

JAMES KNOBLOCH PETROLEUM CONSULTANTS INC. APPALACHIAN BASIN 2016 REVIEW

MARTY SHUMWAY – SHUMWAY RESOURCES

NATHAN SMITH – JKPC INC

ZACH ENGLE - JKPC INC


TIM KNOBLOCH - JKPC INC

We do not consider
that aeroplanes will
be of any possible
use for war
purposes.

— The British Secretary of State for
War, 1910



AGENDA


- ▶ 2016 M&A SUMMARY
 - ▶ HORIZONTAL WELL ACTIVITY SUMMARY
 - ▶ DRILLING RIG SUMMARY
 - ▶ EUR BCF/1,000' BASIN MAP
 - ▶ SUMMARY BY STATE
 - ▶ BELMONT COUNTY OH ANALYSIS
- 

2016 M&A SELECTED MARCELLUS TRANSACTION SUMMARY (TPH)

MON	BUYER	SELLER	MM\$	ACRES	\$ PER ACRE
MAR	BENEFIT ST	REX	175	48,300	3,623
APR	RICE	ALPHA NAT	200	30,600	6,536
MAY	EQT	STATOIL	407	62,500	6,512
JUN	ANTERO	SWN	450	55,000	8,182
SEP	RICE	VANTAGE	2,700	174,000	15,517
OCT	TUG HILL	STONE	360	90,000	4,000
OCT	EQT	TRANS – REPUBLIC	513	60,000	8,550
DEC	ALTA RES	ANADARKO	1,240	195,000	6,358
DEC	ALTA RES	MITSUI	207		
		TOTAL	6,252	715,400	8,739

RICE – VANTAGE AND ALTA-ANADARKO

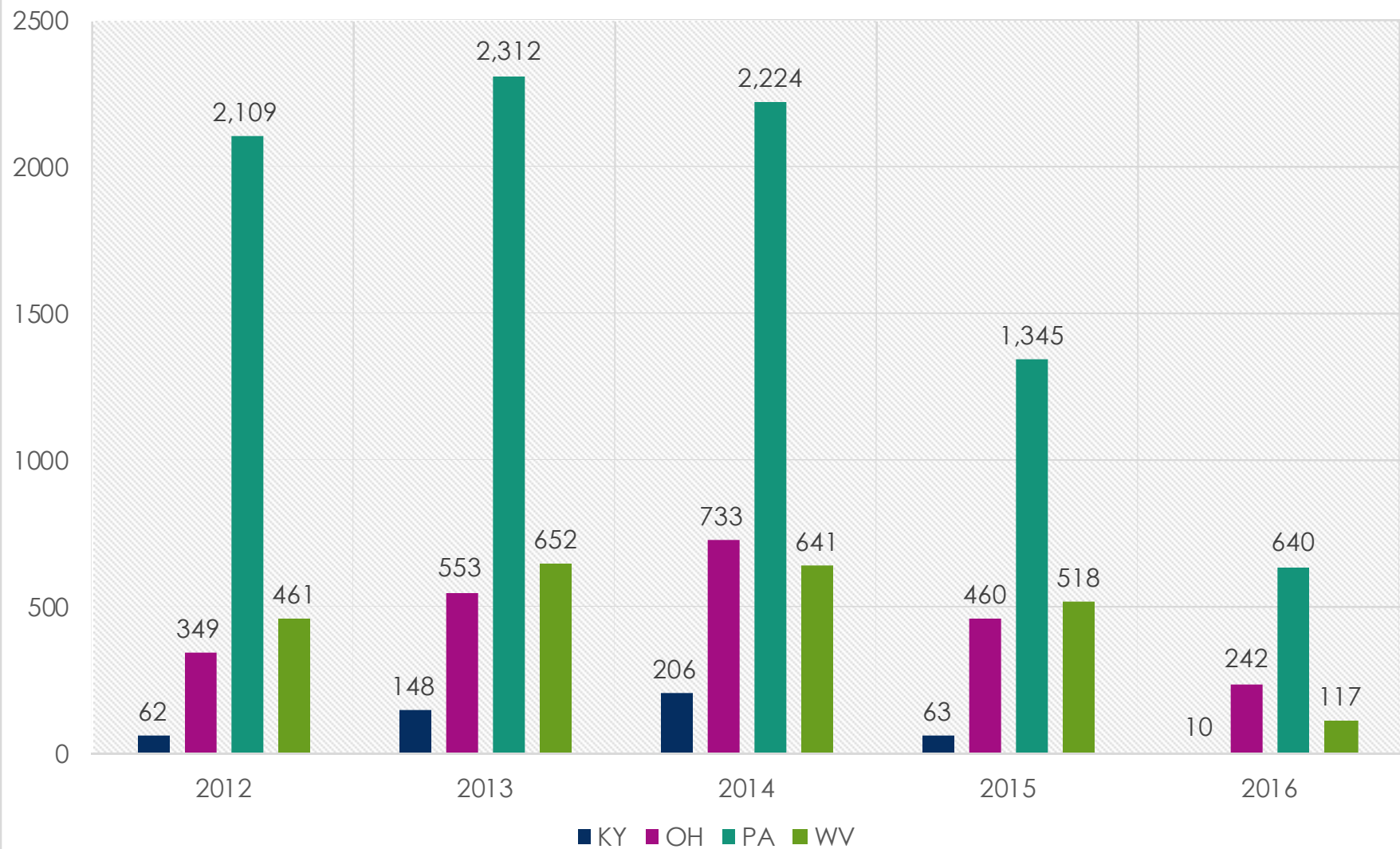
- ▶ **Rice-Vantage:** \$2.1 B upstream, \$0.6 B midstream
 - ▶ **85,000 Ac. Marcellus Greene Co - 462 net locations**
 - ▶ 50% ac hbp - 268 mmcfe/d Appalachian - **76 wells**
 - ▶ **52,000 net Utica ac - 113 net locations**
 - ▶ 37,000 net Barnett acres with 110 mmcfdeq

 - ▶ **Alta - Anadarko:** - Selling all Marcellus Ac/wells
 - ▶ 195,000 Ac. Primarily Lycoming Co.
 - ▶ State Data – 268 wells
- 

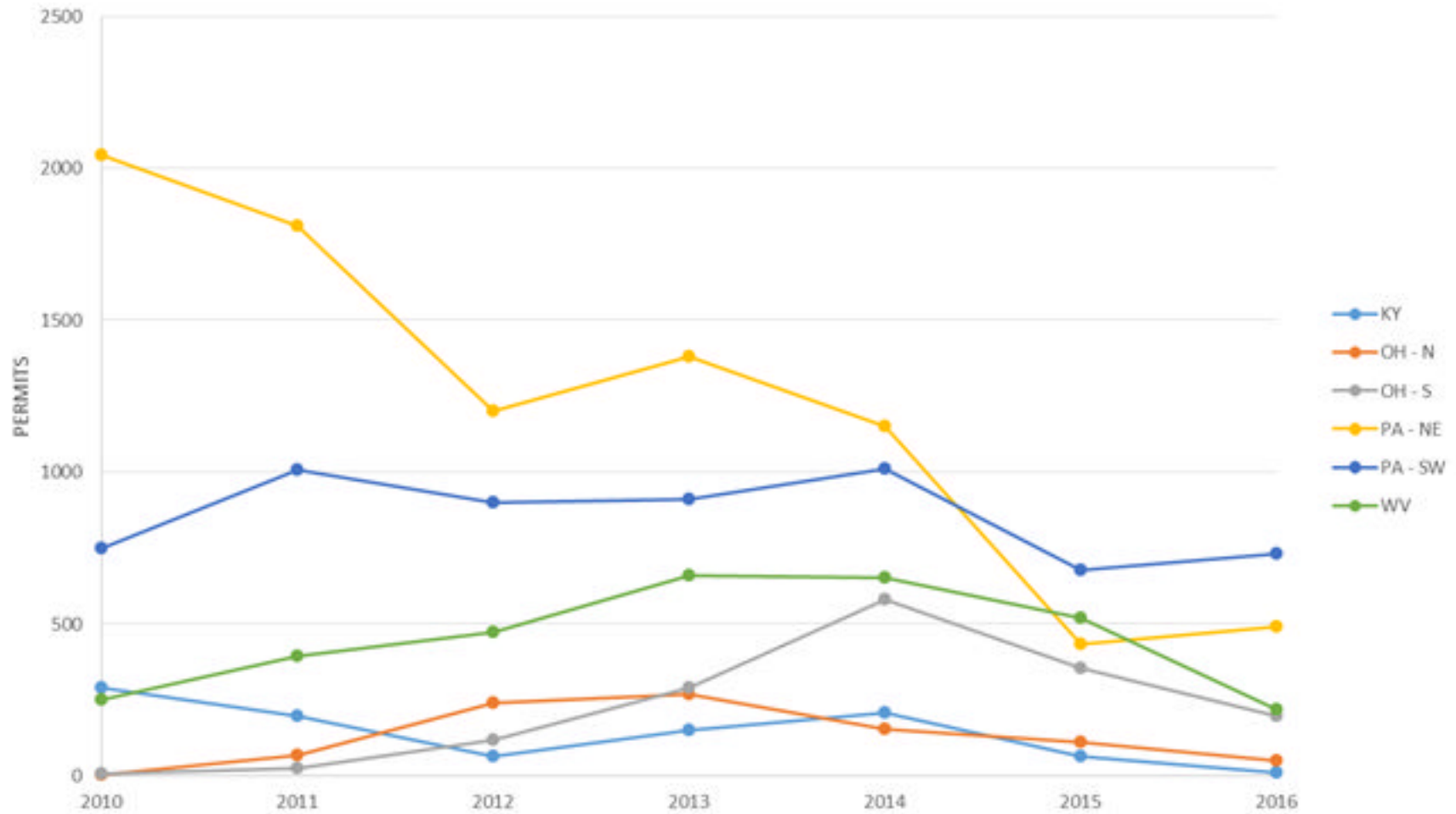
2016 M&A SELECTED UTICA TRANSACTION SUMMARY - TPH

MON	BUYER	SELLER	MM\$	ACRES	\$ PER ACRE
SEP	UNDSCLSD	GULFPORT	42	?	?
OCT	UNDSCLSD	MURRAY	64	5,900	10,780
DEC	GULFPORT	UNDSCLSD	87	12,600	6,905
DEC	UNDSCLSD	ECLIPSE	64	9,900	6,444
		TOTAL	259	28,400	7,570

