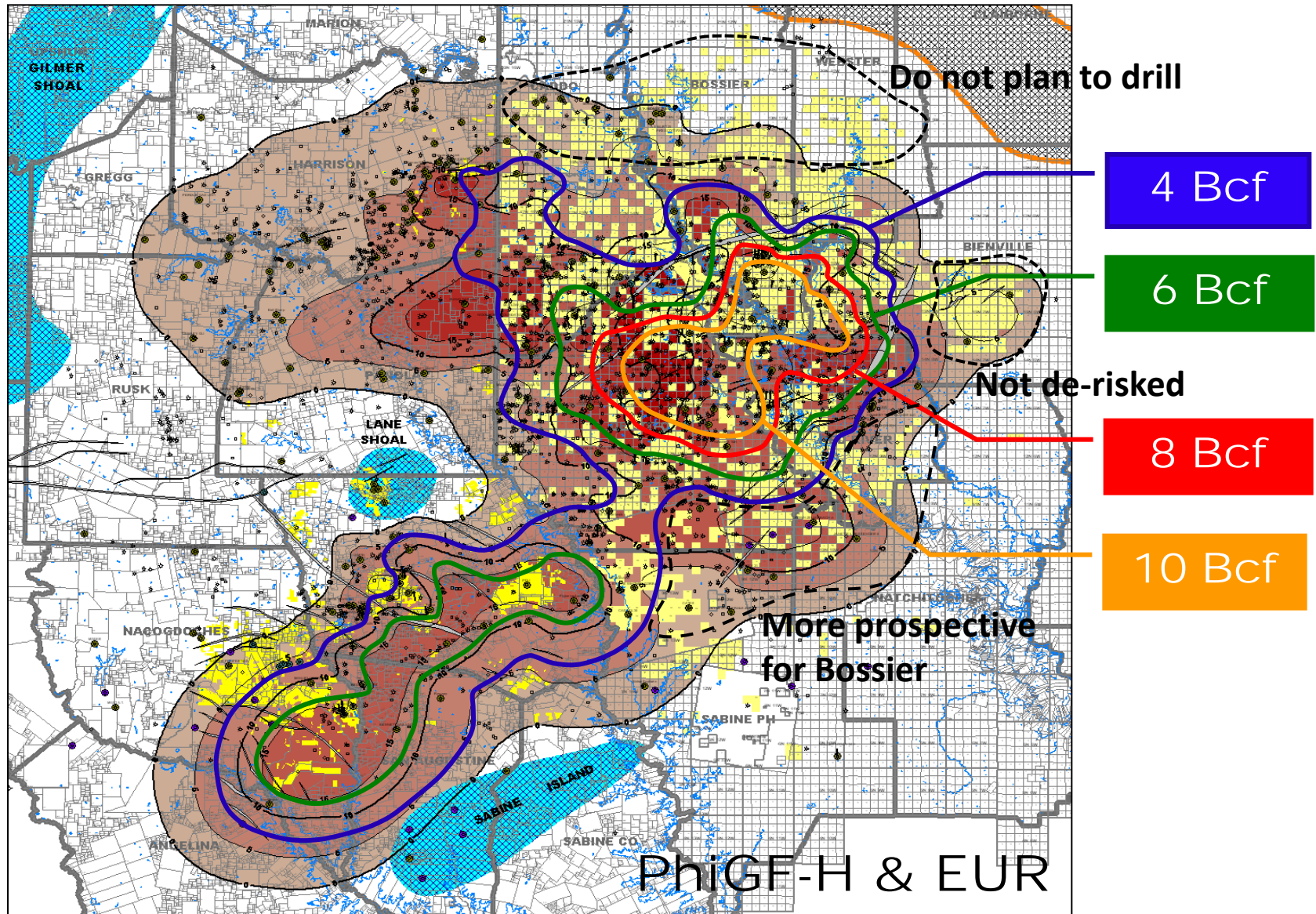
- Unitized sections are ready to drill from a regulatory standpoint

- 84 of the 198 have 2012 expirations (114 sections to drill in 2H 2010 and 2011)

- Comprises approx. 12,000 net acres, all non-op; many will be drilled but have not been unitized yet

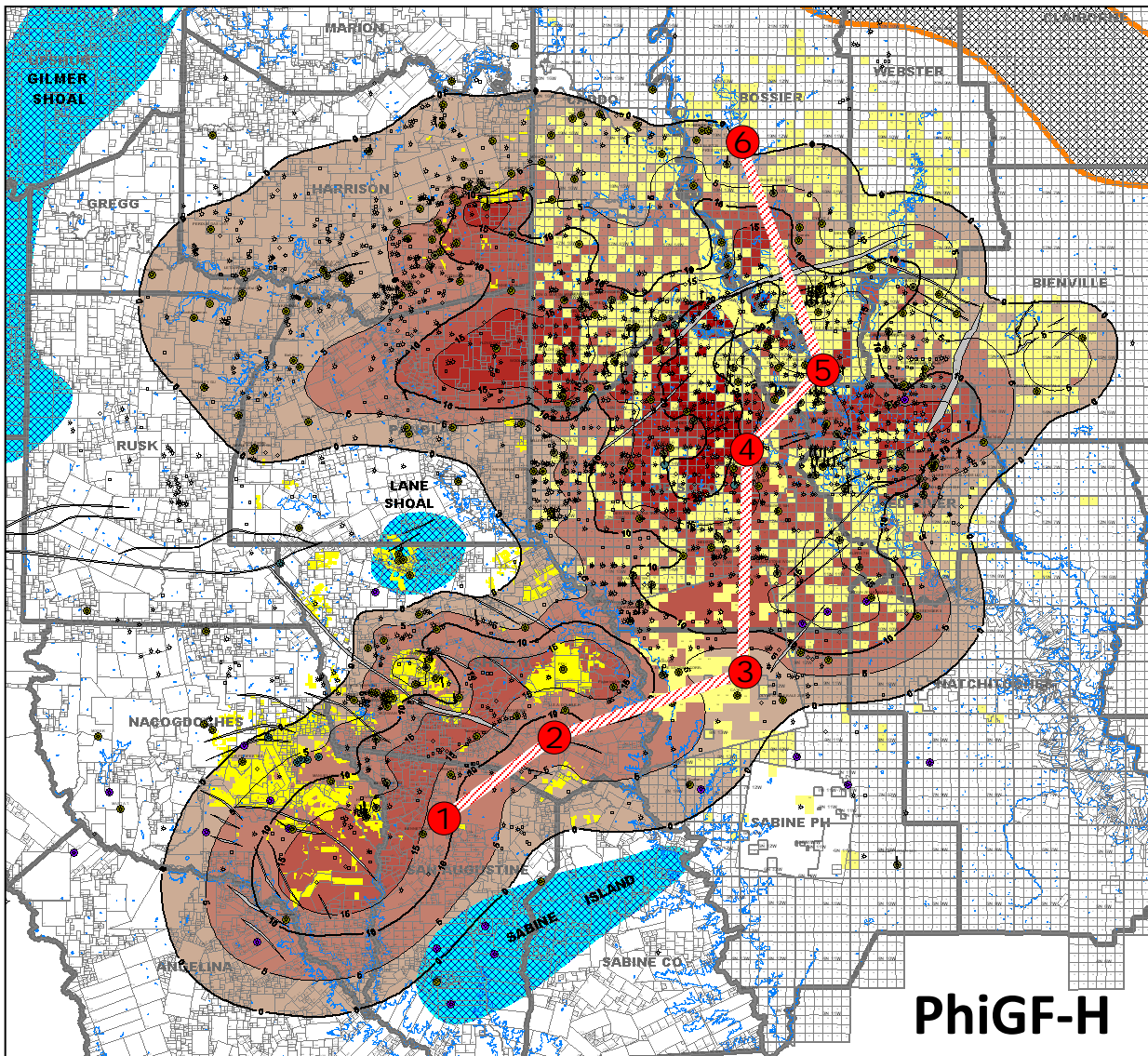


# NW Louisiana Haynesville: The Core Defined by EUR





# NW Louisiana Haynesville: The Core Defined by Porosity



## All Cross-Section Wells

1. EOG Hassel-1
2. Temple Eastex-1
3. Eagle McDonald-1
4. Petrohawk Griffith 11-1
5. Petrohawk Hunt Plywood 36-11
6. Petrohawk Tri-State Realty 28-1

### PhiGF-H:

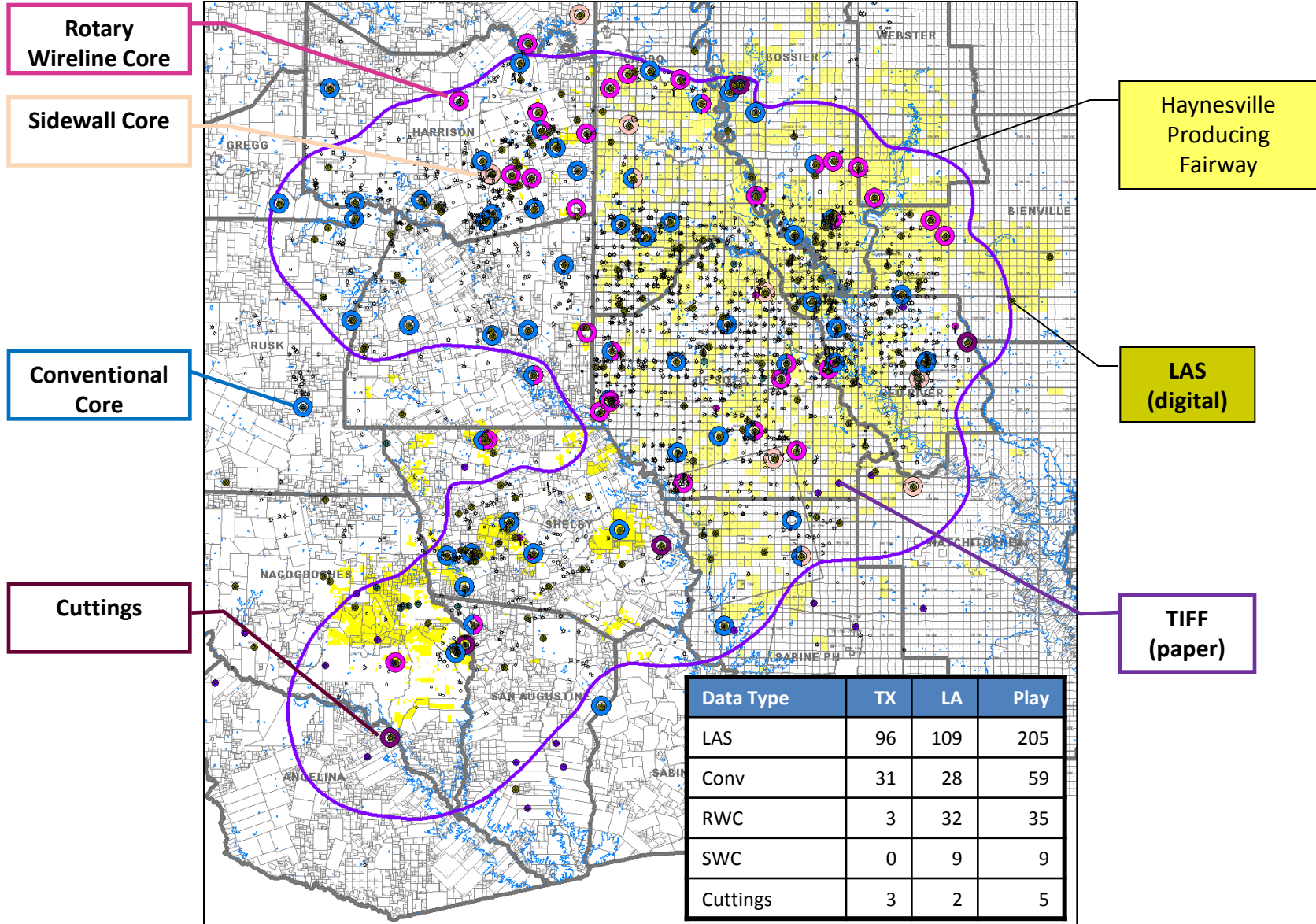
Average gas filled porosity multiplied times the total footage greater than 8% porosity

Example:

$$9\% \times 186' = 16.7' \text{ PhiGF-H}$$

# NW Louisiana Haynesville:

## Importance of a Large Geological Database

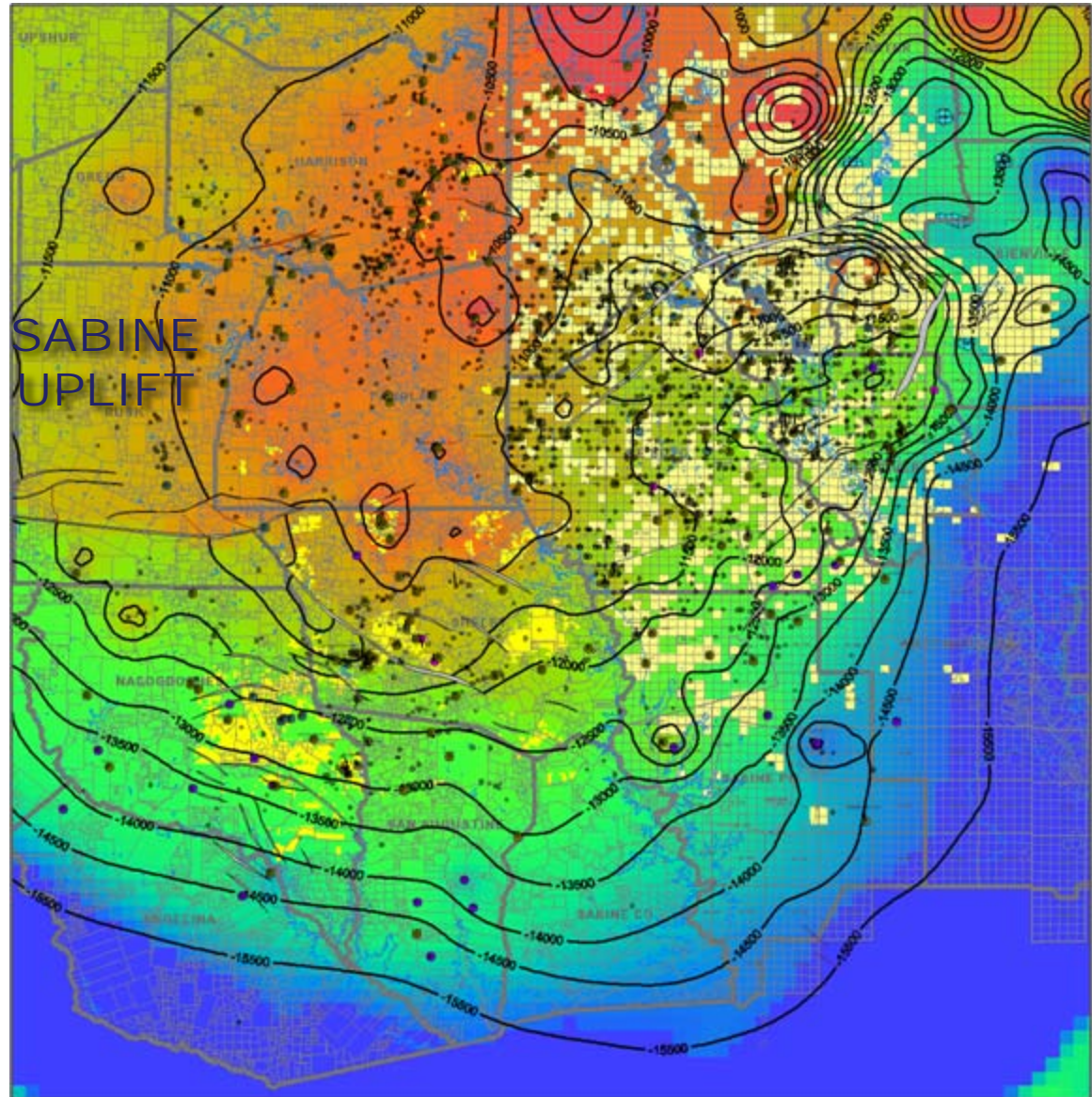




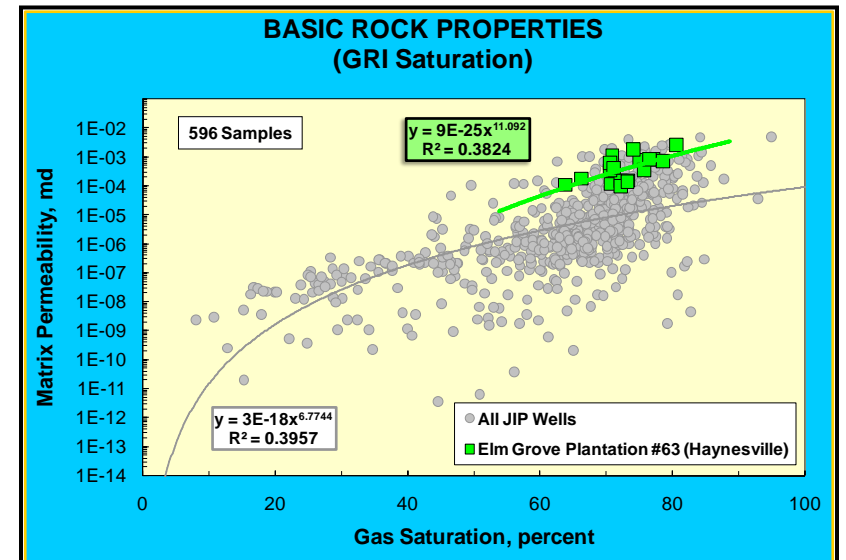
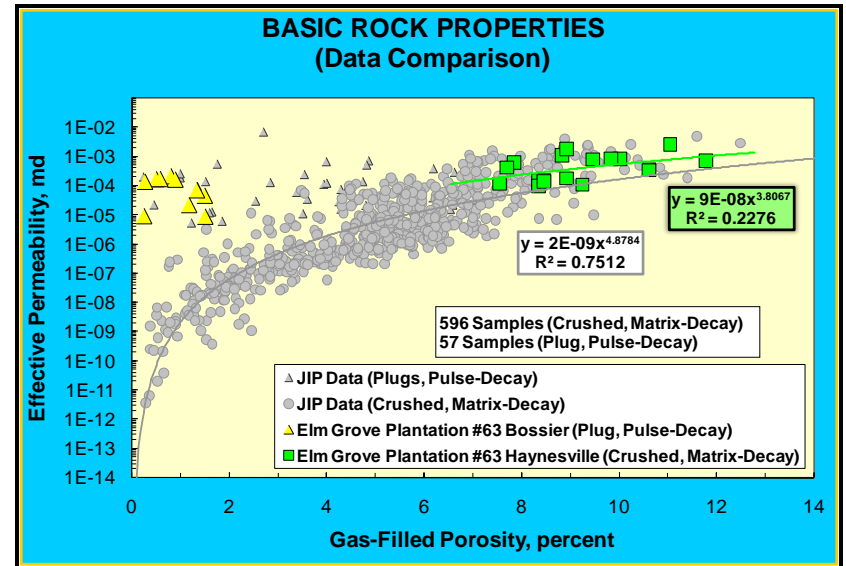
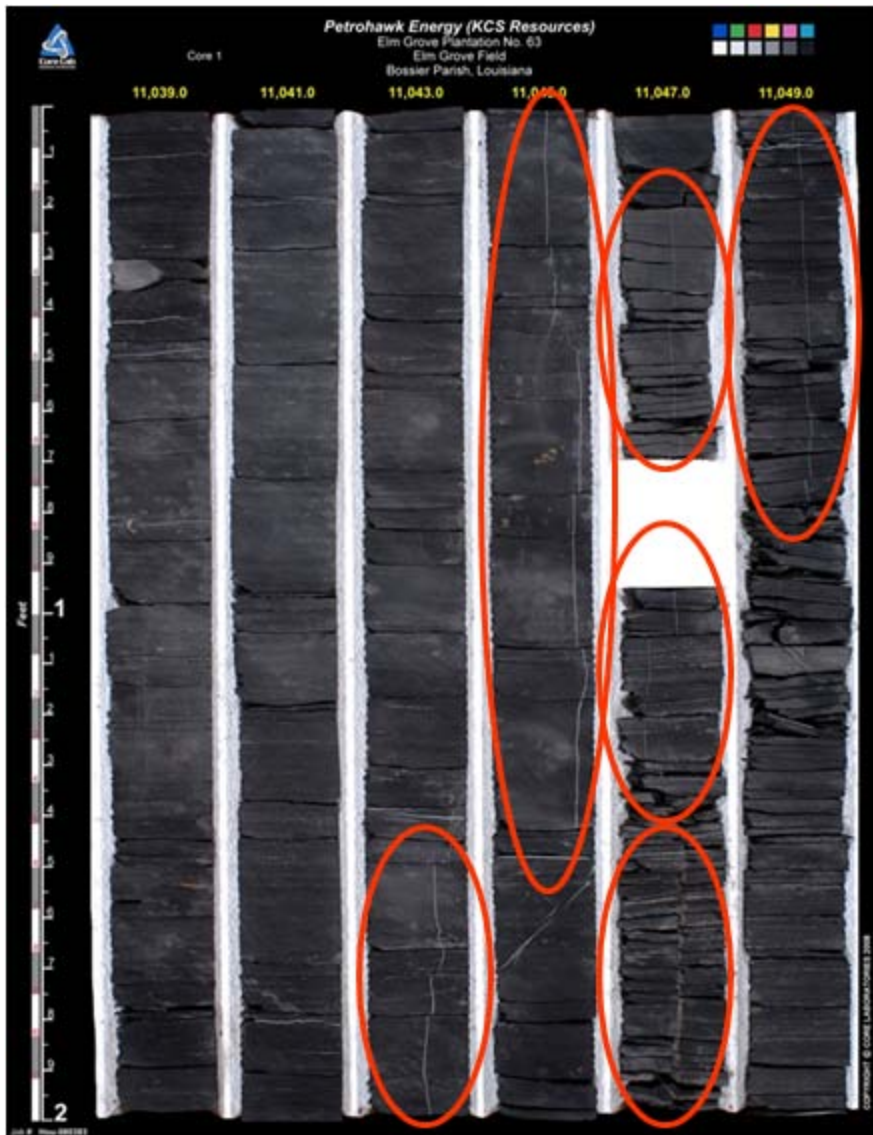
# NW Louisiana Haynesville: Haynesville Structure



- Shallower depths over Harrison and Panola Counties, Texas result in less bottom hole pressure and less EUR
- Core area of NW La and Shelby Trough has higher bottom hole pressure, higher thermal maturity and higher OGIP (original gas in place)