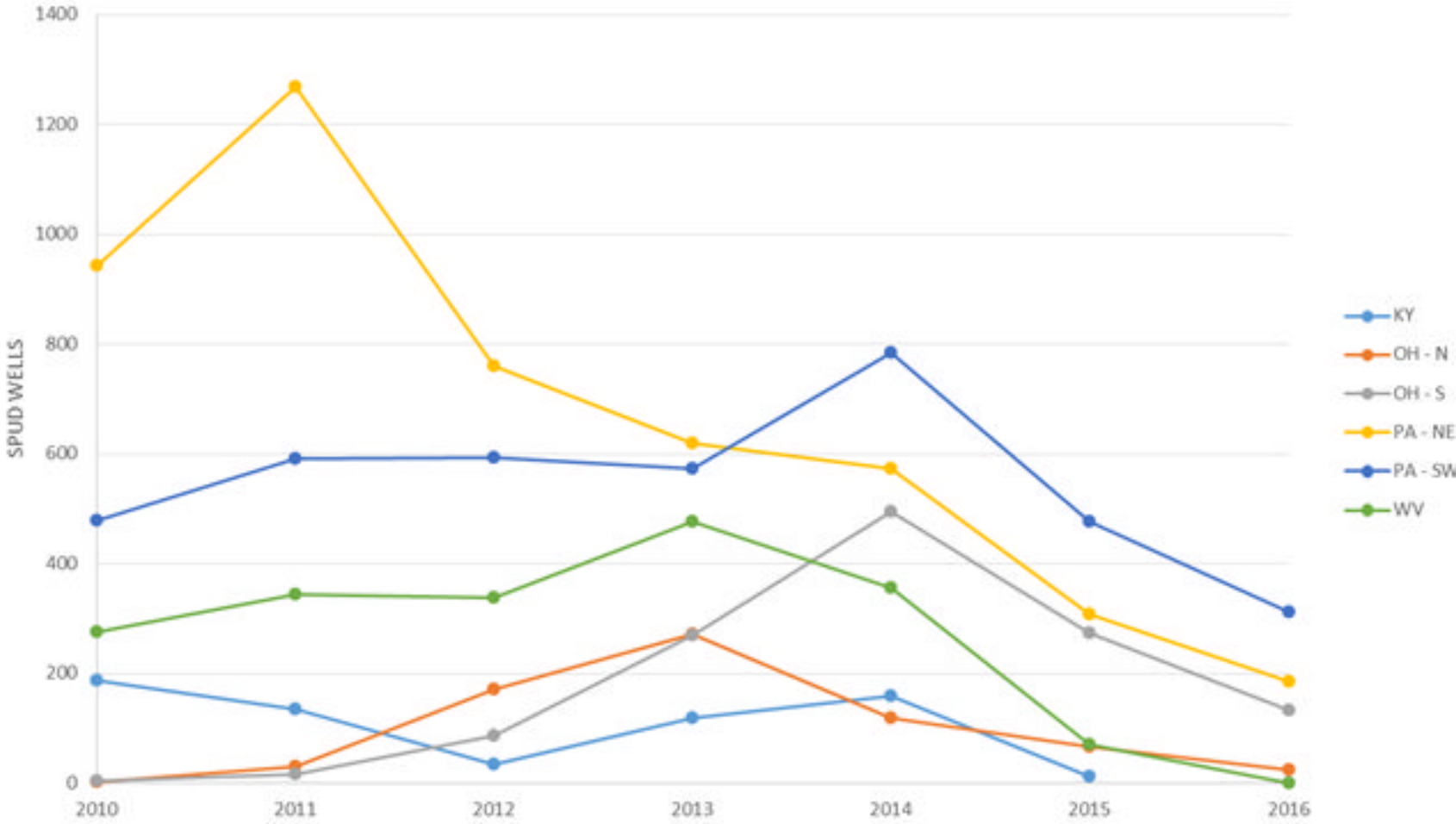
HORIZONTAL WELL PERMIT ACTIVITY BY YEAR



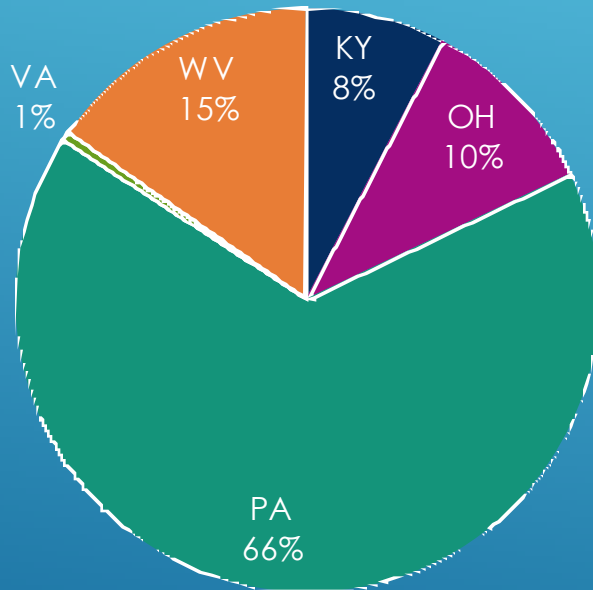
PERMITS PER YEAR



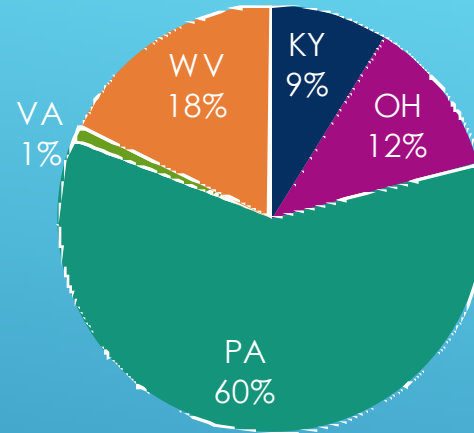
SPUD COUNT PER YEAR



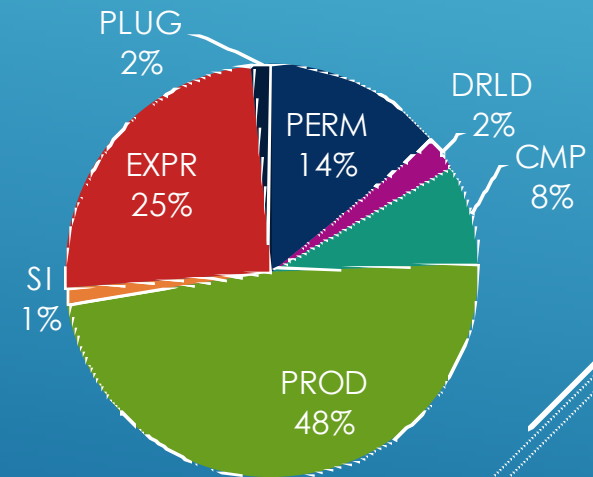
TOTAL HORIZONTAL WELLS 24,487 TOTAL



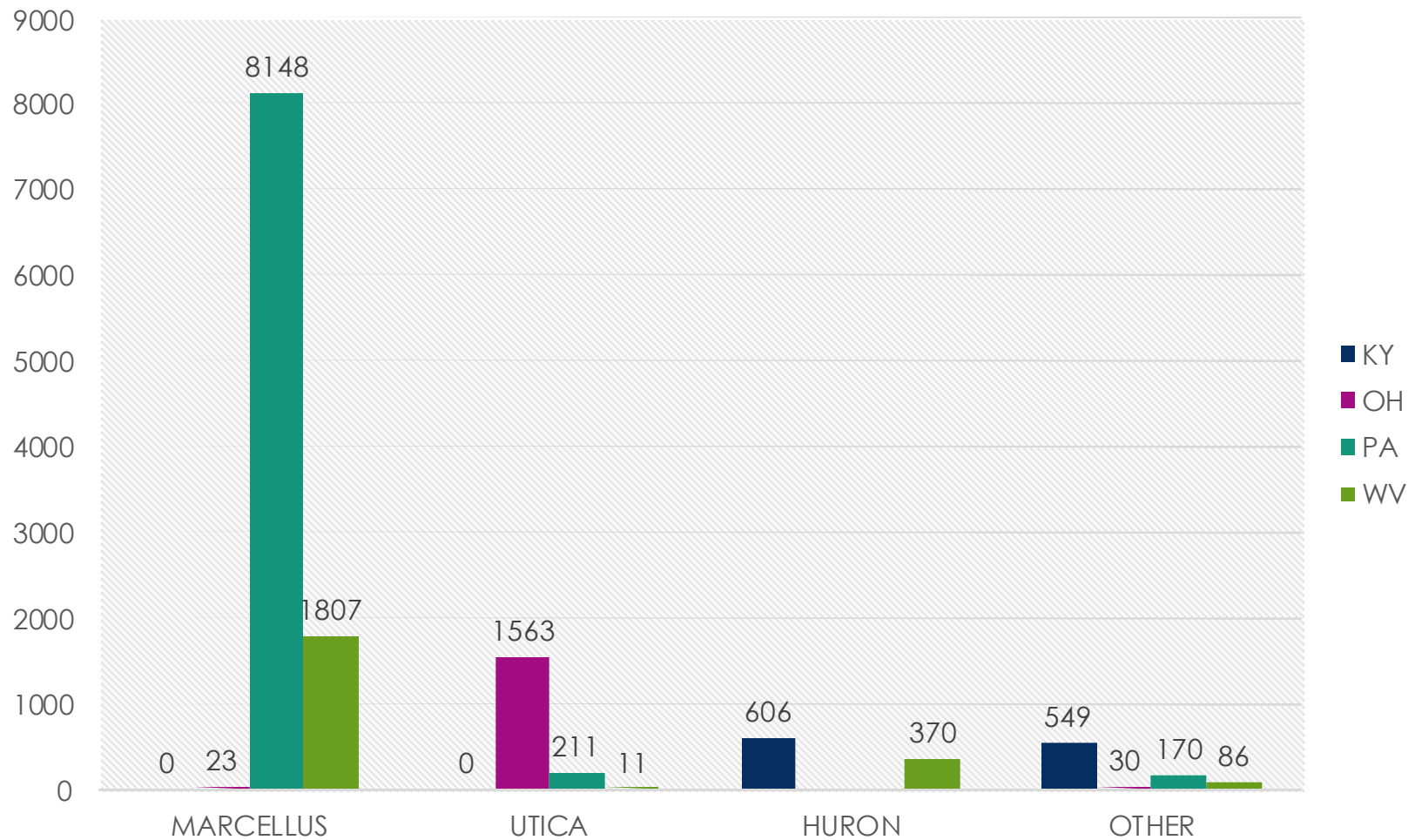
PRODUCING - 11,780 TOTAL