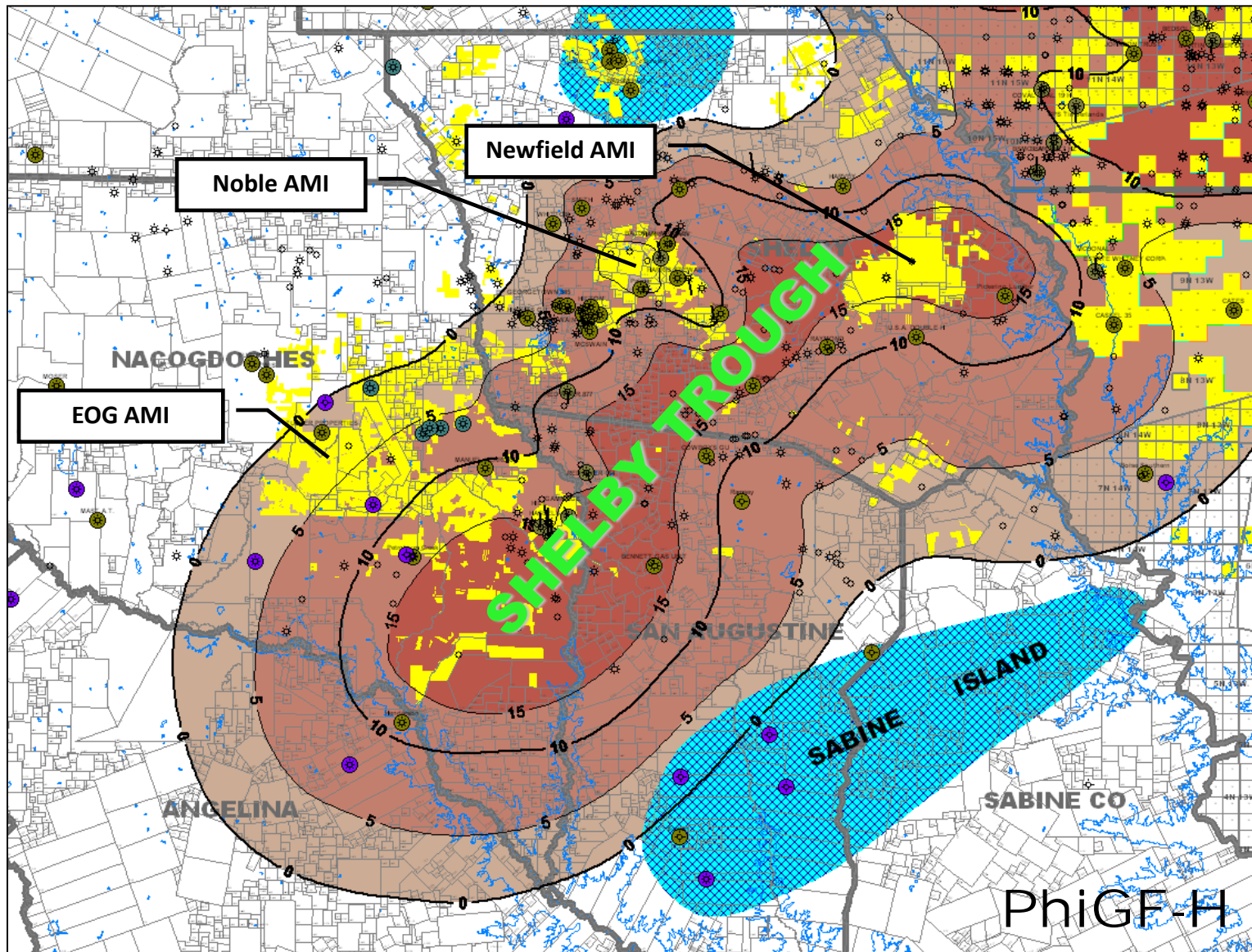


# Haynesville: Petrohawk EGP 63 #1 Core Analysis





# Haynesville SW Extension: Net Isopach Map

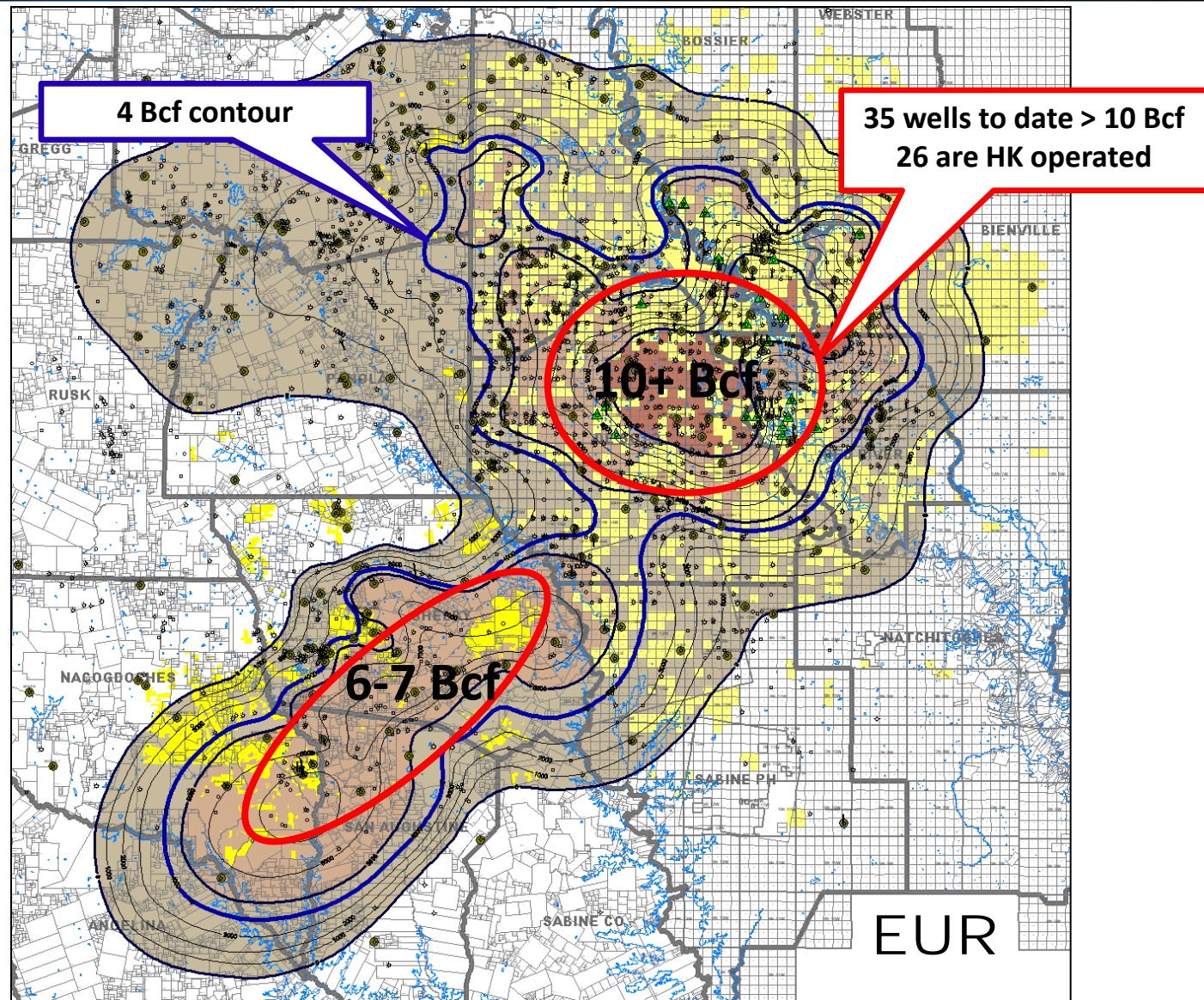




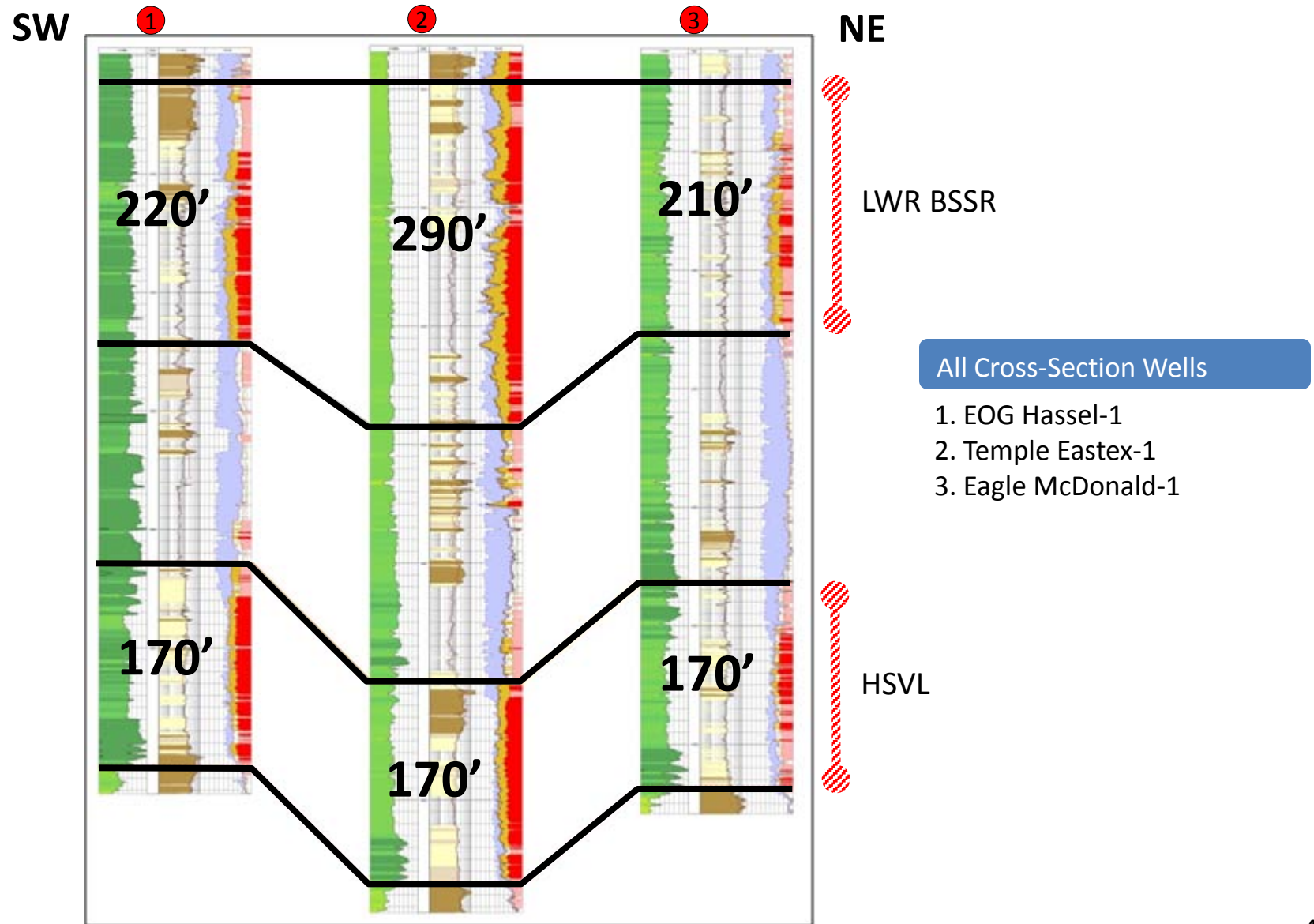
# Haynesville SW Extension: How Good Is It?



- Shelby Trough has good rock quality and PhiH
- Quality does not appear to be as good as NW La
- Data set is still fairly limited, but EUR trends do not indicate a core area as good as NW La.

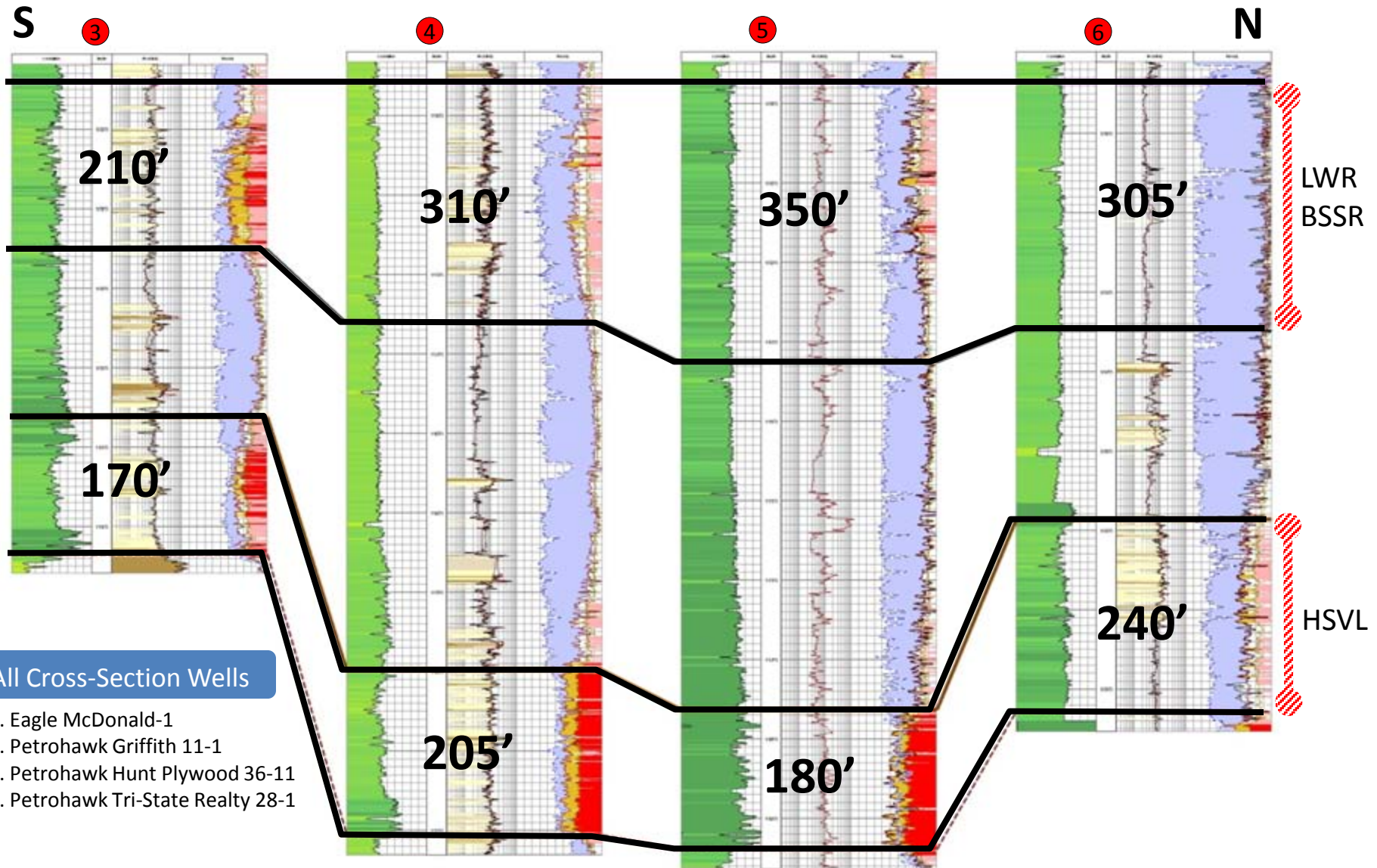


# Haynesville: Shelby Trough Cross-Section





# Haynesville: Louisiana Core Area Cross-Section



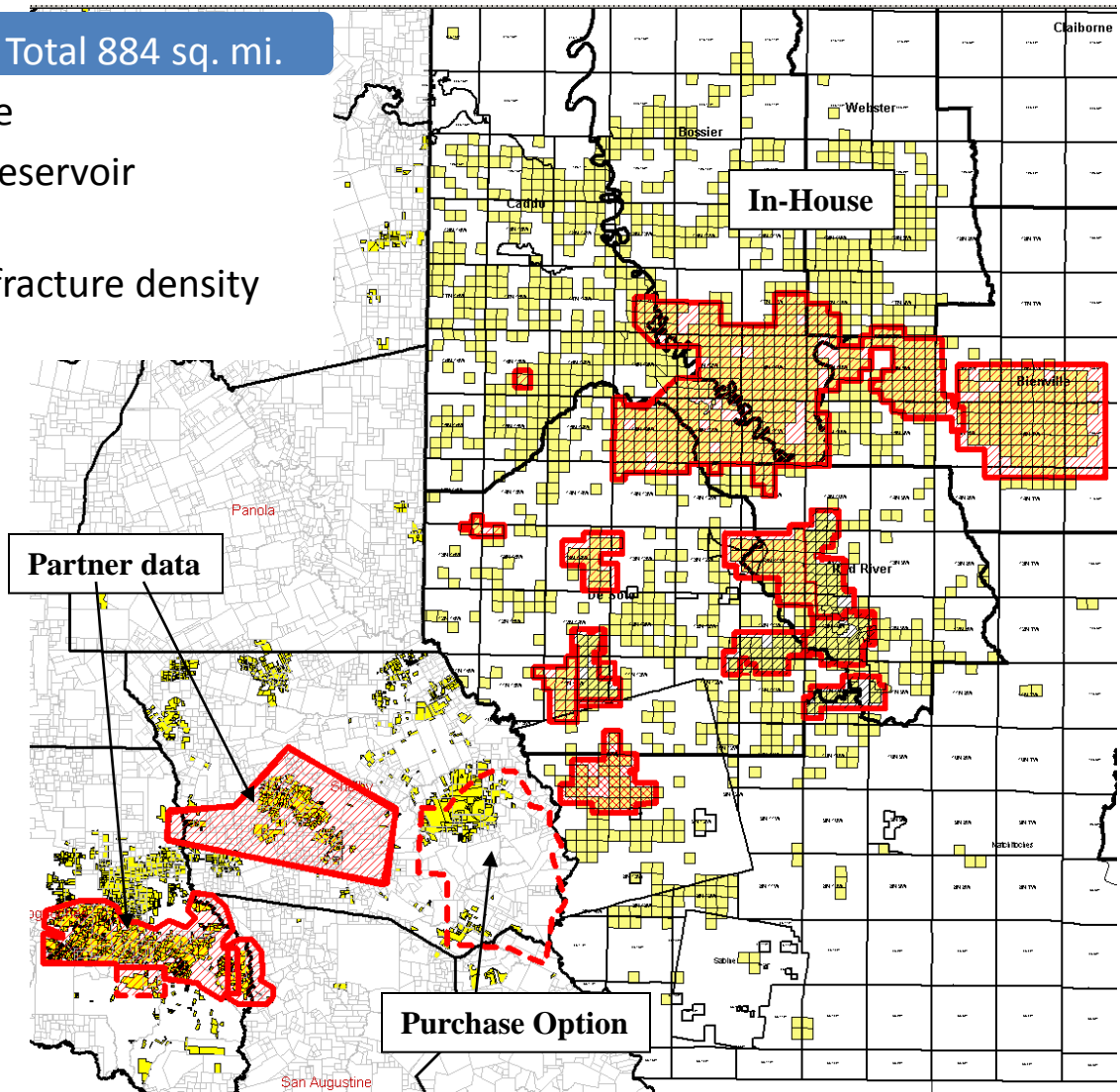


# Haynesville: 3D Seismic Coverage



3D Seismic Coverage by 12/2010 - Total 884 sq. mi.

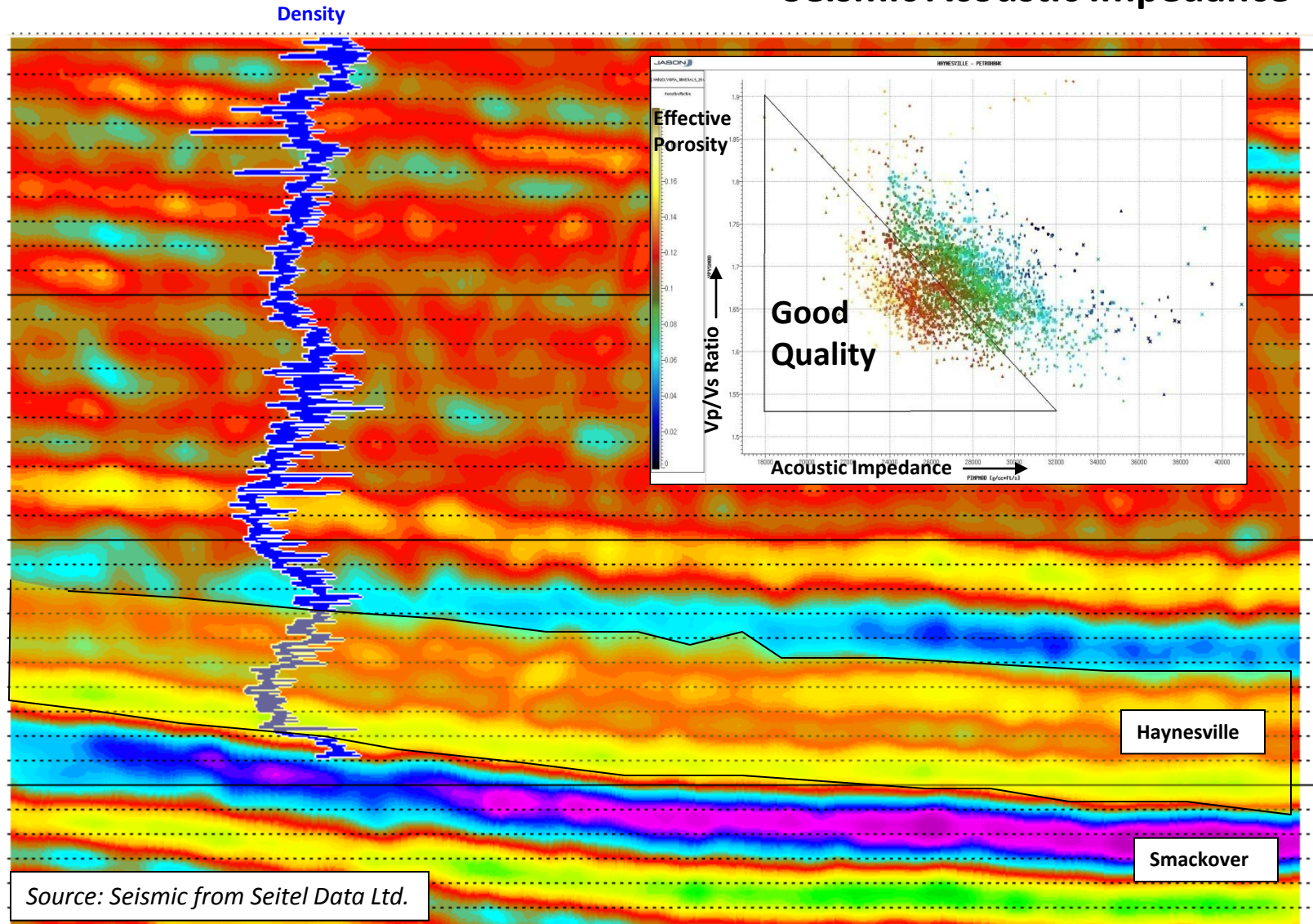
- 3D critical to mapping structure
- 3D inversions will help define reservoir properties
- 3D fracture analysis can show fracture density



# Haynesville: Defining the Core with 3D



## Seismic Acoustic Impedance



# Haynesville: Drilling Down the Well Cost

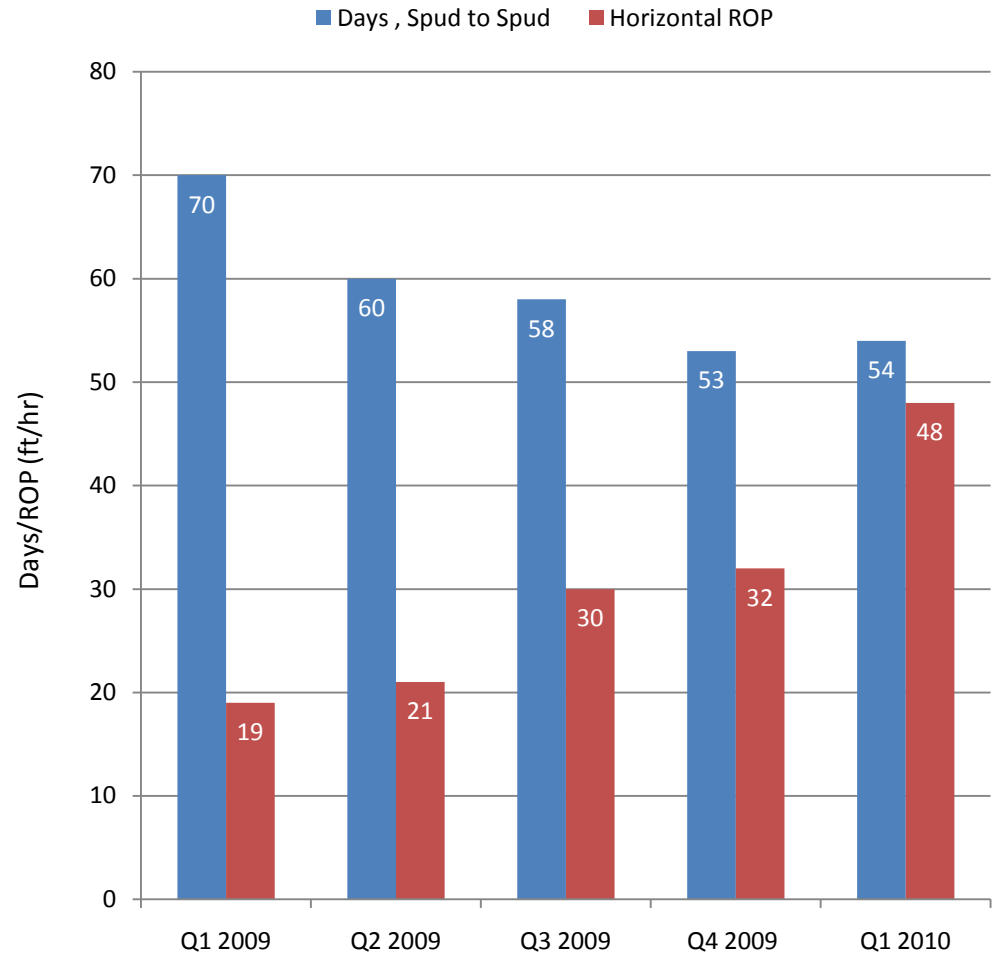


## ■ Optimization

- Continued gains in horizontal rate of penetration (ROP)
- Spud to spud days decreasing through 4Q09
- 1Q10 spud to spud impacted by:
  - 5 rig startups Dec-Jan with long mobilization time
  - Location of wells in deeper areas
  - 50% of wells custom drilled to maximize recovery (back build or build & turn)

## ■ Fastest well to date for HK

- 23 days to TD (30 days S-S)
- 4 wells to TD in <30 days





# Tactics for Improving Performance

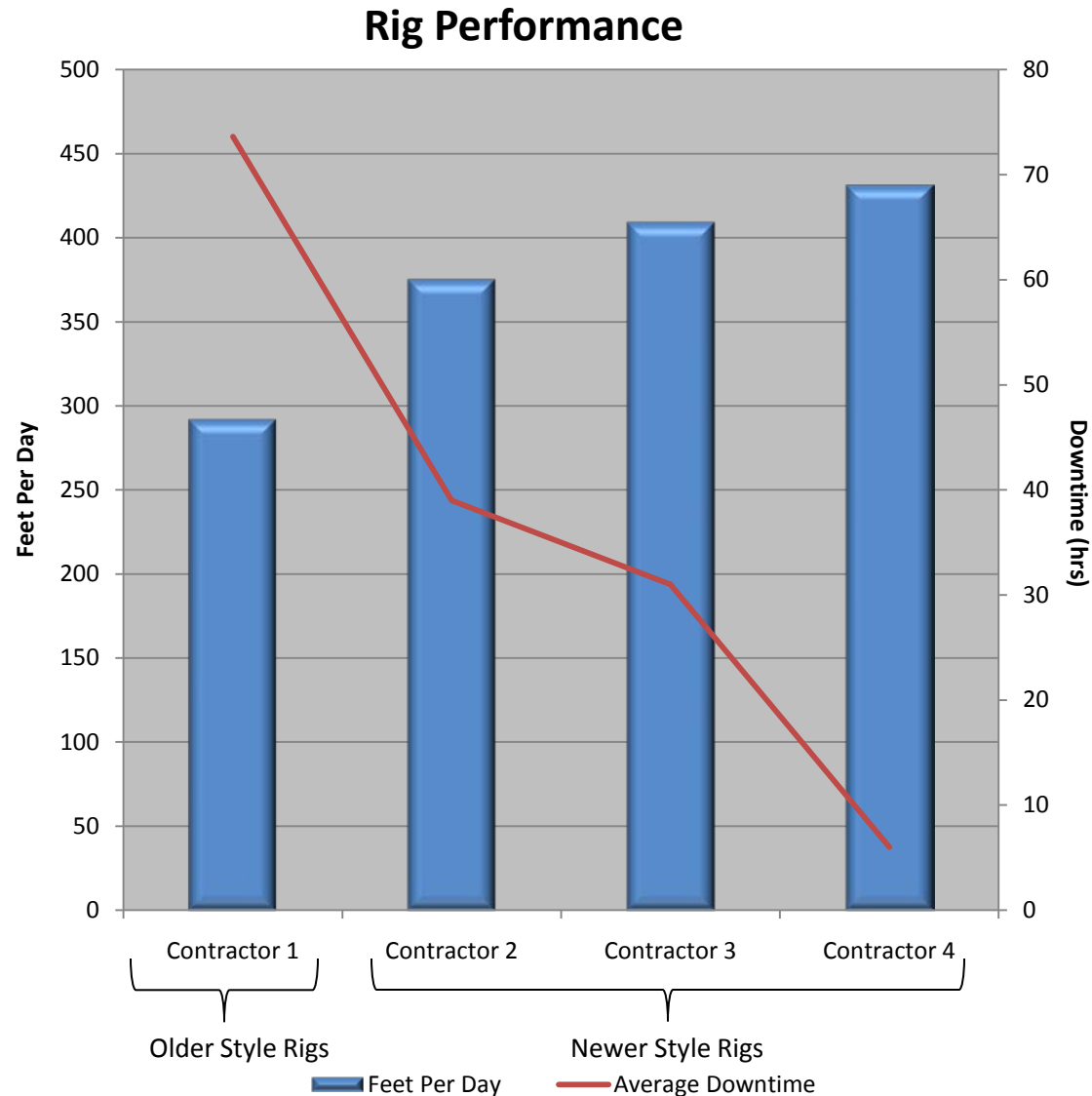


- Eliminated open hole logging in intermediate section
- Experimenting with new technology tools
  - Hevi-Pac down hole bit stabilization – fastest 9-7/8" ROP in area
  - Coordinated design and deployment of +5 new bits
  - Tested a variety of new motor components and configurations
- Reduced hole size for increased ROP
  - Downsize from 9-7/8" to 8-3/4"
  - Observed faster ROP in most areas
  - Fewer bits and fewer bit trips further reducing time
  - Produce less cuttings for haul off
- Continue to realize gains from modern rig fleet

# Haynesville Rig Performance Through Time



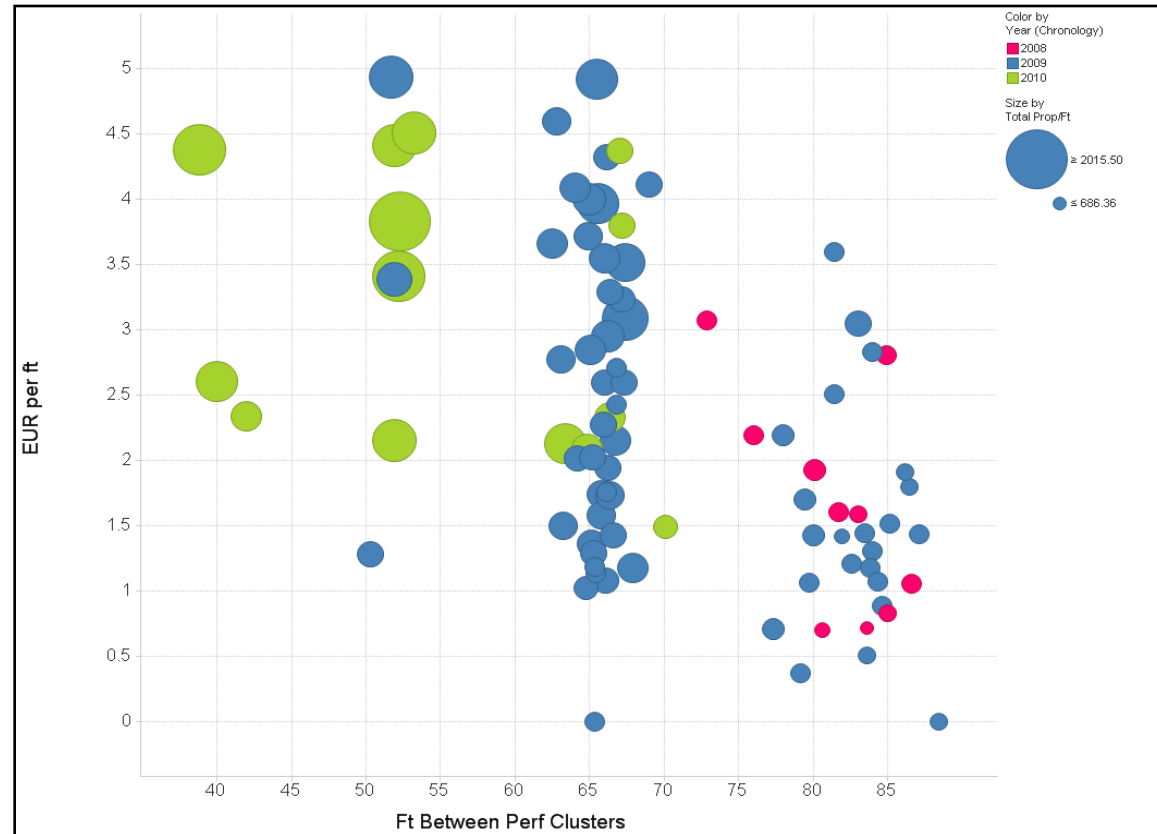
- New rigs do perform better
  - Clear advantage in ROP
  - Downtime reduced significantly
  - Consistent across all contractors
- Implemented metrics program
  - Measure and track key performance indices
  - Able to sort by rig, contractor, superintendent, and engineer
    - Focus where needed
    - Identify best practices
    - Upgrade resources where underperforming
- Other key advantages of rigs
  - Able to eliminate spills through design
  - Quiet for urban drilling environments
  - Help attract and retain best workers



# Changing the Recipe Through Time: EUR/foot vs. Feet Between Perf Clusters



- 2008 Fracs
  - 80-85 ft between perf clusters
  - 700-900 lbs proppant per foot
- 2009 Fracs
  - 50-85 ft between perf clusters
  - 800-1600 lbs proppant per foot
- 2010 Fracs
  - 40-70 ft between perf clusters
  - 1000-2000 lbs proppant per foot
- Future Fracs
  - Calibrated to be area specific





# Changing the Recipe Through Time: EUR/foot vs Total Proppant/foot



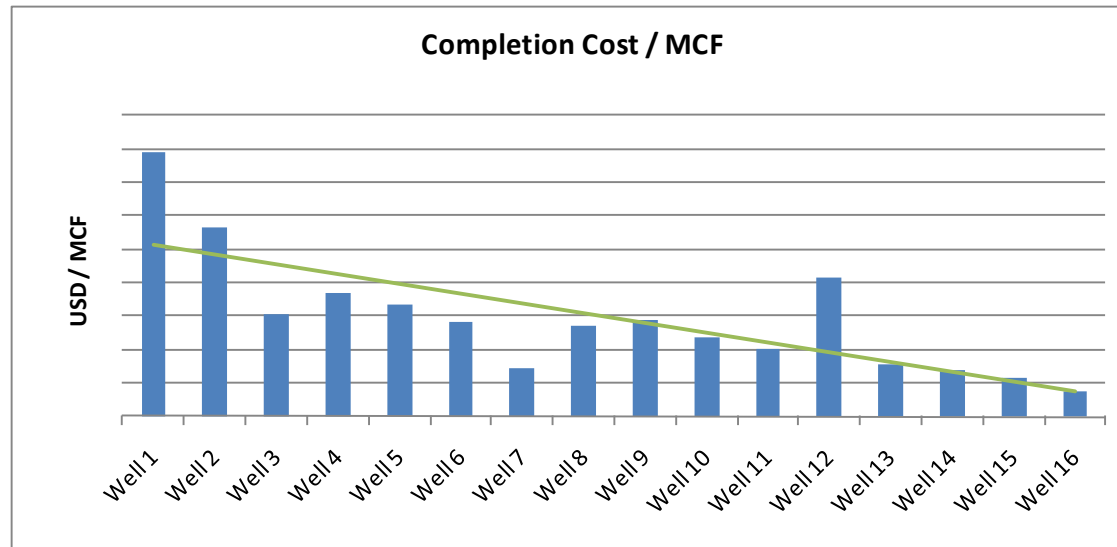
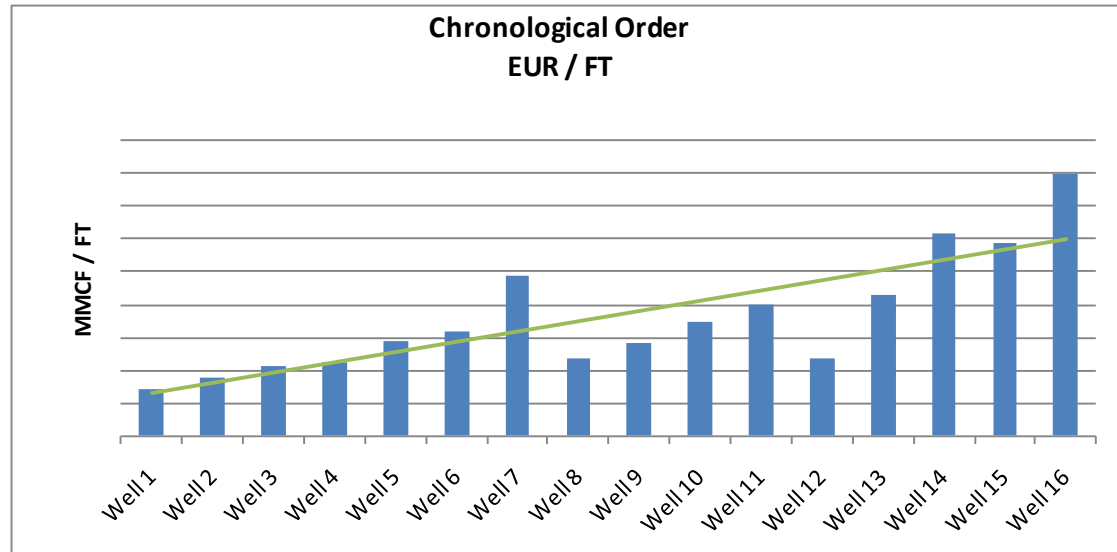
- 2008 Fracs
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  - 800-1600 lbs proppant per foot
- 2010 Fracs
  - 40-70 ft between perf clusters
  - 1000-2000 lbs proppant per foot
- Future Fracs
  - Calibrated to be area specific