ALL WELLS BY STATUS

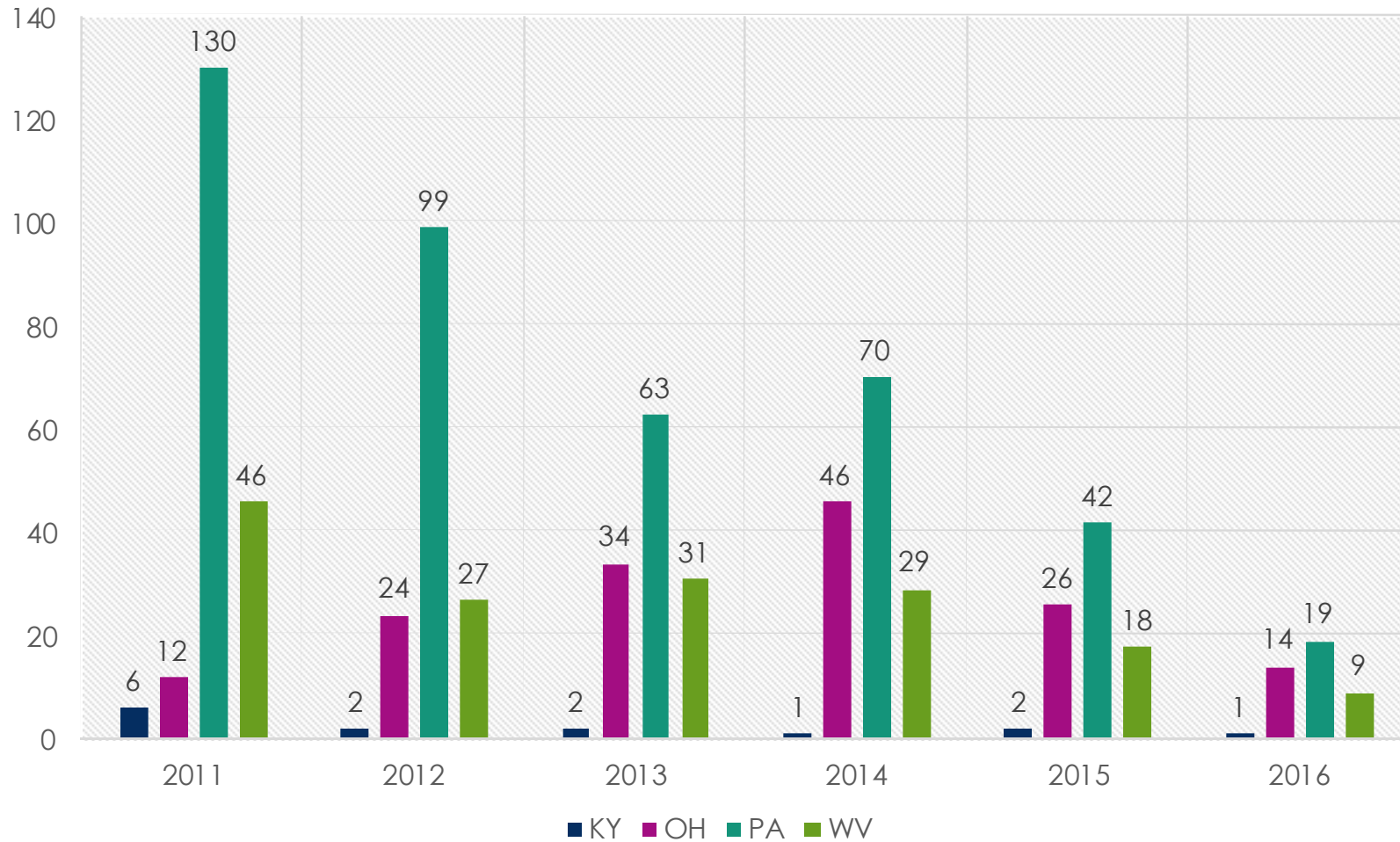


COMP-PROD WELLS BY FORMATION

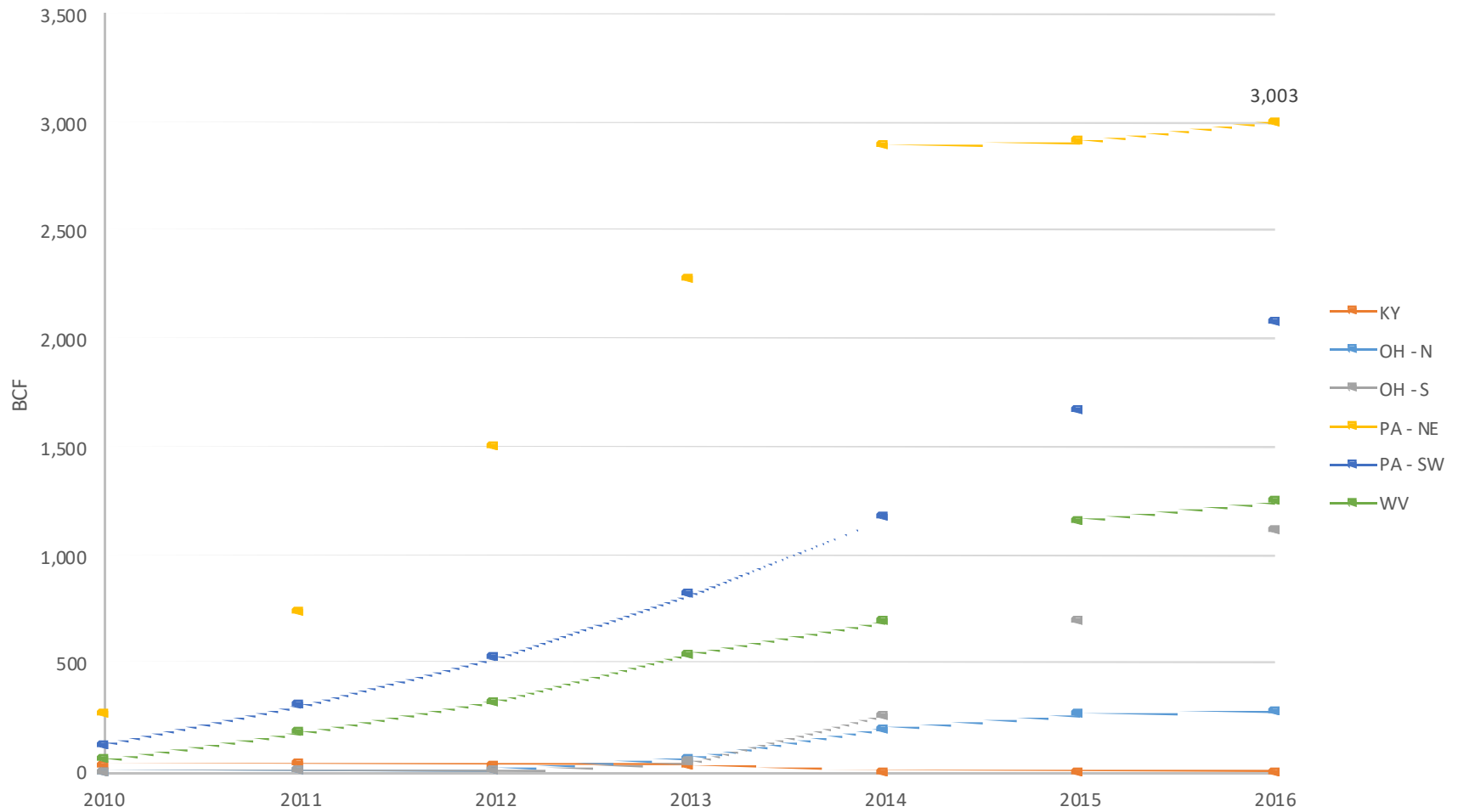


AVERAGE RIGS BY STATE BY YEAR

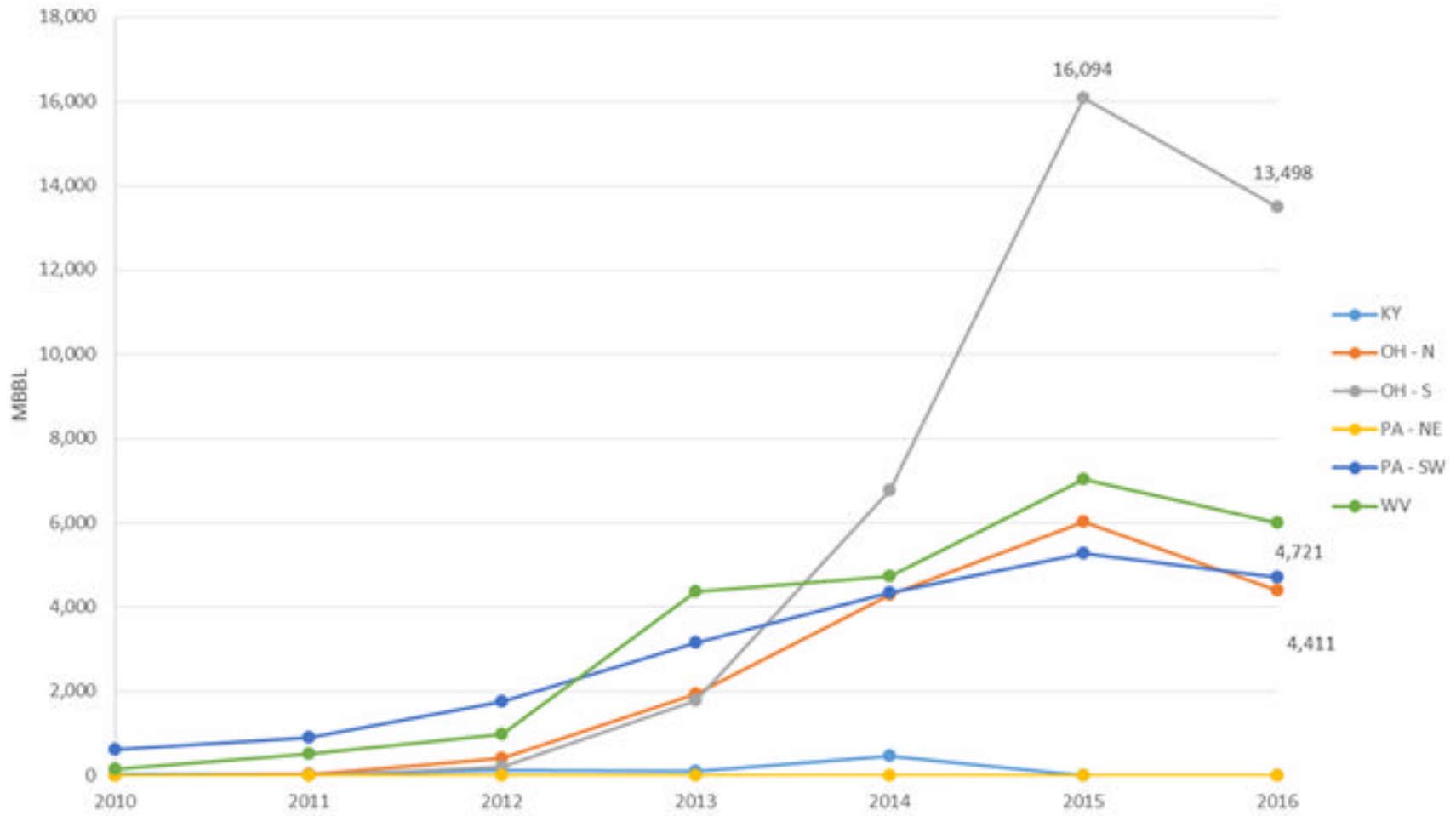
RIG COUNT BY STATE



NATURAL GAS PRODUCTION HISTORY

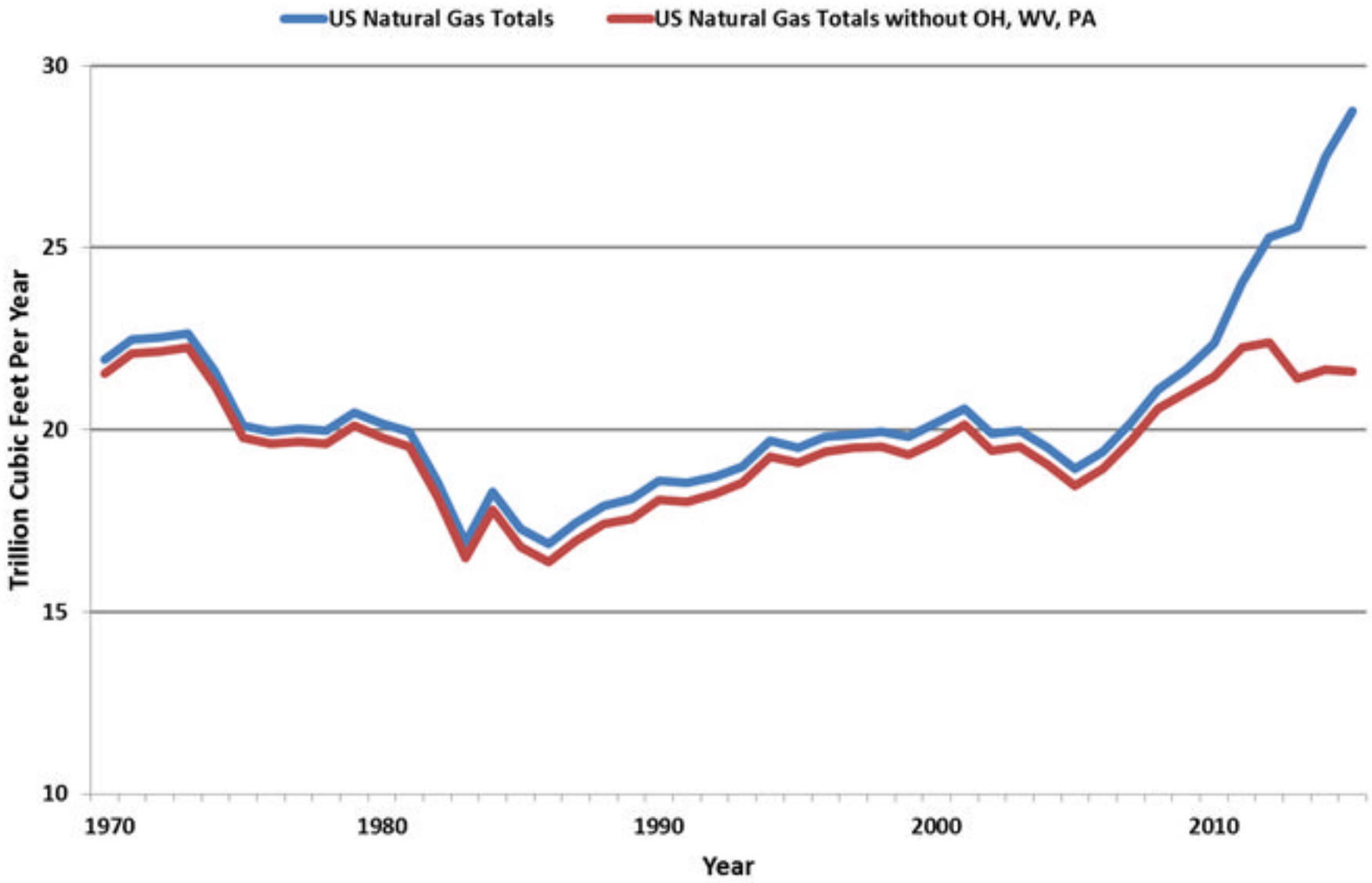


OIL PRODUCTION HISTORY



Natural Gas Production (1970 - 2015)