# Haynesville: Performance Enhancements 2009



- Improved well performance
  - 400+% growth in EUR / FT
  - Producing more gas / well
  - Tie geology to stimulation design
  - Optimizing by area
- Economic improvements
  - 90% reduction per MCF cost
  - Pricing up ~\$1.0 MM for same job versus 2009
- Future enhancements
  - Test proppant sizes
  - Optimize volumes of water/prop
    - Maintain well performance, lower cost
  - Increase stage length
    - Fewer stages / well
  - New well design



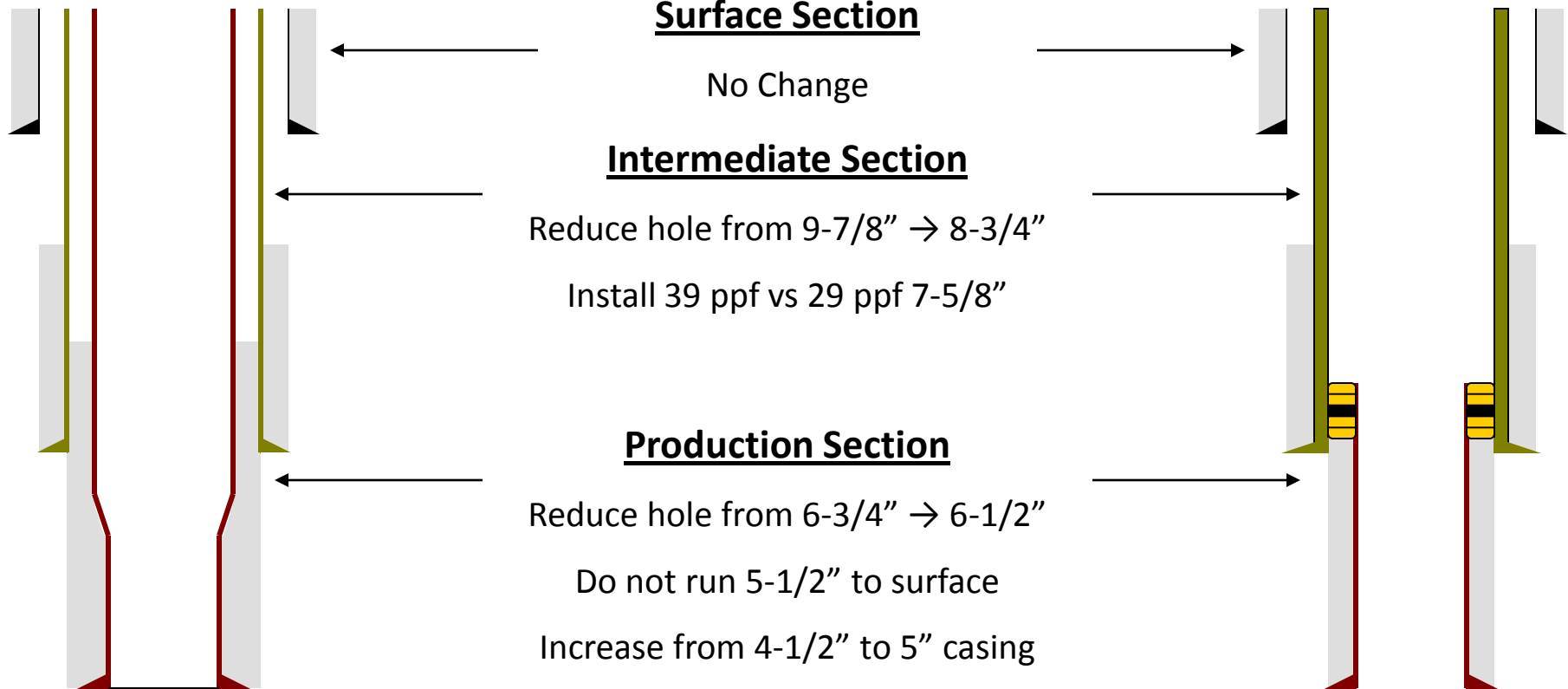


# New Well Design Concept



- Stronger 7-5/8" intermediate casing
- Frac down / produce up production liner and intermediate casing
- Lower stimulation pressures
  - Reduce equipment failures and resulting downtime
  - Open door for additional stimulation providers and competition
- Associates well with our restricted rate program
  - Delay well cleanout until future remediation becomes necessary
  - More economic by combining two operations later in life
- Potential for reducing AFE by \$0.5 - \$1.0 mm

# Well Design: Current vs Concept



Frac under 10,000 psi down 7-5/8" X 5"

Cheaper surface rental equipment


More available stimulation service providers

Ultimately lower well cost



# Haynesville: AFE Breakdown



PETROHAWK ENERGY CORPORATION											
and all wholly-owned subsidiaries											
AFE COST ESTIMATE											
OPERATOR						AFE NO.					
Petrohawk Operating Company						110DC95641					
WELL NAME				PROPOSED FORMATION		DATE					
Jestma LLC 14H #1				Haynesville Shale		May 12, 2010					
FIELD/PROSPECT		SURFACE LOCATION		BOTTOM HOLE LOCATION		CLASSIFICATION					
Elm Grove		204' FSL & 1065' FEL Sec 11		250' FSL & 1140' FEL		Development					
COUNTY/PARISH		STATE		LEGAL DESCRIPTION		PROPOSED MD		TVD		LATERAL LENGTH	
Bossier		Louisiana		Sec 14-16N-11W		16,181		11,313		4,791	
INTANGIBLES					DRILLING		COMPLETION				
					ACCT/SUB		ACCT/SUB		TOTAL		
					AMOUNT		AMOUNT				
DAYS					RATE		RATE				
Drilling Rig					42.0		22,600		904,000		
Completion Rig					06		70,000		350,000		
Rig Mobilization/Demobilization					07		30,000		70,000		
Permitting/Surveying/Staking					08		350,000		30,000		
Location/ Roads/ Pits/etc.					09		140,000		380,000		
Fuel/Water/Power/Lubricants					10		10,000		455,000		
Overhead					11		220,600		15,000		
Drilling Mud/Completion Fluids/Chemicals					12		170,000		3,000		
Cement & Cement Service					13		0		220,600		
Coring/DST					14		2,840,000		170,000		
Stimulation/Sand Control					15		30,000		0		
Production Testing					16		214,000		2,840,000		
Directional Drilling					17		0		30,000		
Mud Logging					18		20,000		214,000		
Open Hole Wireline Service					19		0		0		
Cased Hole Wireline Service					20		86,000		20,000		
Transportation/Trucking					21		82,500		227,000		
Bits/Stabilizers/Reamers etc.					22		92,000		15,000		
Surface Rentals					23		63,000		0		
Downhole Rentals					24		208,000		82,500		
Supervision-Engineering/Geology/Consulting					25		190,000		272,000		
Contract Services/Labor/Welding					26		5,400		93,000		
Insurance					29		31,500		328,000		
Environmental/Pit Disposal/Safety/Regulatory Compliance					30		153,100		385,000		
Contingencies/Misc Costs 5%					31		175,000		5,400		
Land/Legal/Damages							10.840		99,000		
							FACILITIES		373,300		
Construction Contract Services/Labor/Welding							200,000		175,000		
Wells Killed by Frac - Water Hauling							0		0		
Wells Killed by Frac - CTU/Rig							0		0		
Wells Killed by Frac - Lift							0		0		
Wells Killed by Frac - Flowback/Labor							0		0		
TOTAL INTANGIBLES					\$3,215,100		\$4,824,700		\$8,039,800		

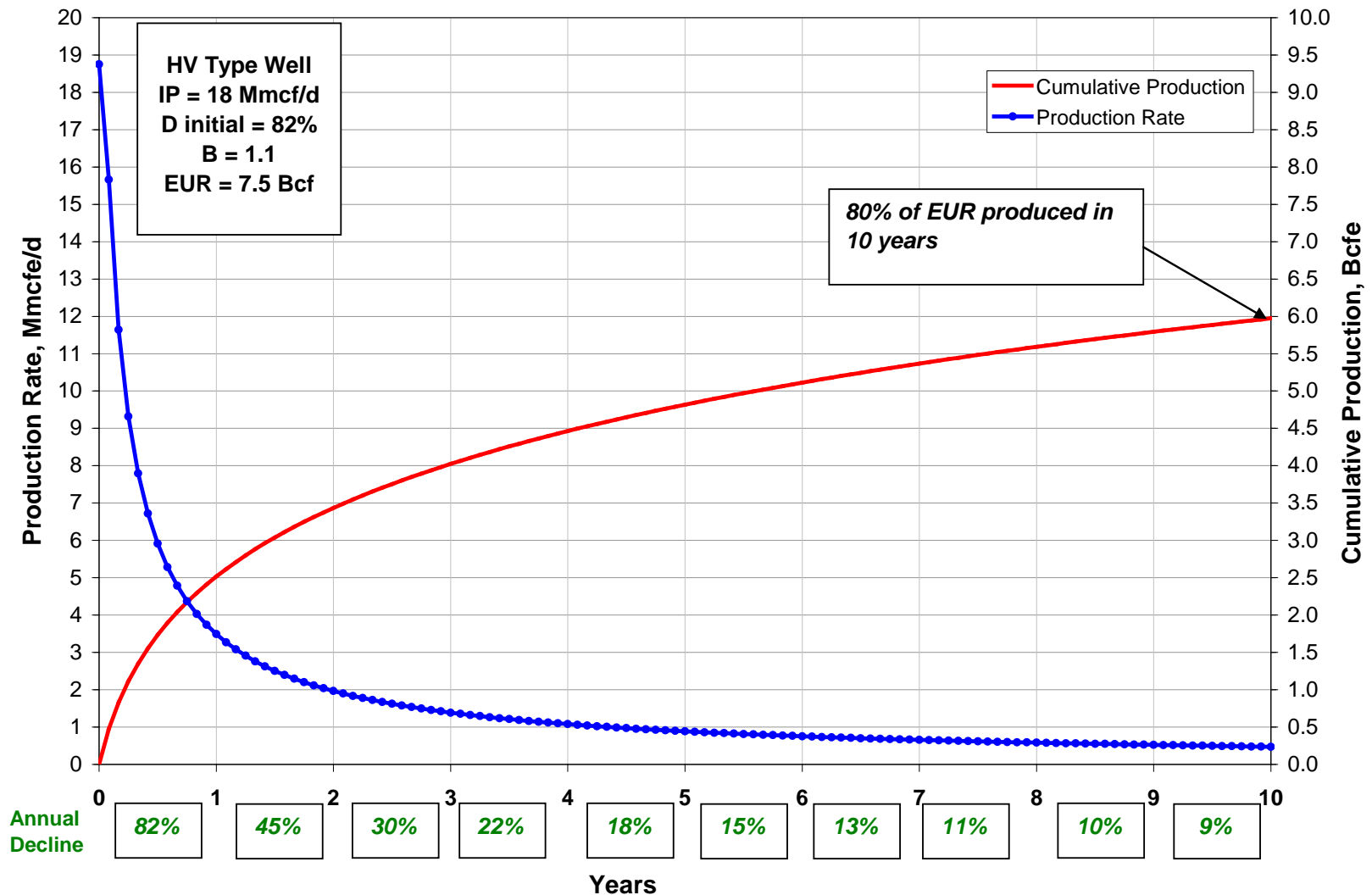
# Haynesville: AFE Breakdown



TANGIBLES					ACCT/SUB	AMOUNT	ACCT/SUB	AMOUNT	TOTAL
	LENGTH	SIZE	WEIGHT	GRADE	10.835		10.845		
Conductor	80	16.0			02	10,000			10,000
Surface	2,150	10.75	40.5	J-55	03	47,600			47,600
Protection	10,300	7.625	29.7	P-110	04	277,600			277,600
Prod/Liner	5,591	4.5	15.1	P-110	06	107,000			107,000
Prod/Liner	10,590	5.5	23.0	P-110	06	286,600			286,600
Tubing							07	125,600	125,600
Packers/Other Subsurface Equipment					09	20,000	09	25,000	45,000
Wellhead/Tree					12	50,000			50,000
							10.825	FACILITIES	0
Flowline							08	36,000	36,000
Artificial Lift							11	0	0
Production Tree							12	65,000	65,000
Meters / Production Controls							13	18,000	18,000
Separators							14	30,000	30,000
Heaters / Treaters / Dehy							15	35,000	35,000
Tanks							16	45,000	45,000
Valves / Manifolds / Fittings / Connections							17	90,000	90,000
Compressor and Pumping Equipment							19	0	0
Contingencies/Misc Costs			5%		20	39,900	20	33,500	73,400
TOTAL TANGIBLES						\$838,700		\$503,100	\$1,341,800
TOTAL WELL COST						\$4,053,800		\$5,327,800	\$9,381,600



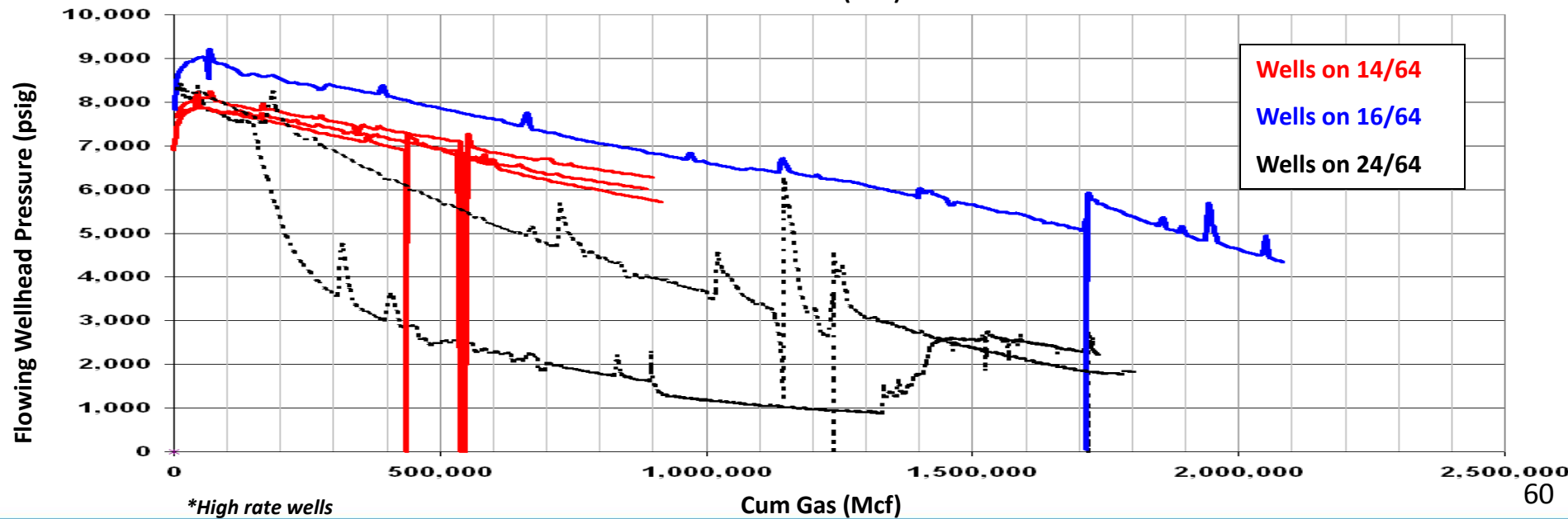
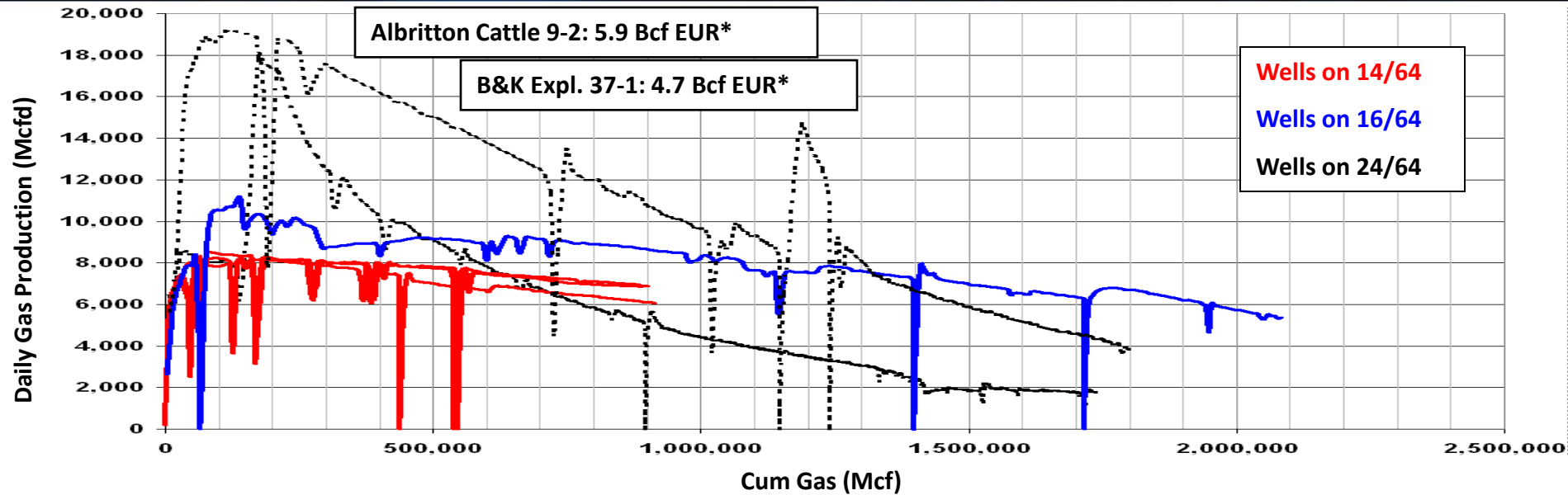
# Haynesville: Original 7.5 Bcf Type Curve



*\*Petrohawk's estimated type curve for wells produced typically on a 24/64" choke*

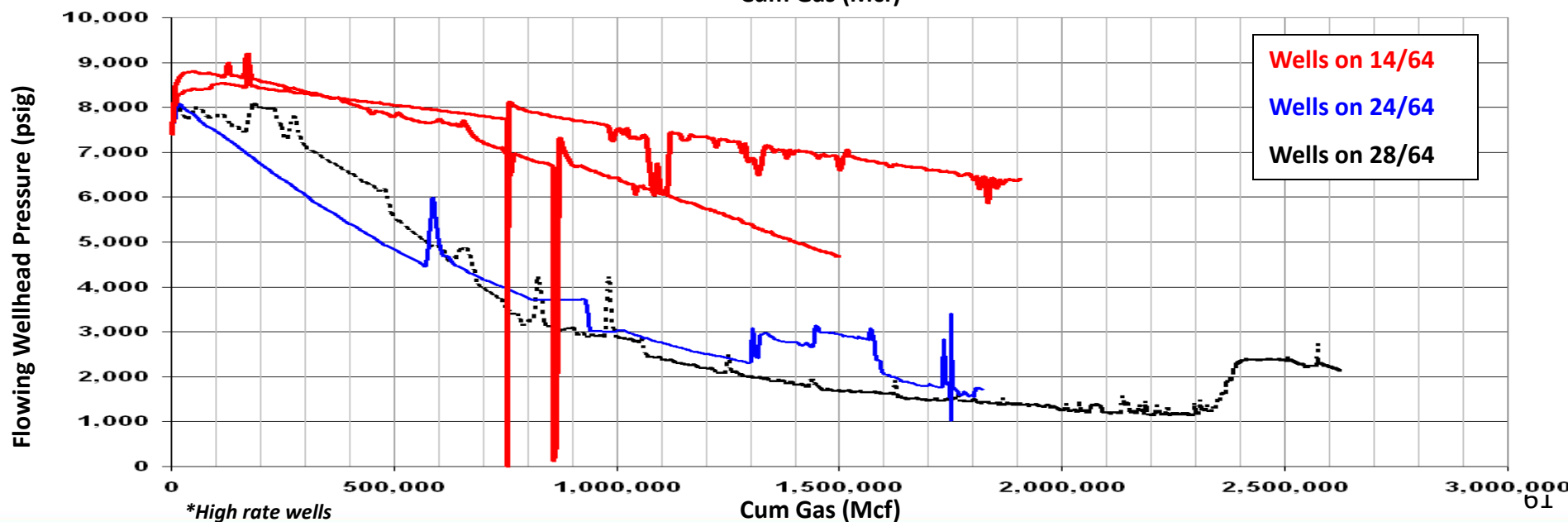
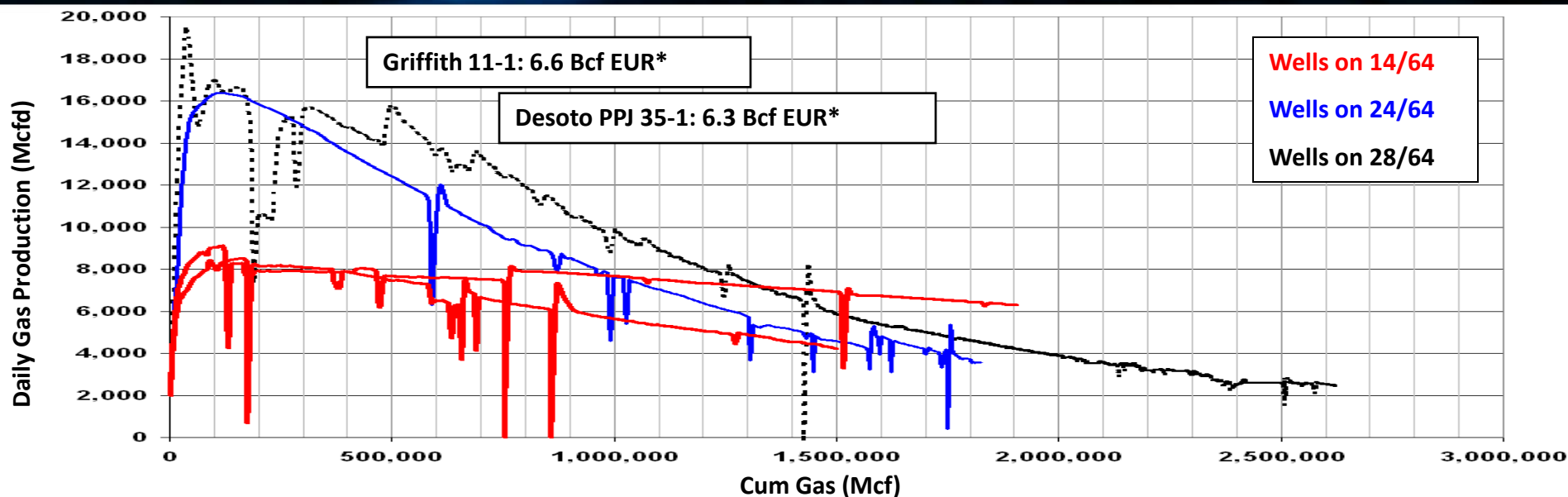
- Risks associated with high rate production practices
  - Embedment
  - Fines migration
  - Proppant deformation
- Benefits from utilizing restricted rate production practices
  - Decrease 1st year decline from ~80-85% to ~45-50%
  - Decrease base PDP decline
  - More stable production growth
  - Potentially a significant increase in EUR which offsets the slightly diminished PV as a result of deferred production
  - Deferral of capital necessary for field wide compression
  - Decrease in amine plant capacity required as a result of stabilizing production growth

# Haynesville: 4-6 Bcf Restricted Rate Data

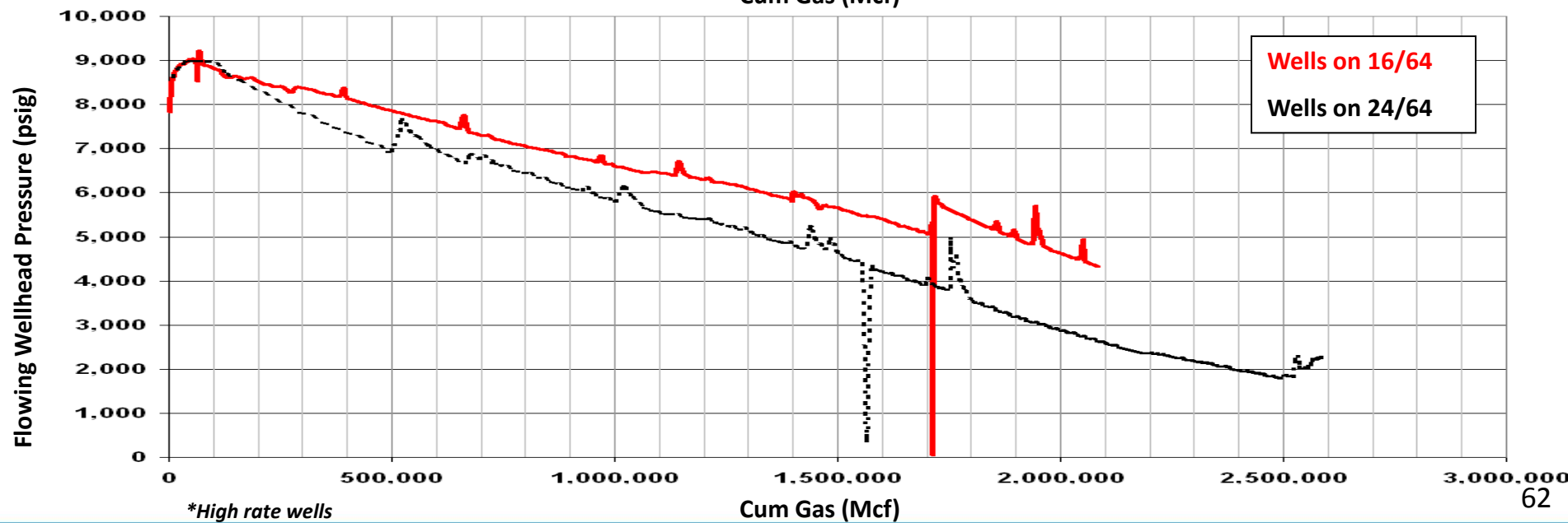
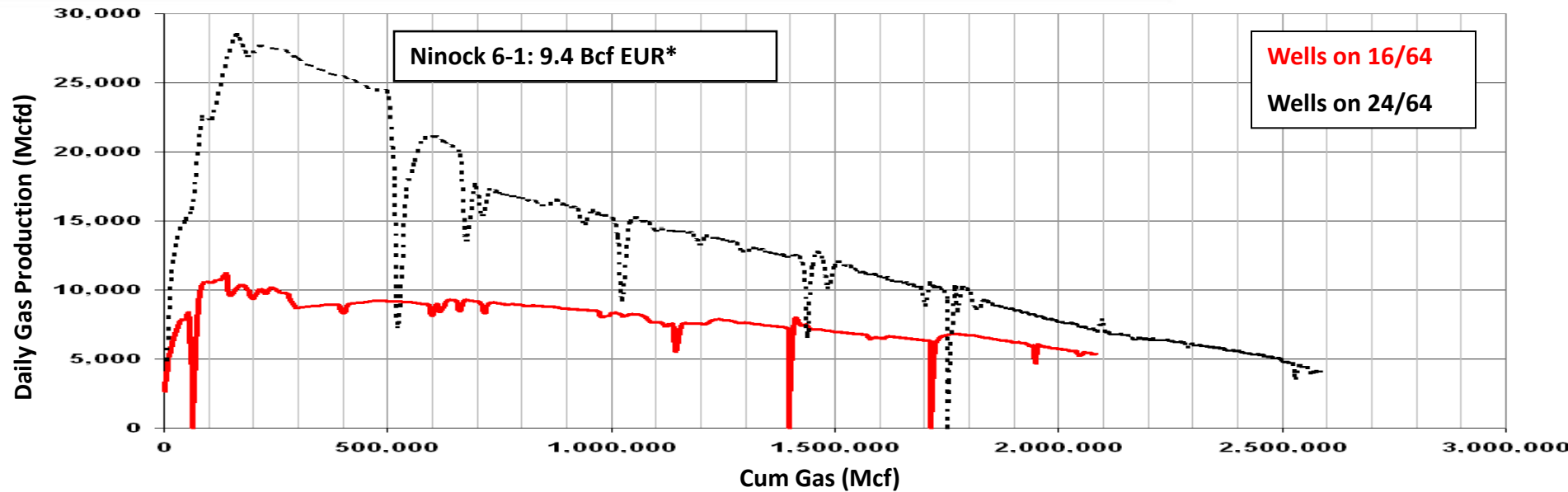




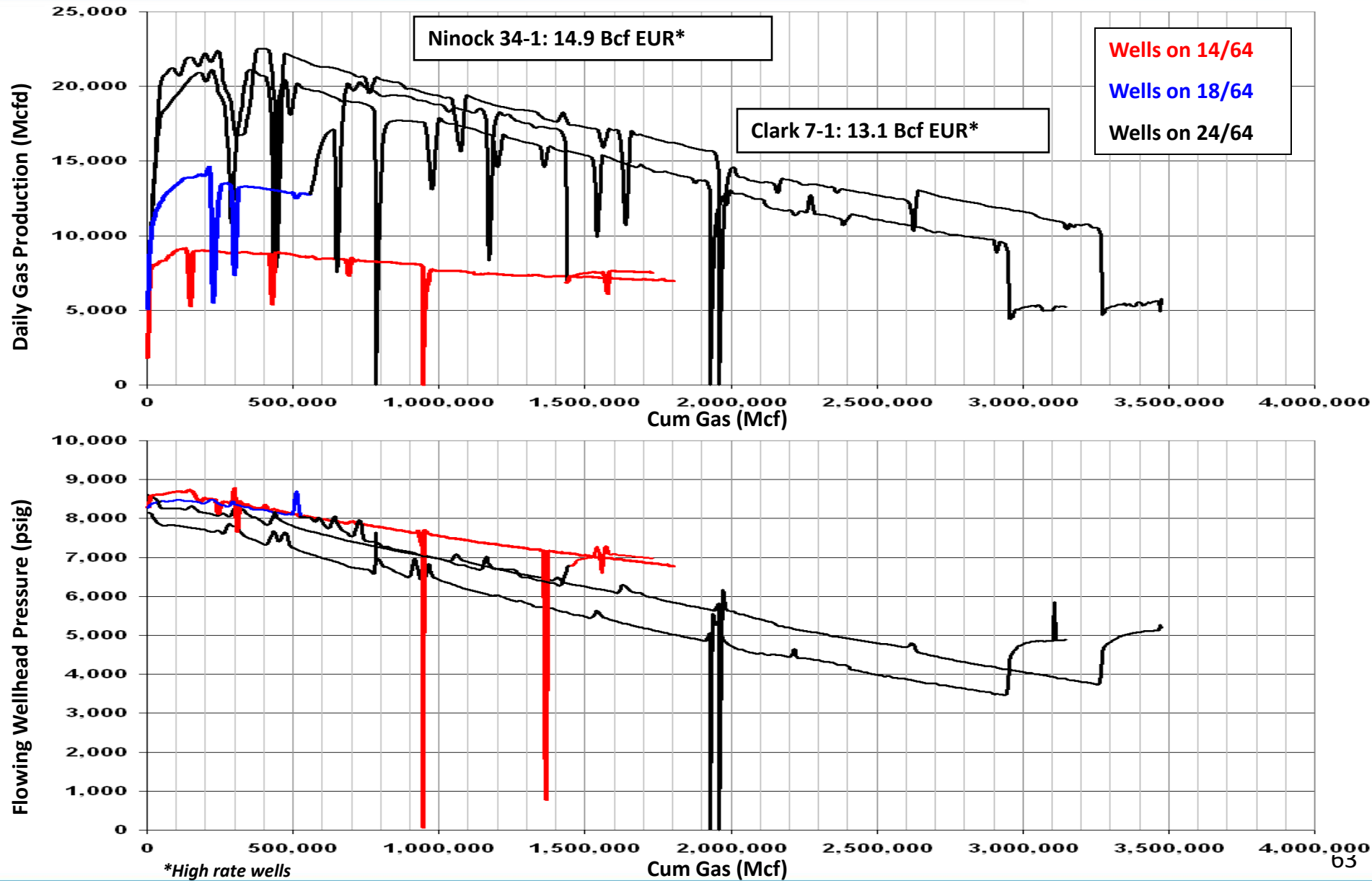
# Haynesville: 6-8 Bcf Restricted Rate Data