**2016 OH PA, WV
7.8 TCF**



FRED

Henry Hub Natural Gas Spot Price

NOV 2014

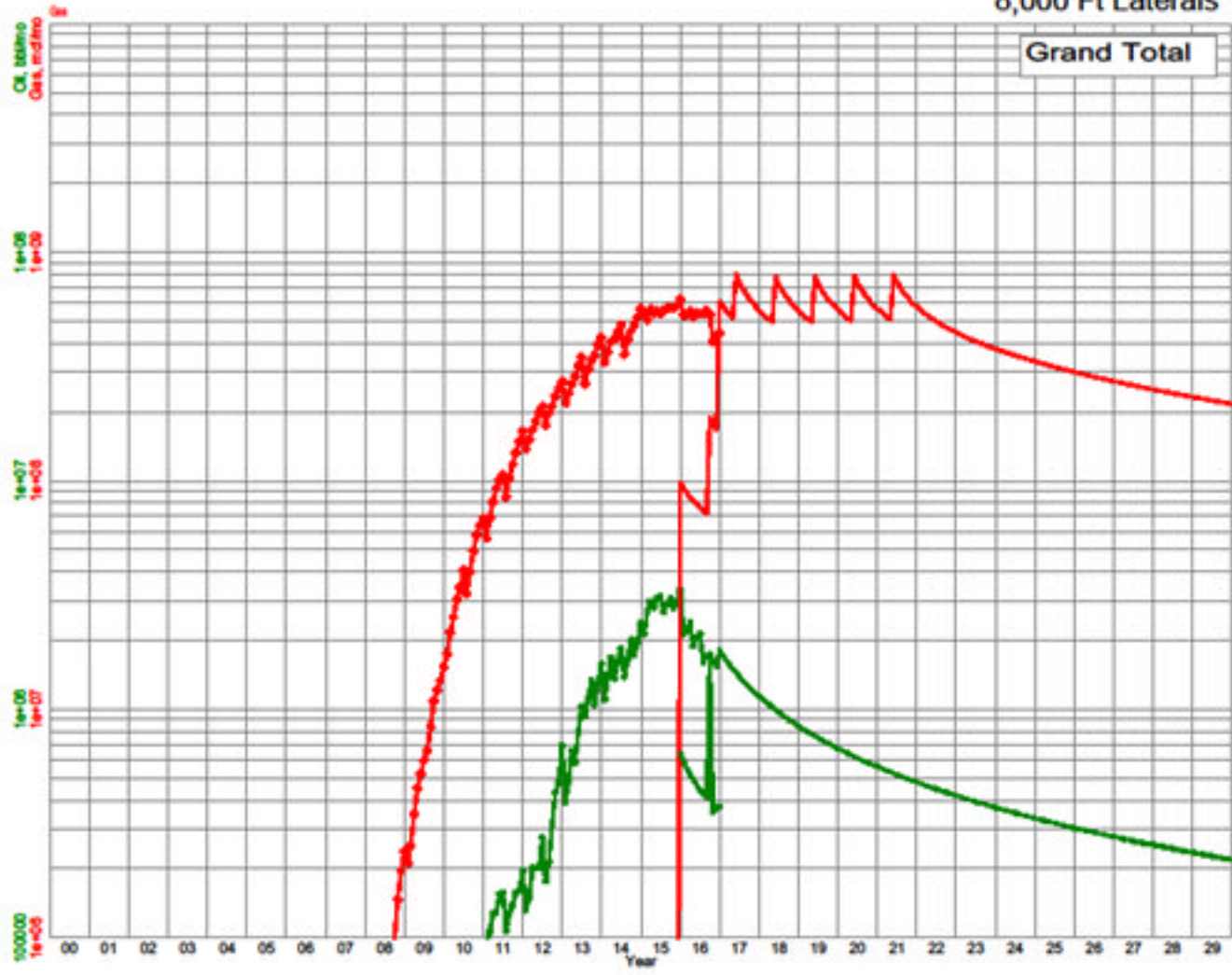


FRED

Crude Oil Prices: West Texas Intermediate (WTI) - Cushing, Oklahoma

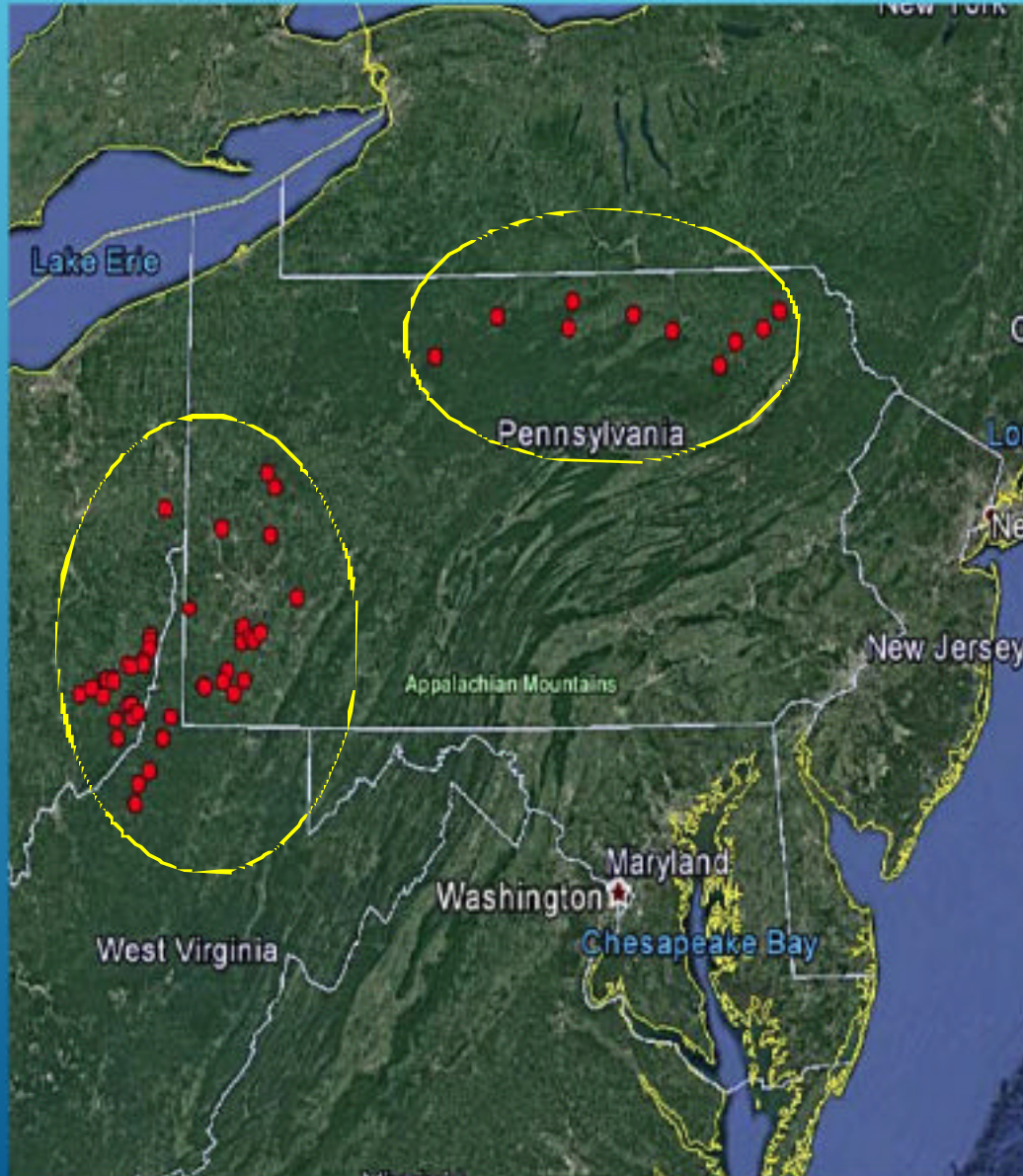


800 Wells Per Year
1.5 Bcf Per 1K Ft
8,000 Ft Laterals



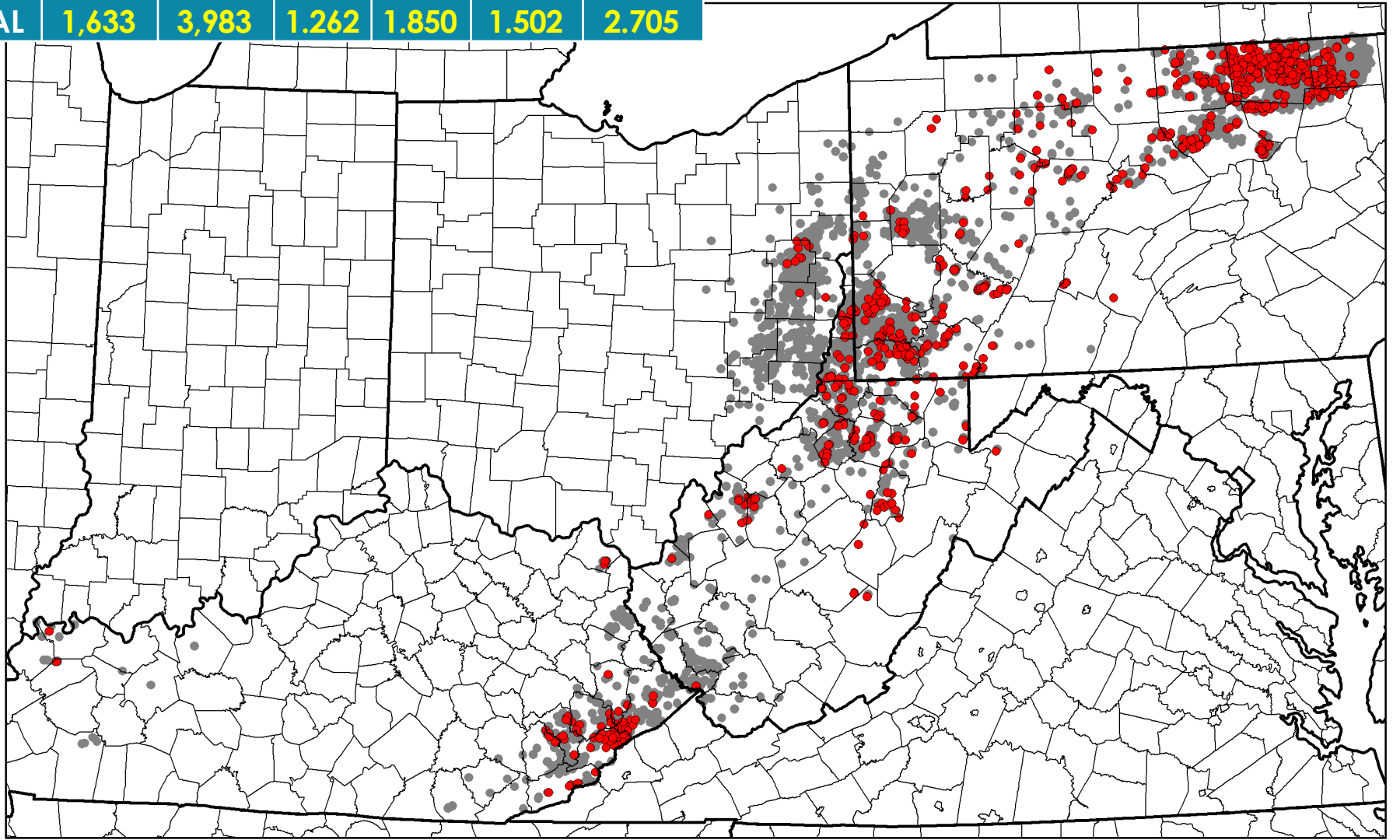
300,000,000 Mcf/M

RIG LOCATIONS AS OF JAN 2017

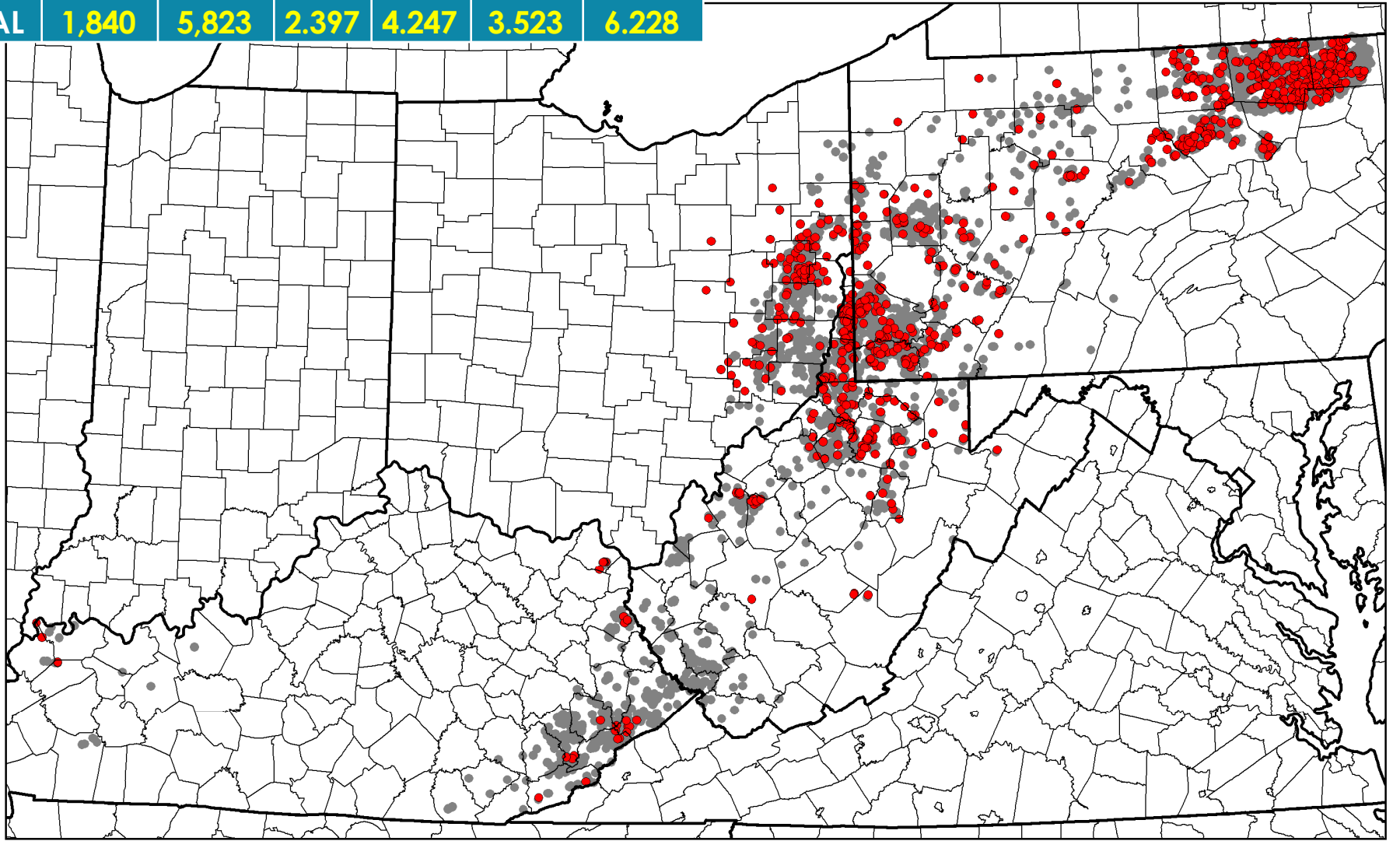


OPERATOR	OH	PA	WV	TOTAL
EQT		8		8
GULFPORT	6			6
ANTERO	3		2	5
RICE	3	2		5
ASCENT	3			3
RANGE		3		3
SWN		1	2	3
CABOT		2		2
CHK	1	1		2
CONSOL	2			2
RE GAS		2		2
STATOIL	2			2
SWEPI		2		2
CHIEF		1		1
JAYBEE			1	1
OTHER	4	5		6
TOTAL	24	27	5	56

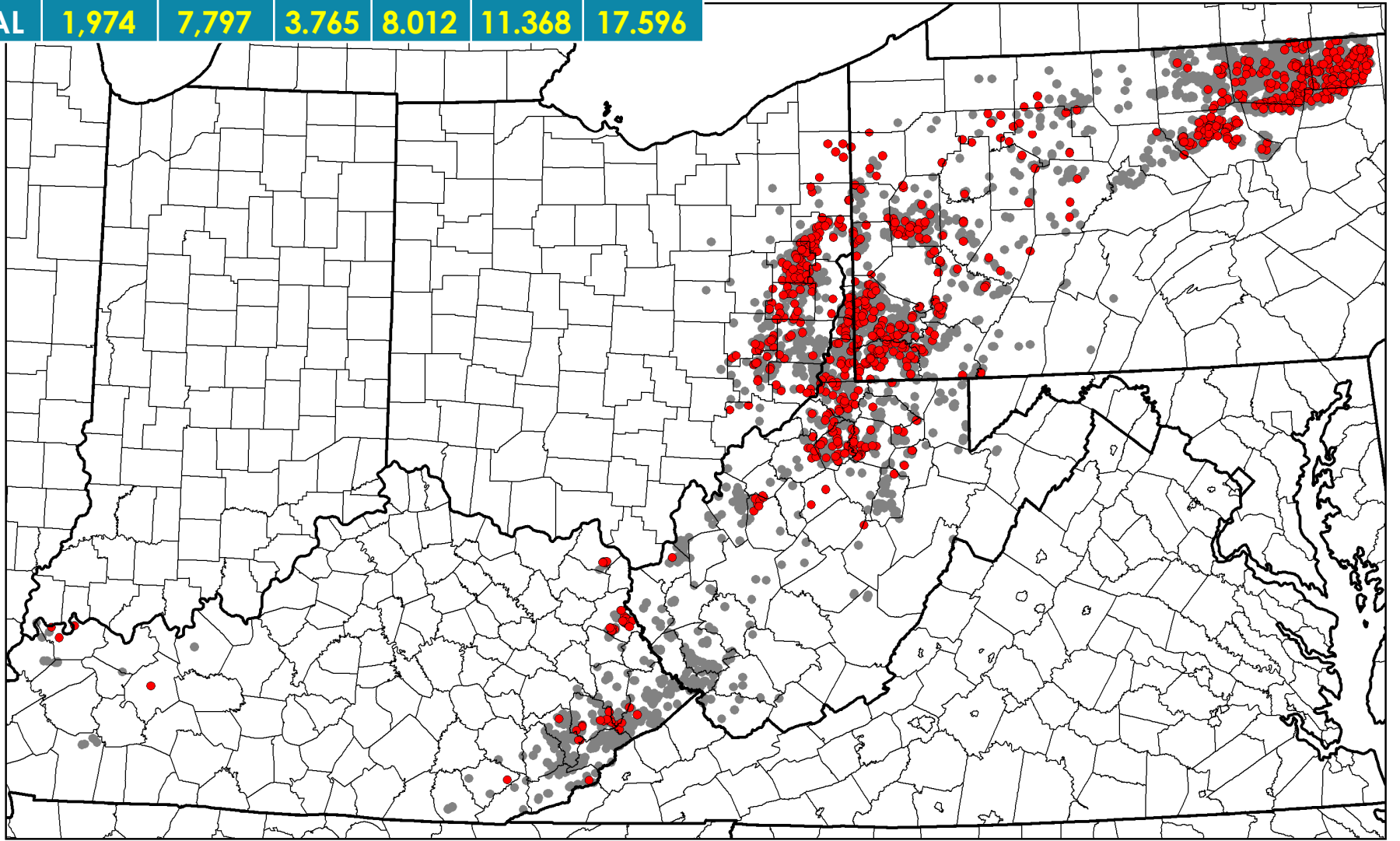
	WELLS		GAS (TCF)		OIL (MIL BBL)	
	2011	YTD	2011	YTD	2011	YTD
TOTAL	1,633	3,983	1.262	1.850	1.502	2.705



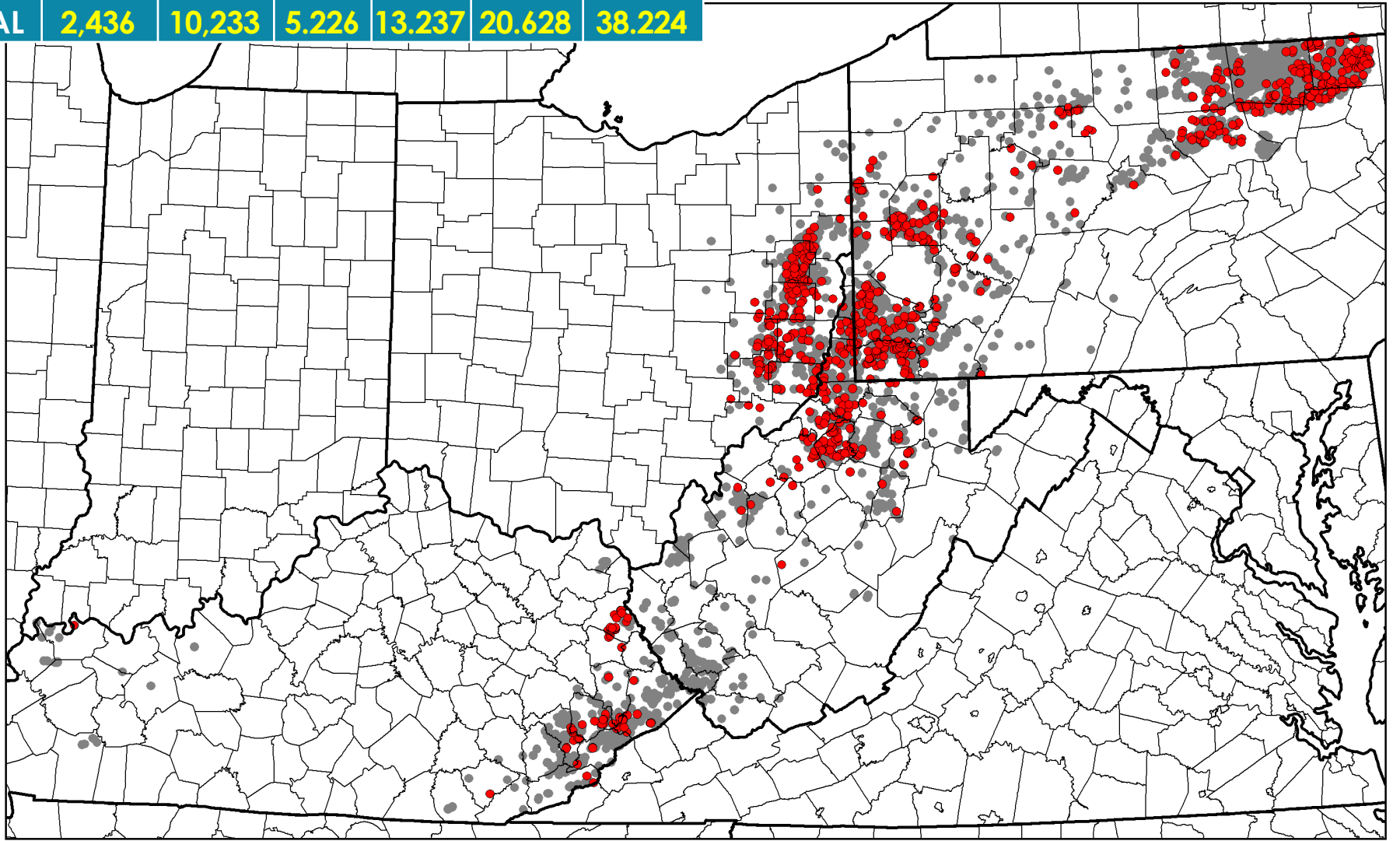
	WELLS		GAS (TCF)		OIL (MIL BBL)	
	2012	YTD	2012	YTD	2012	YTD
TOTAL	1,840	5,823	2.397	4.247	3.523	6.228