# Haynesville: 8-10 Bcf Restricted Rate Data



# Haynesville: 10+ Bcf Restricted Rate Data

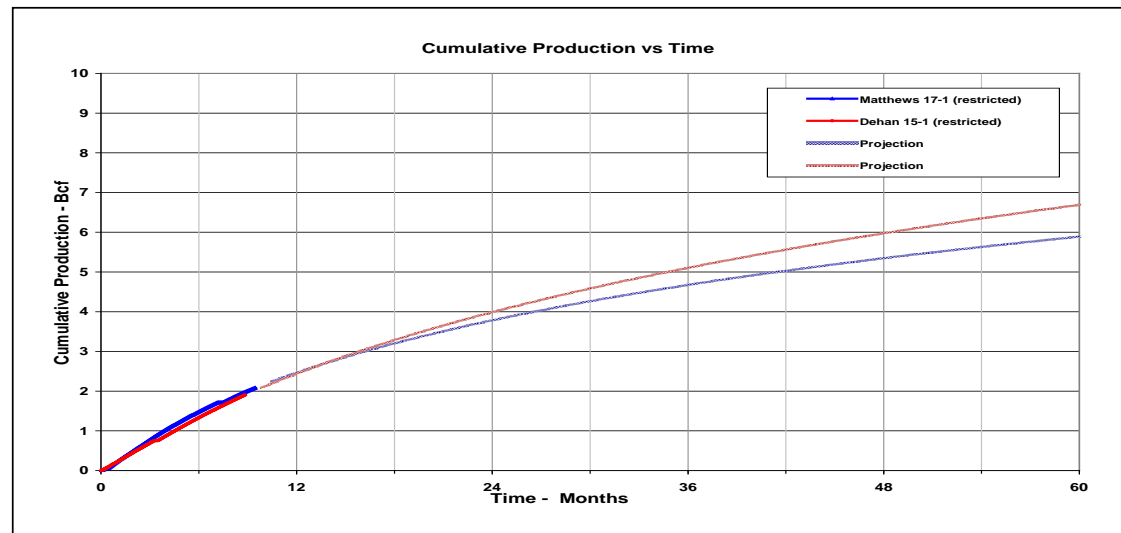
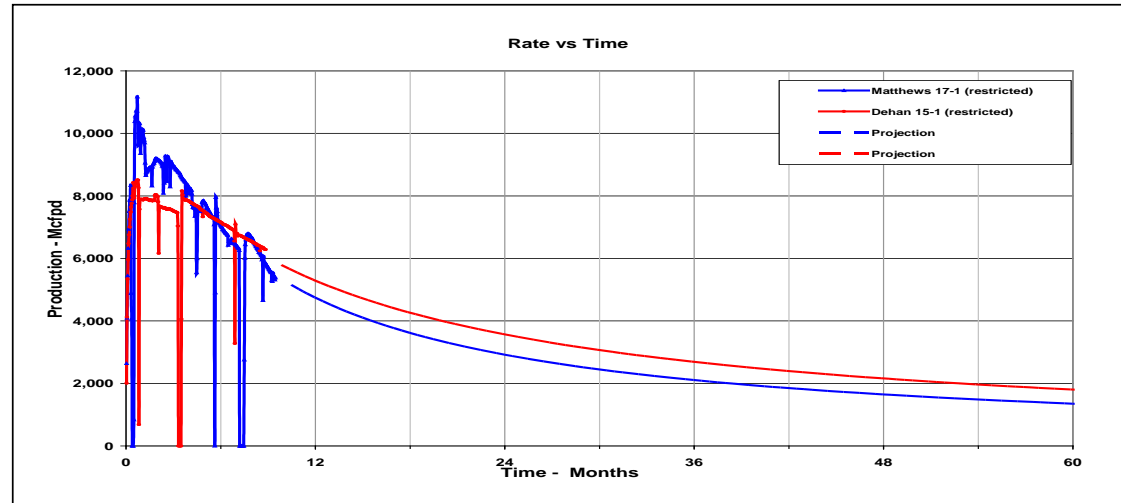




# Haynesville: Forecasting Restricted Rate Wells



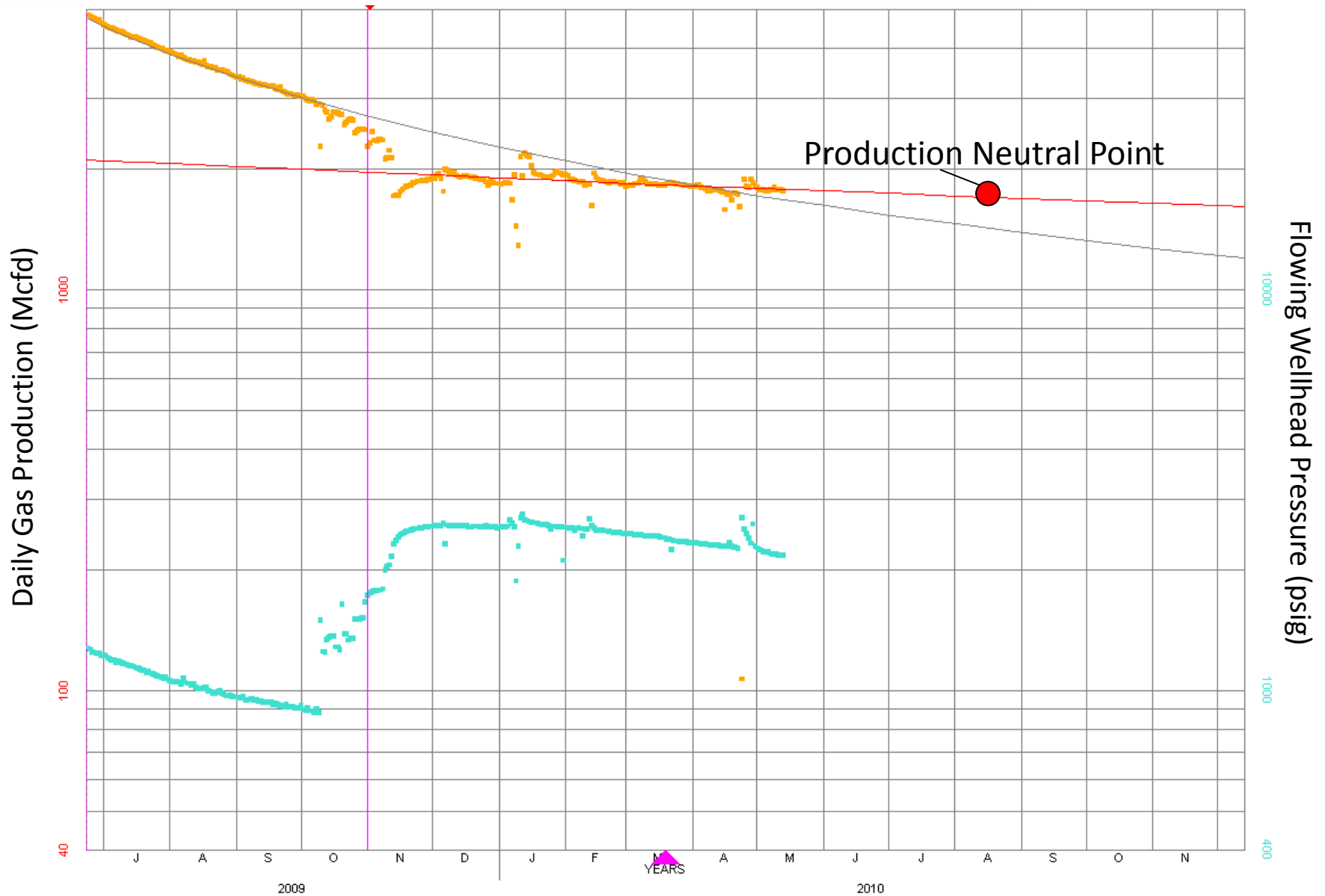
- Two oldest restricted rate wells (~9 months)
- High rate wells in the vicinity of these wells are ~6-8 Bcf EUR
- Current forecast yields ~6-7 Bcf produced in 5 years





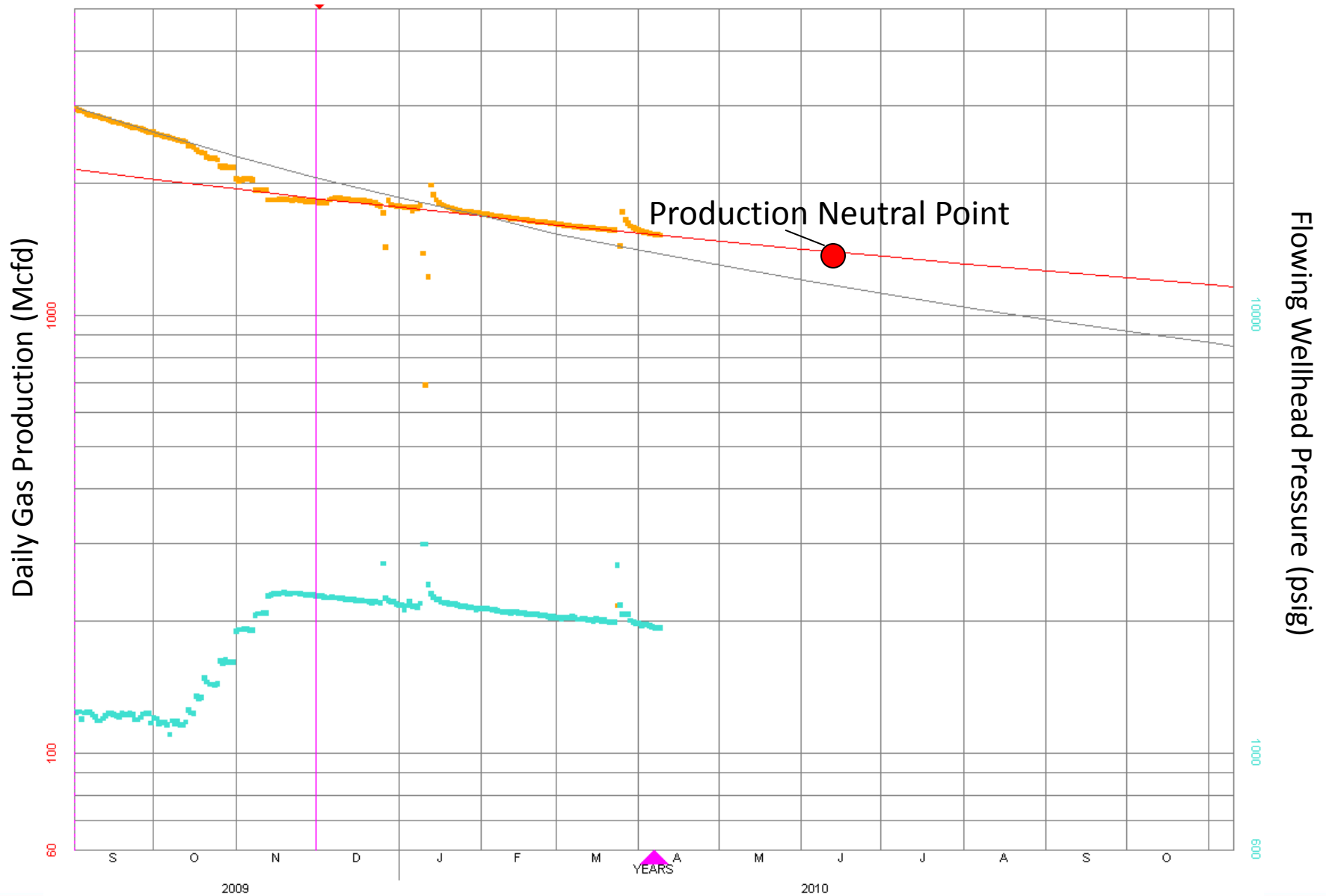
- What more can be learned?
  - Optimize each area of the field with the appropriate rate and flowing casing / tubing pressure
  
- Not only applicable to initial production, but also to existing wells
  - Restricting existing wells further delays the need for field-wide compression
  - Stabilizes base PDP decline
  - Could also result in higher EURs?