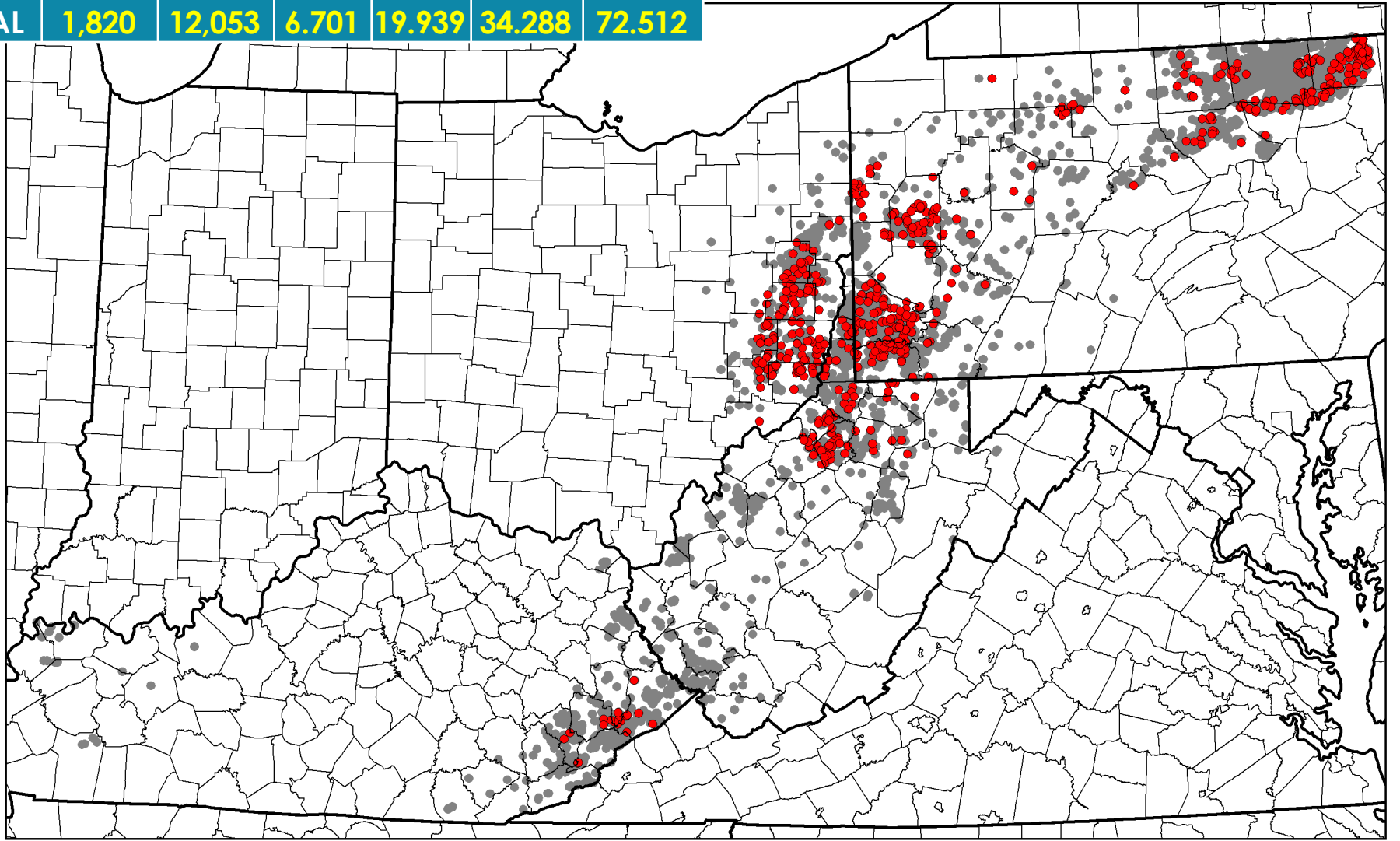
	WELLS		GAS (TCF)		OIL (MIL BBL)	
	2013	YTD	2013	YTD	2013	YTD
TOTAL	1,974	7,797	3.765	8.012	11.368	17.596



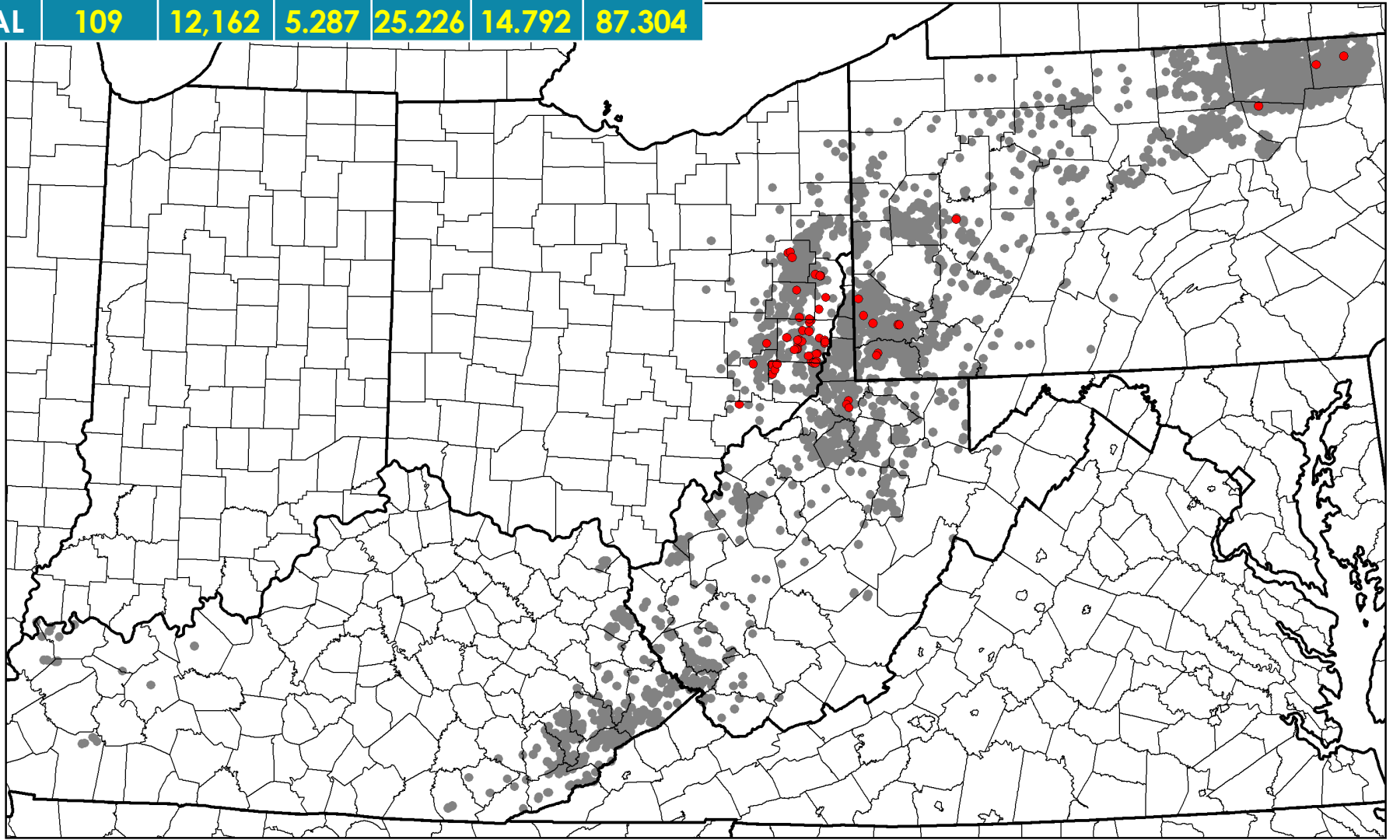
	WELLS		GAS (TCF)		OIL (MIL BBL)	
	2014	YTD	2014	YTD	2014	YTD
TOTAL	2,436	10,233	5.226	13.237	20.628	38.224



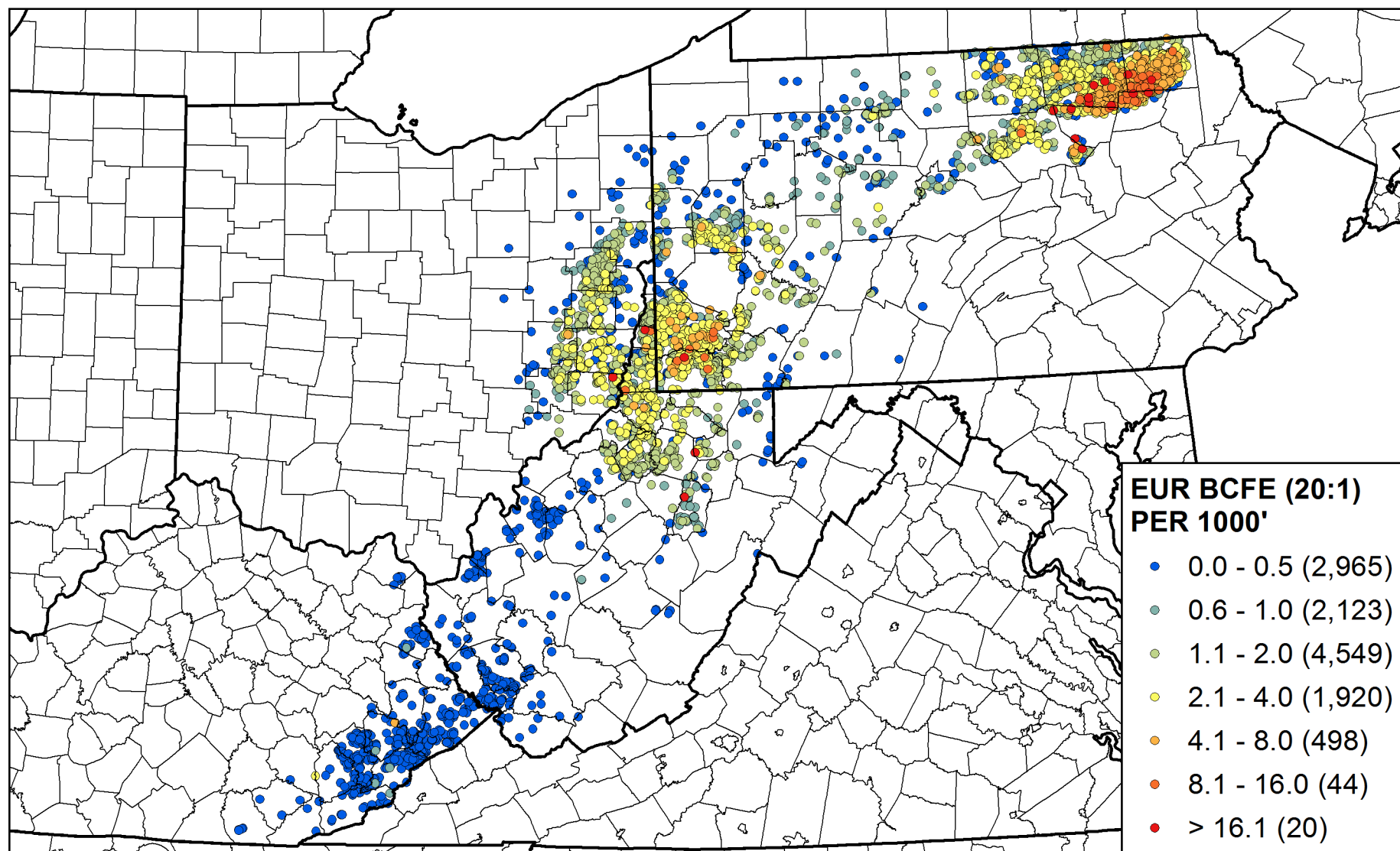
	WELLS		GAS (TCF)		OIL (MIL BBL)	
	2015	YTD	2015	YTD	2015	YTD
TOTAL	1,820	12,053	6.701	19.939	34.288	72.512



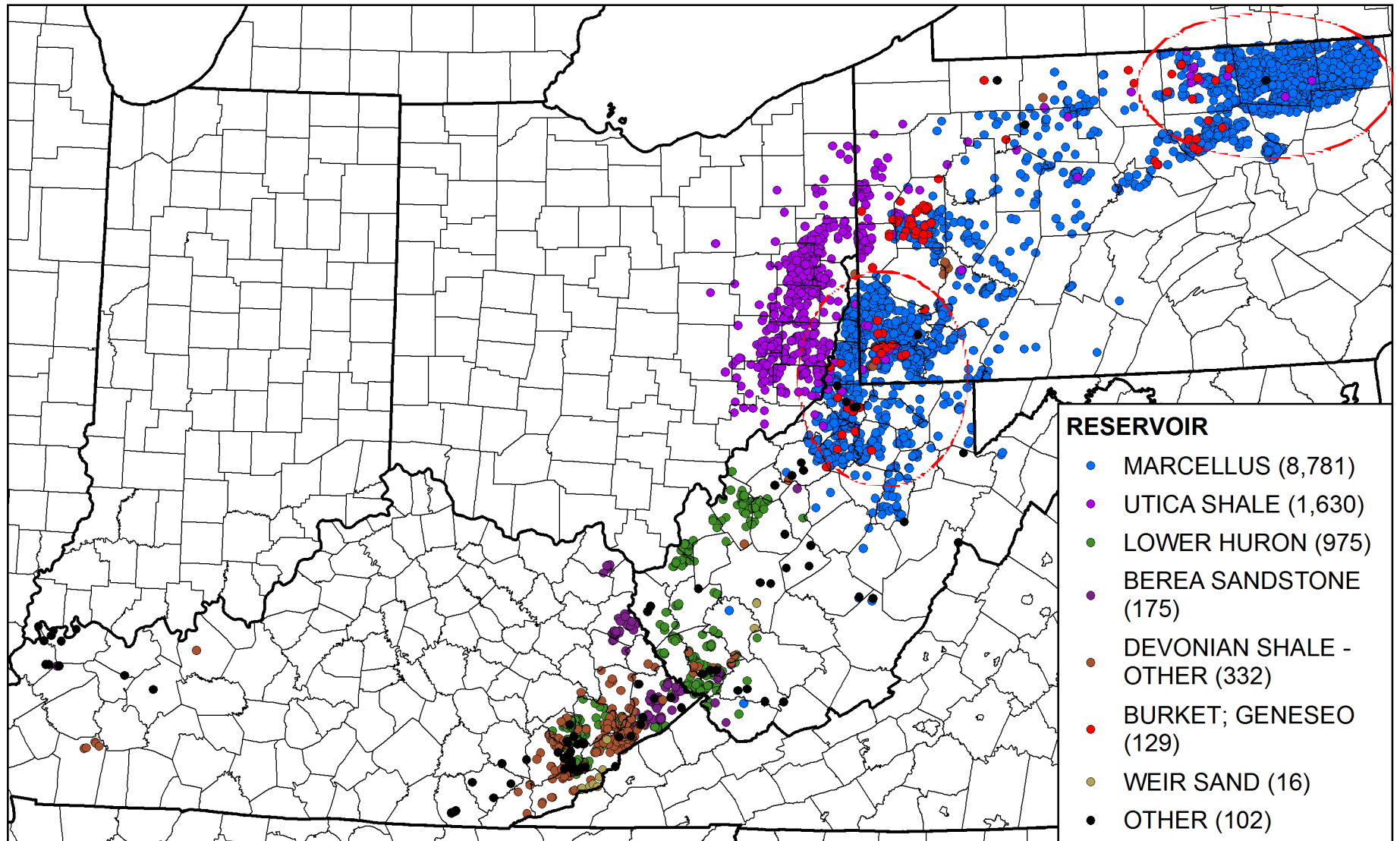
	WELLS		GAS (TCF)		OIL (MIL BBL)	
	2016	YTD	2016	YTD	2016	YTD
TOTAL	109	12,162	5.287	25.226	14.792	87.304



EUR BCFE/1,000'



WELLS BY RESERVOIR

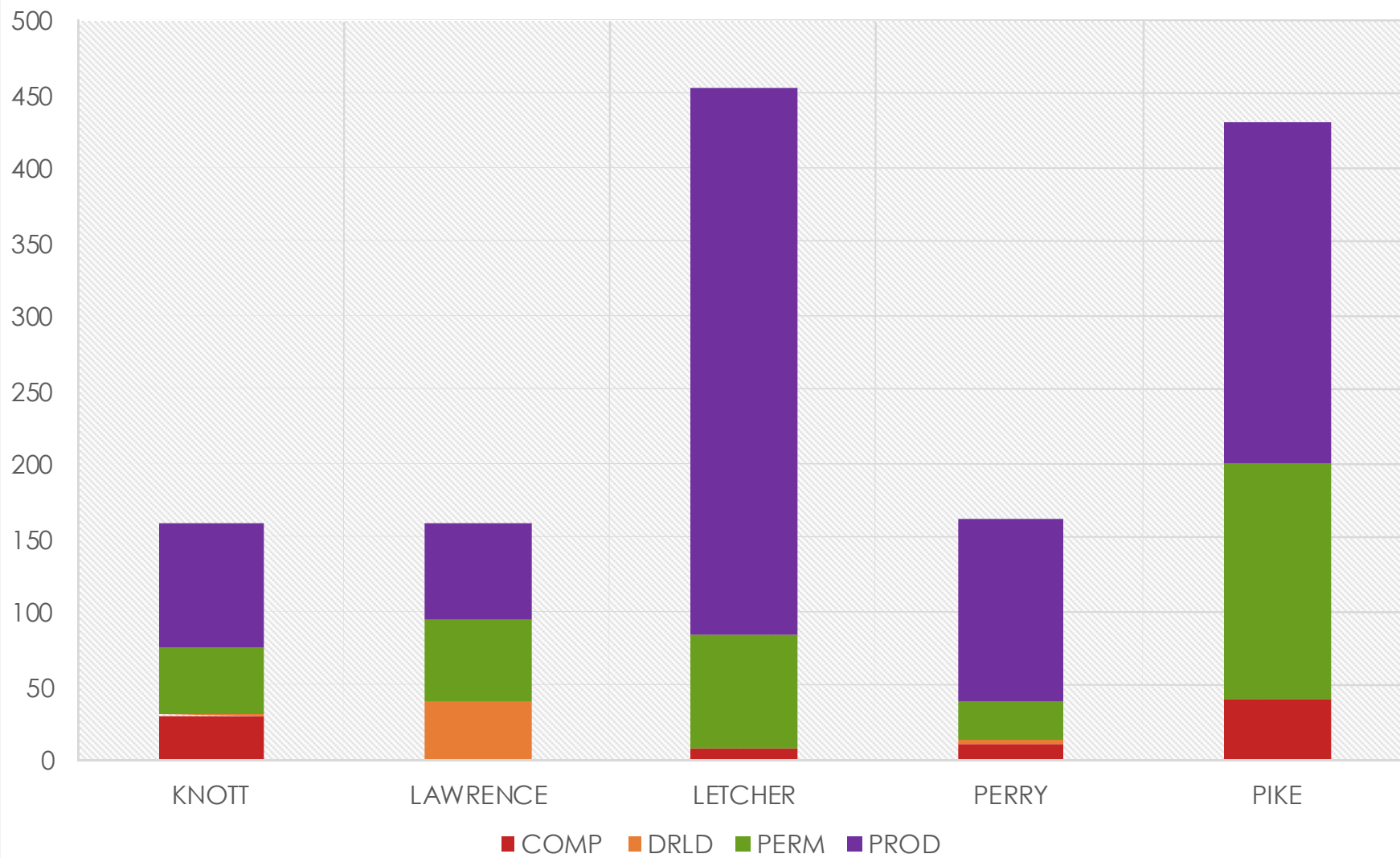


LONGEST LATERAL & GREATEST BCF

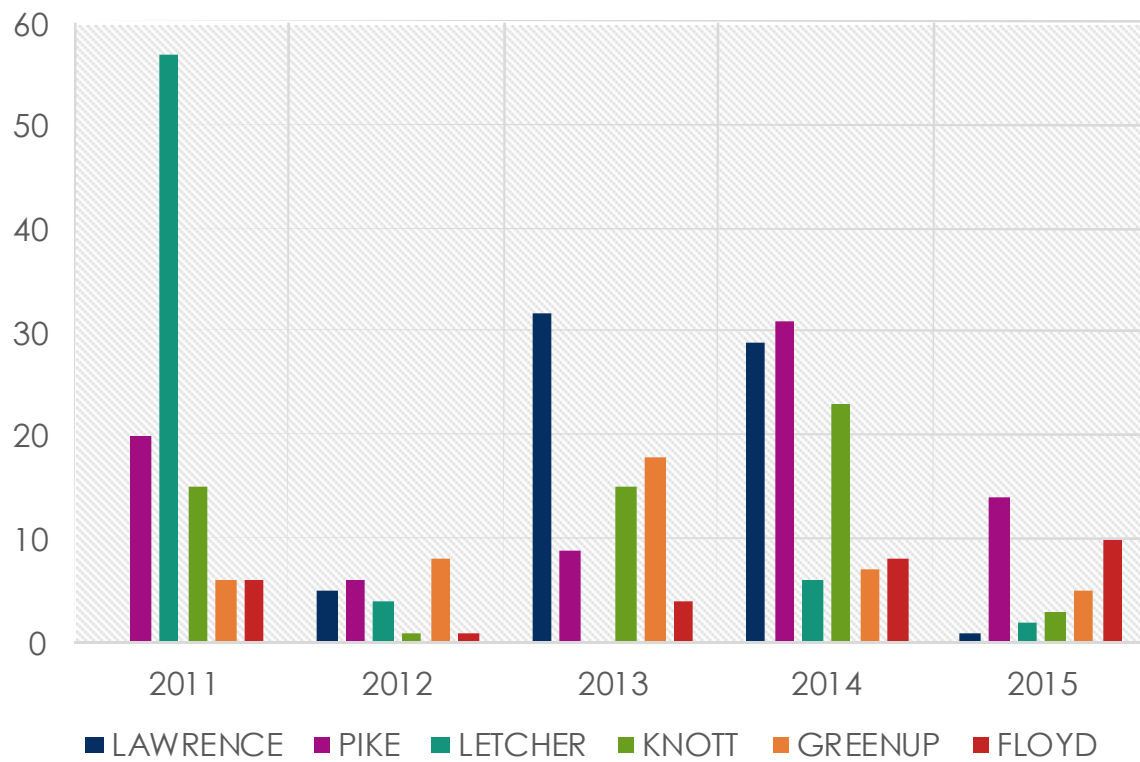
LONGEST LATERAL BY STATE								
ST	CO	OPER	WELL NAME	TTL	STGS	STGL	BCF	BCF /1,000
OH	GUERN	ECLIPSE	PURPLE HAYES 1H	18,544	124	150	37.4	2.0
PA	GREENE	NOBLE	RHL4 DHS	11,328	38	298	12.1	1.1
WV	DODD	EQT	HENDERSON 514095	12,033	75	160	ISD	ISD

ST	CO	OPER	WELL NAME	TTL	STGS	STGL	BCF	BCF /1,000
OH	BELMONT	RICE	M WARRIOR 12H	12,094	61	198	31.1	2.6
PA	SUSQUE	CABOT	PIJANOWSKI J 2	6,092	31	197	65.3	10.7
WV	HARRIS	ANTERO	ISAAC 1H	9,895	44	225	21.7	2.2