# Haynesville: B & K Exploration #1H (4-6 Zone Well)





# Haynesville: Hutchinson 9 #5H (6-8 Zone Well)





- Continued geological interpretation to better understand the distribution of rock quality
- Utilizing regional 3D data sets that, in conjunction with the geological knowledge, will more accurately identify areas of high quality reservoir
- Continued improvement in the drilling efficiencies
- Continued experimentation of the completion “recipe”
- Planning Group strategies:
  - Reservoir modeling to better understand drainage
  - Artificial lift
  - Pad drilling
  - Additional study of production optimization practices

# Resource Potential – Haynesville



## Haynesville

15.4 Tcfe

Net Acres =  
338,000

Spacing = 80

Locations =  
4,225

EUR/well = 7.5  
Bcf

Net revenue  
interest = 75%

Risk Factor =  
65%

Bossier

Hawksville

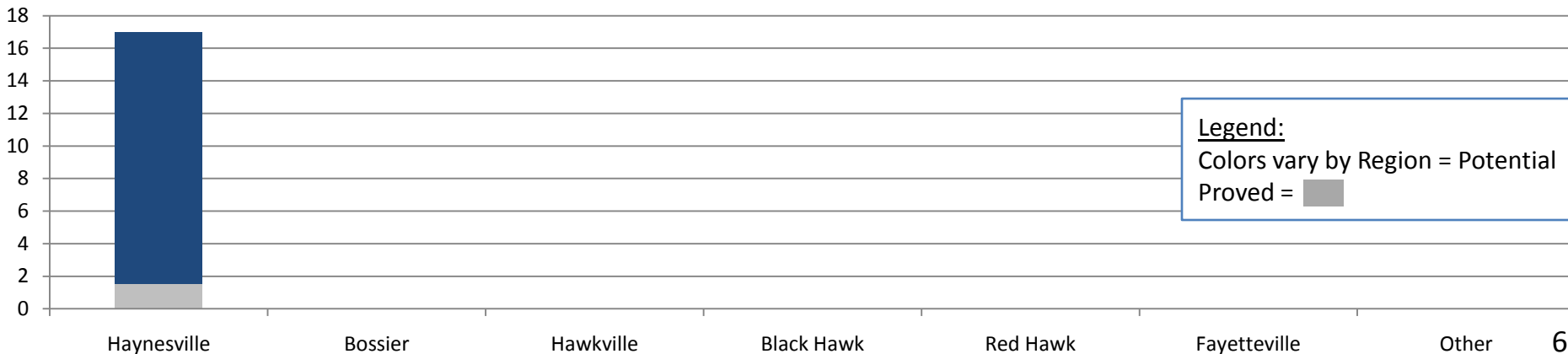
Black Hawk

Red Hawk

Fayetteville

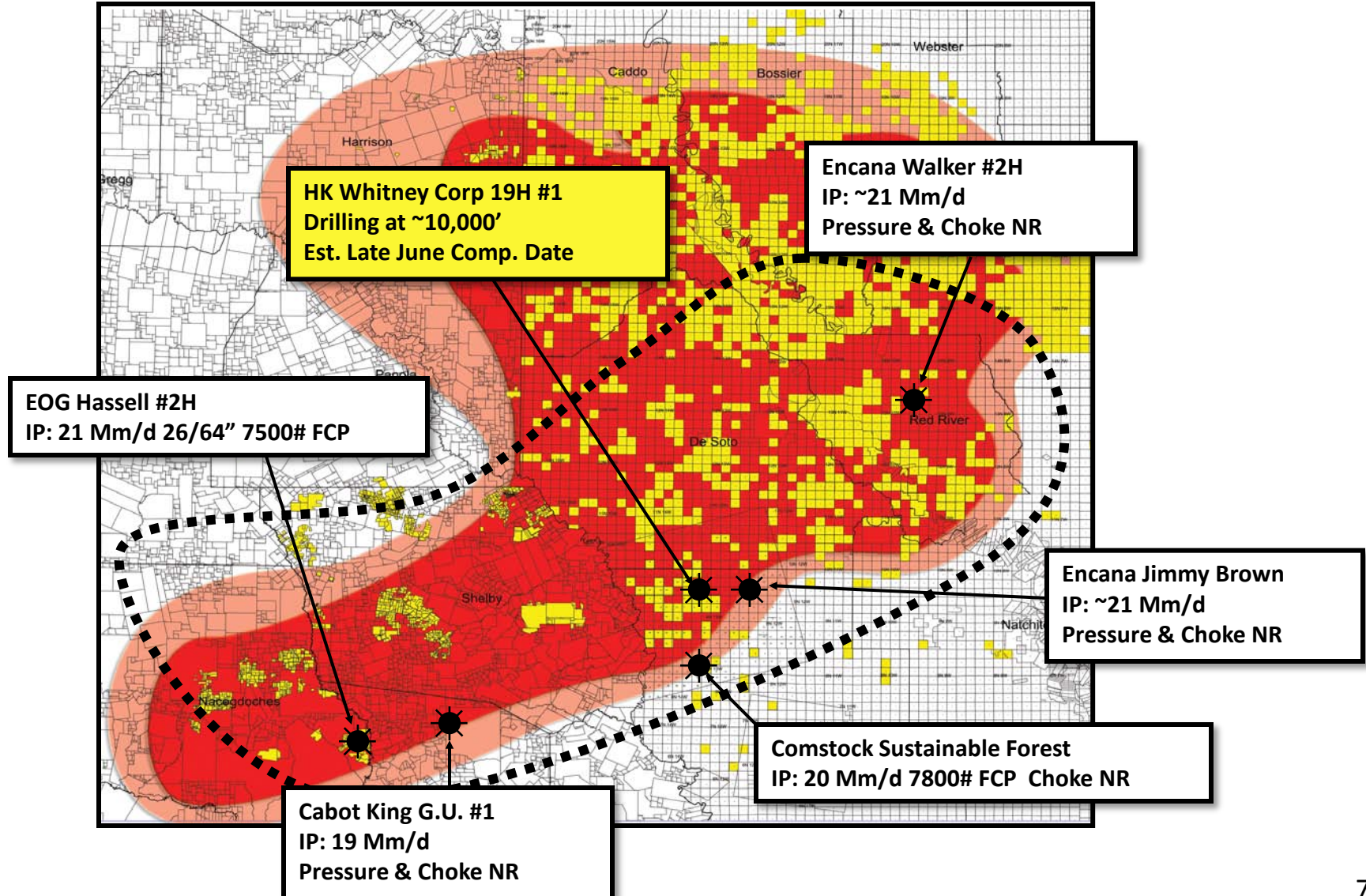
Elm Grove

(Tcfe)



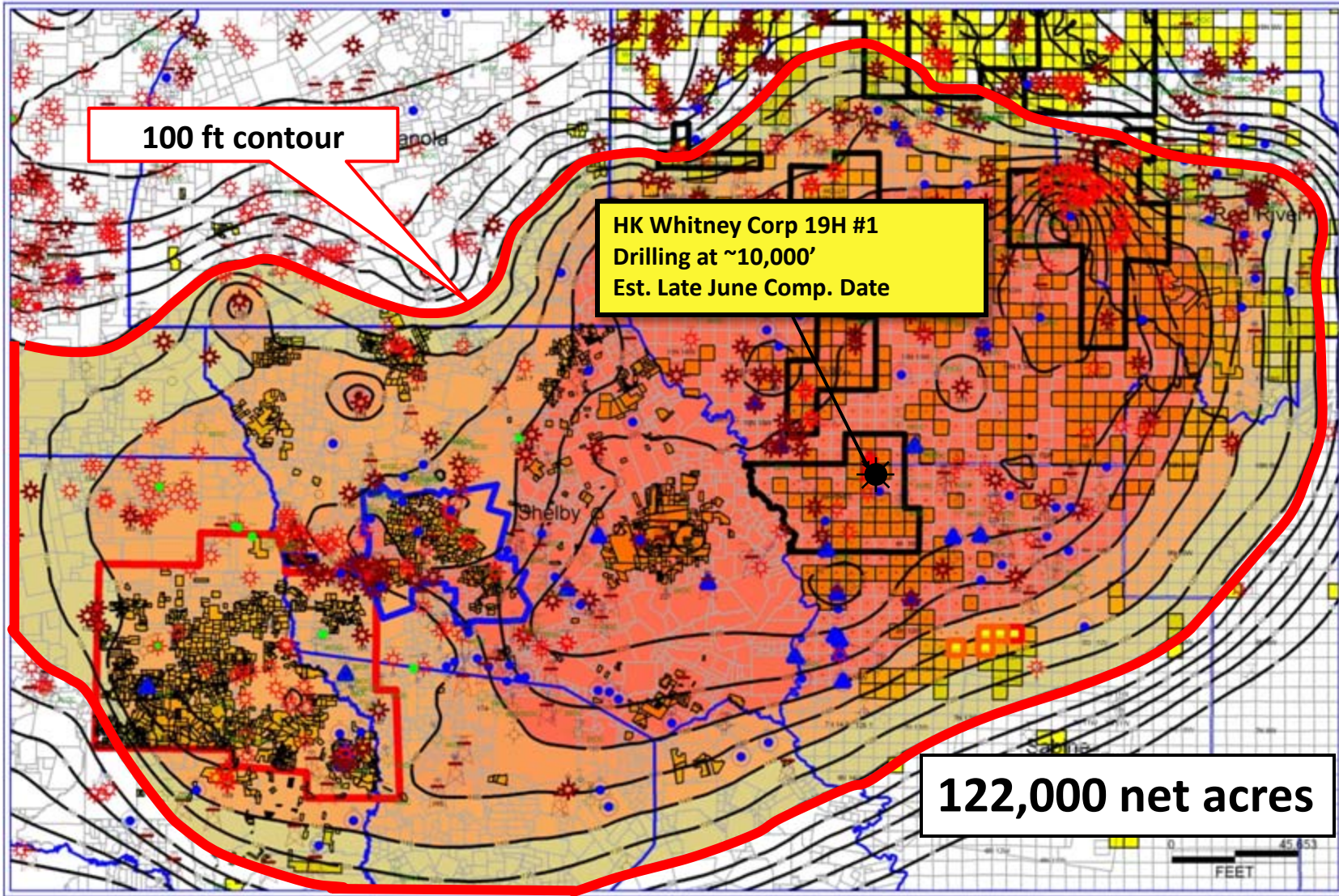


# Lower Bossier Shale: Activity Map





# Lower Bossier Shale: Net Isopach Map

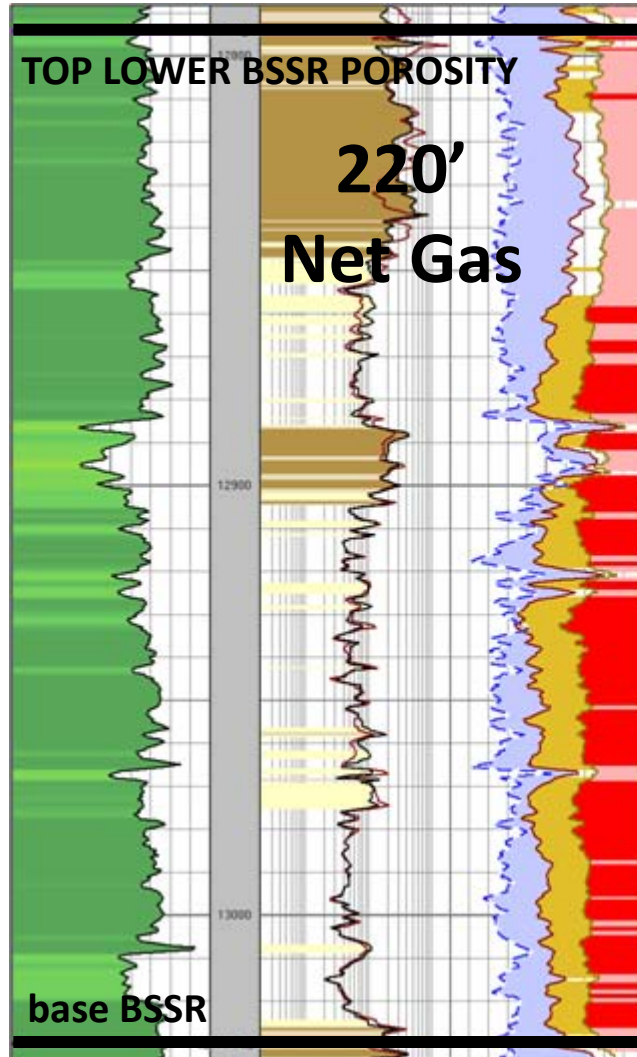




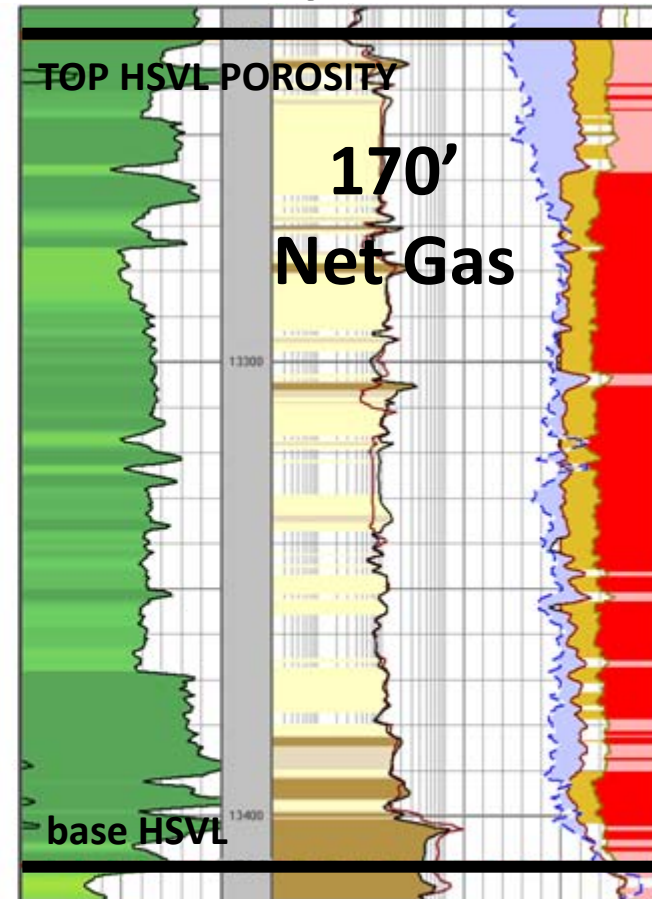
# Lower Bossier Shale: Bossier vs Haynesville



## Bossier



## Haynesville



EOG Hassel #1, Petrohawk 41.76% W.I.

# Resource Potential – Bossier



**Haynesville**  
**15,4 Tcfe**

Net Acres =  
338,000  
Spacing = 80  
Locations =  
4,225

EUR/well = 7.5  
Bcf  
Net revenue  
interest = 75%  
Risk Factor =  
65%

**Bossier**  
**4.1 Tcfe**

Net Acres =  
122,000  
Spacing = 80  
Locations =  
1,525

EUR/well = 5.5  
Bcf  
Net revenue  
interest = 75%  
Risk Factor =  
65%

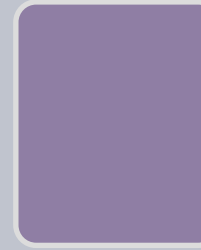
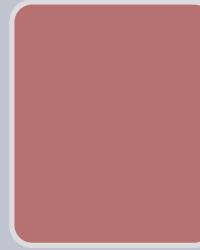
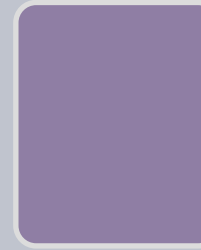
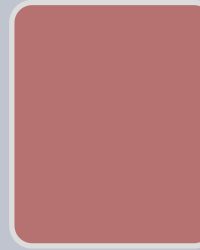
Hawksville

Black Hawk

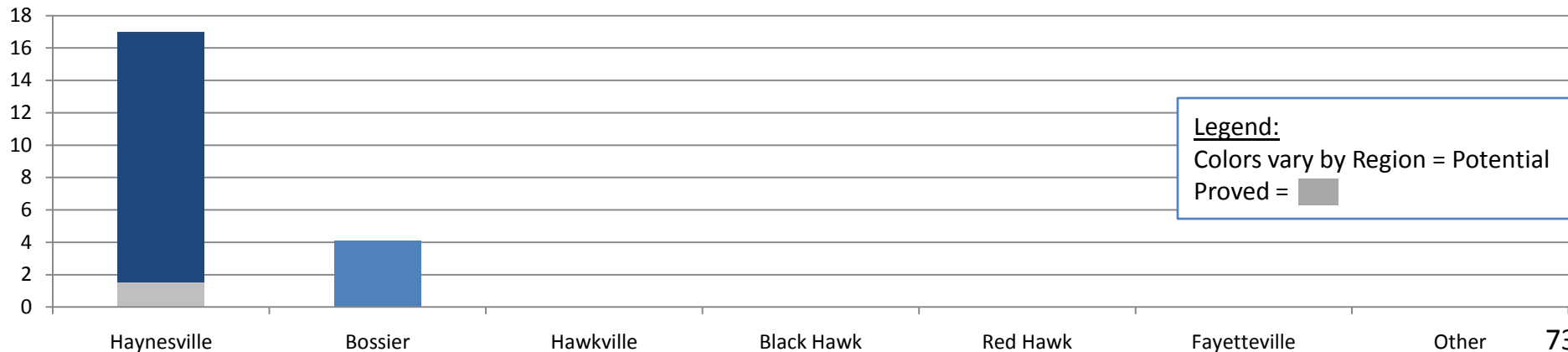
Red Hawk

Fayetteville

Elm Grove



(Tcfe)



**Legend:**  
Colors vary by Region = Potential  
Proved =





# Haynesville Shale and Bossier Shale Q&A