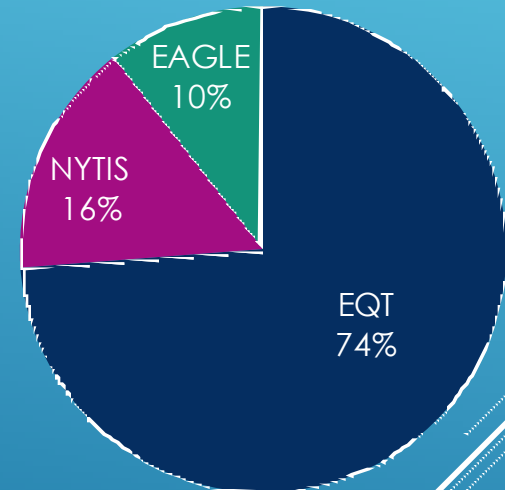
KY WELL ACTIVITY BY COUNTY



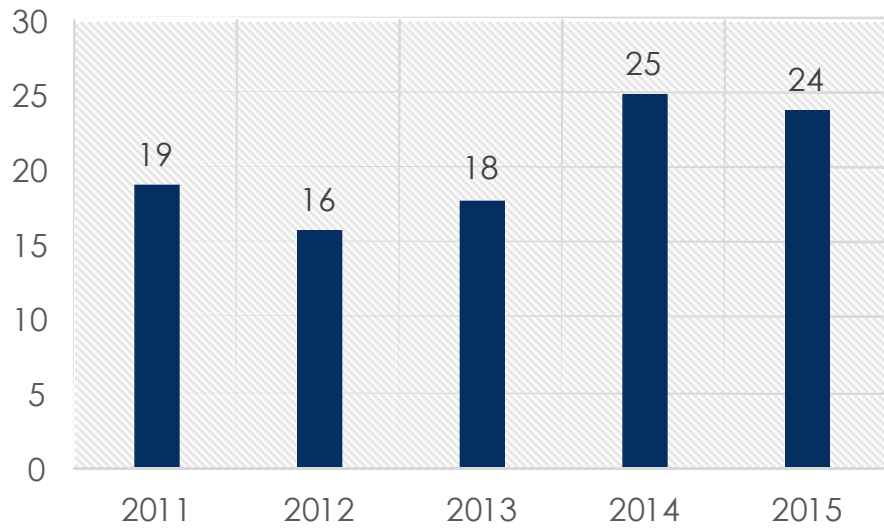
KY CMP-PRD WELLS BY CO BY YR TOP 80%



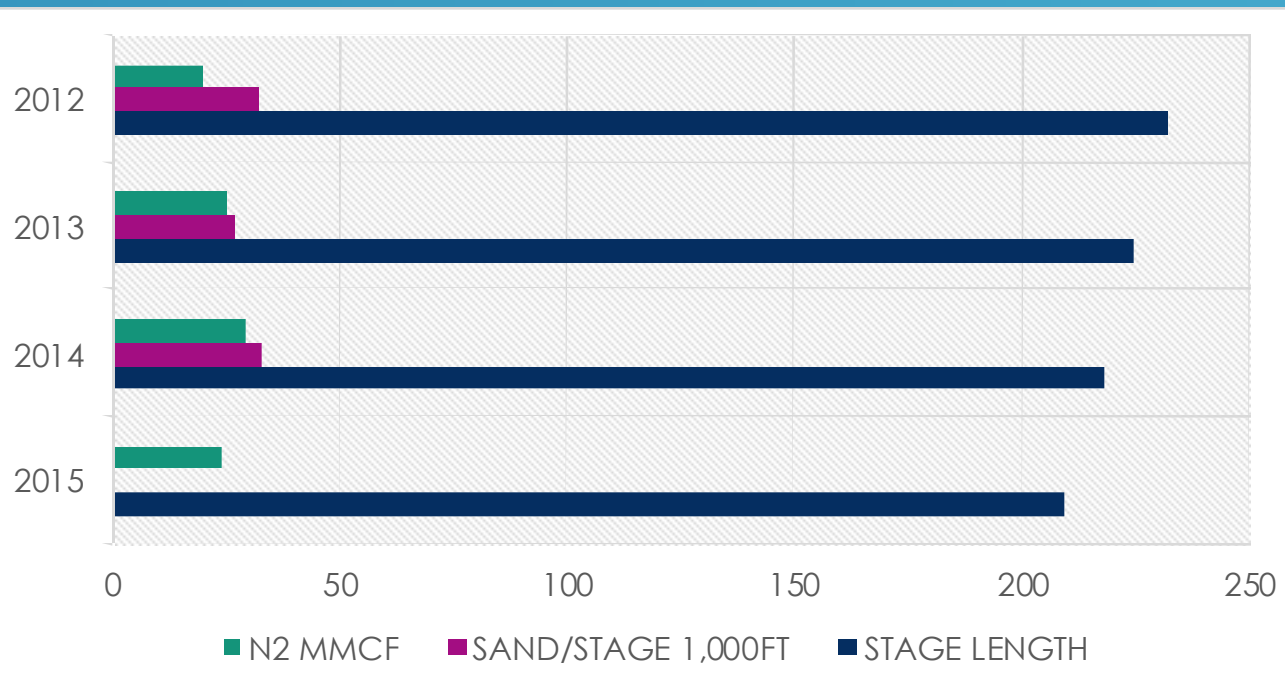
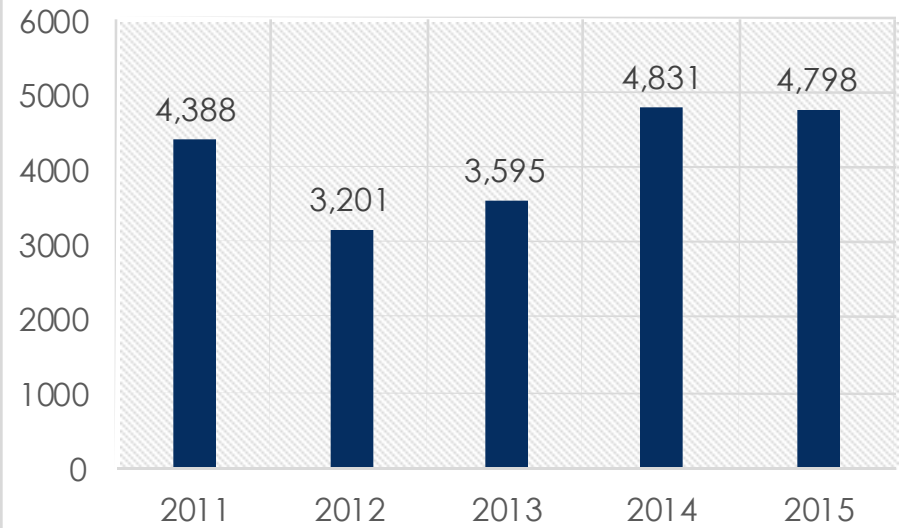
KY COMP-PRD WELLS BY OP TOP 80%



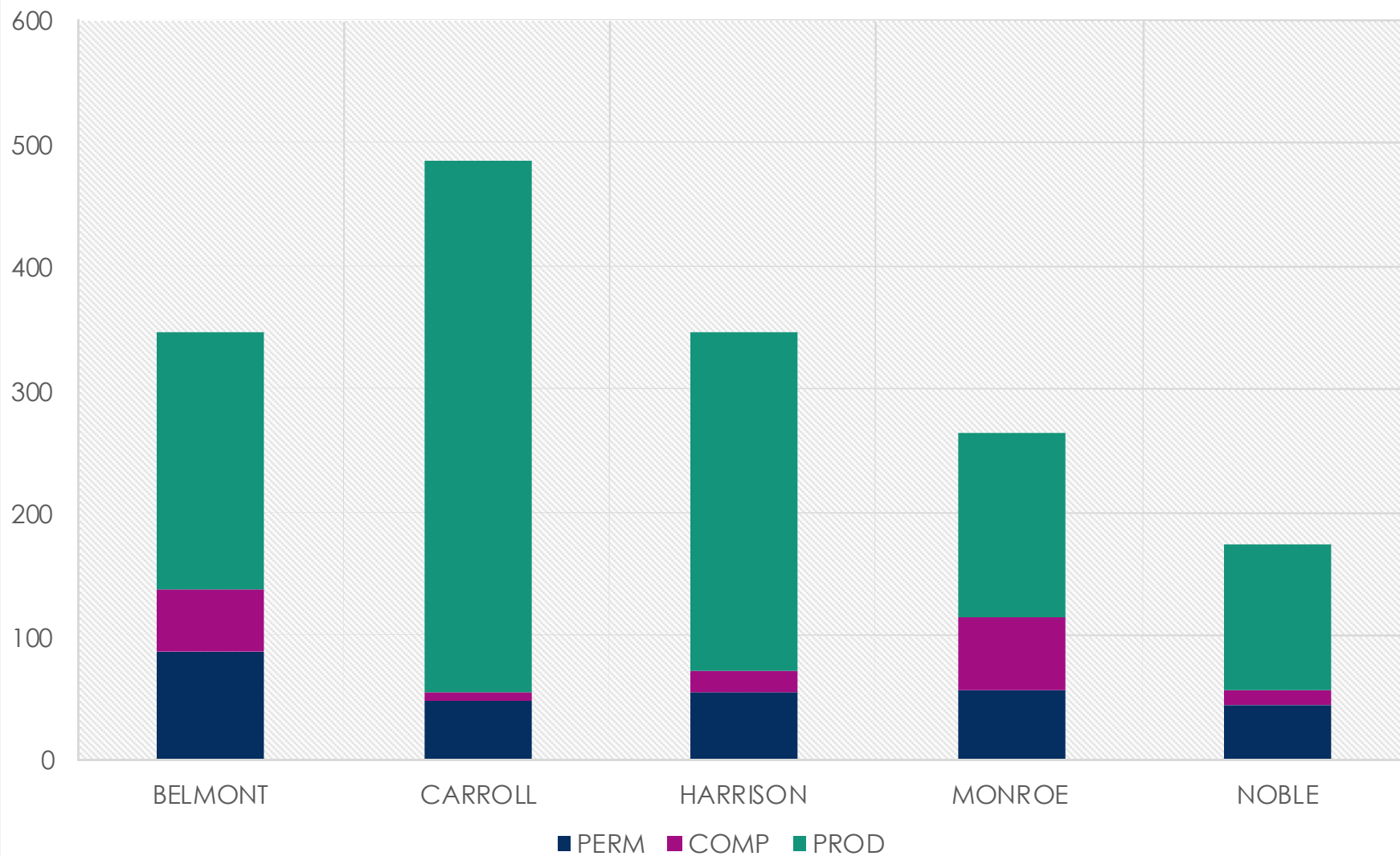
FRAC STAGES



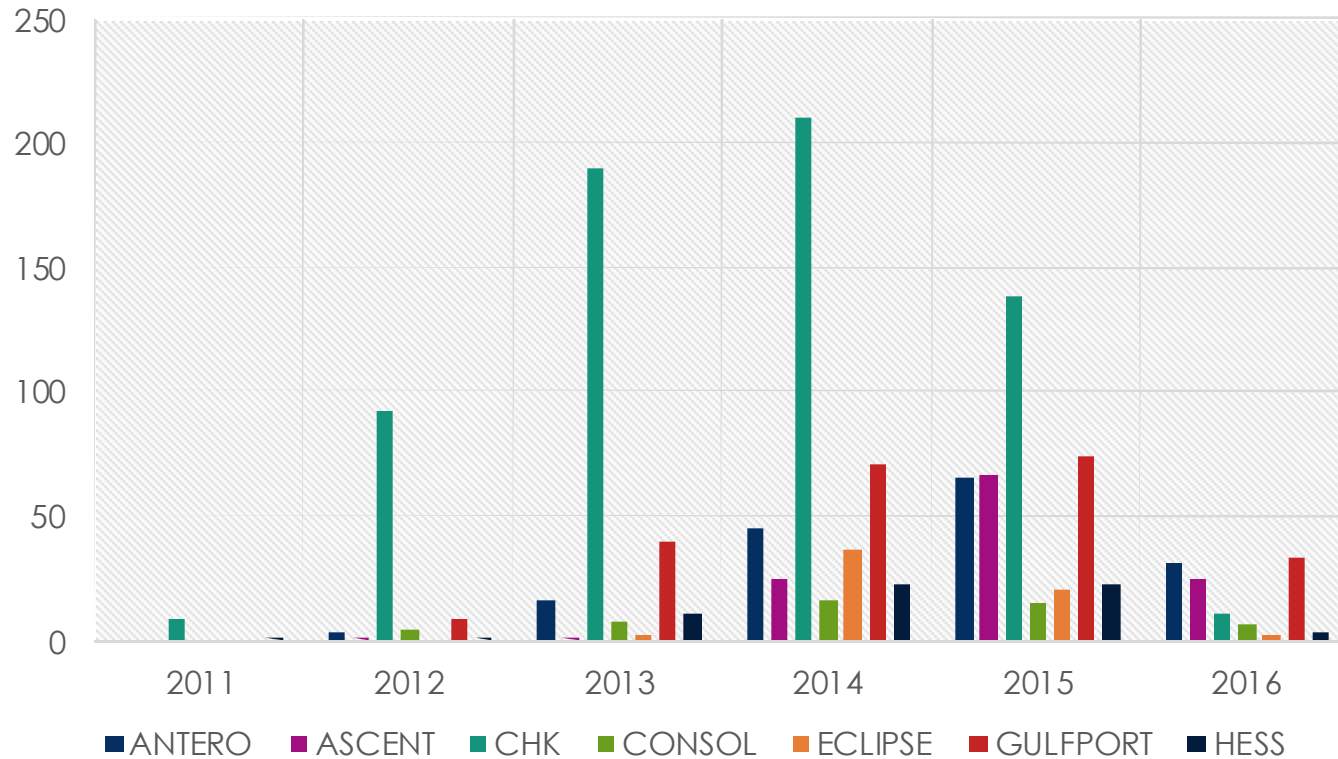
TOTAL TREATED LENGTH



OH WELL ACTIVITY BY COUNTY

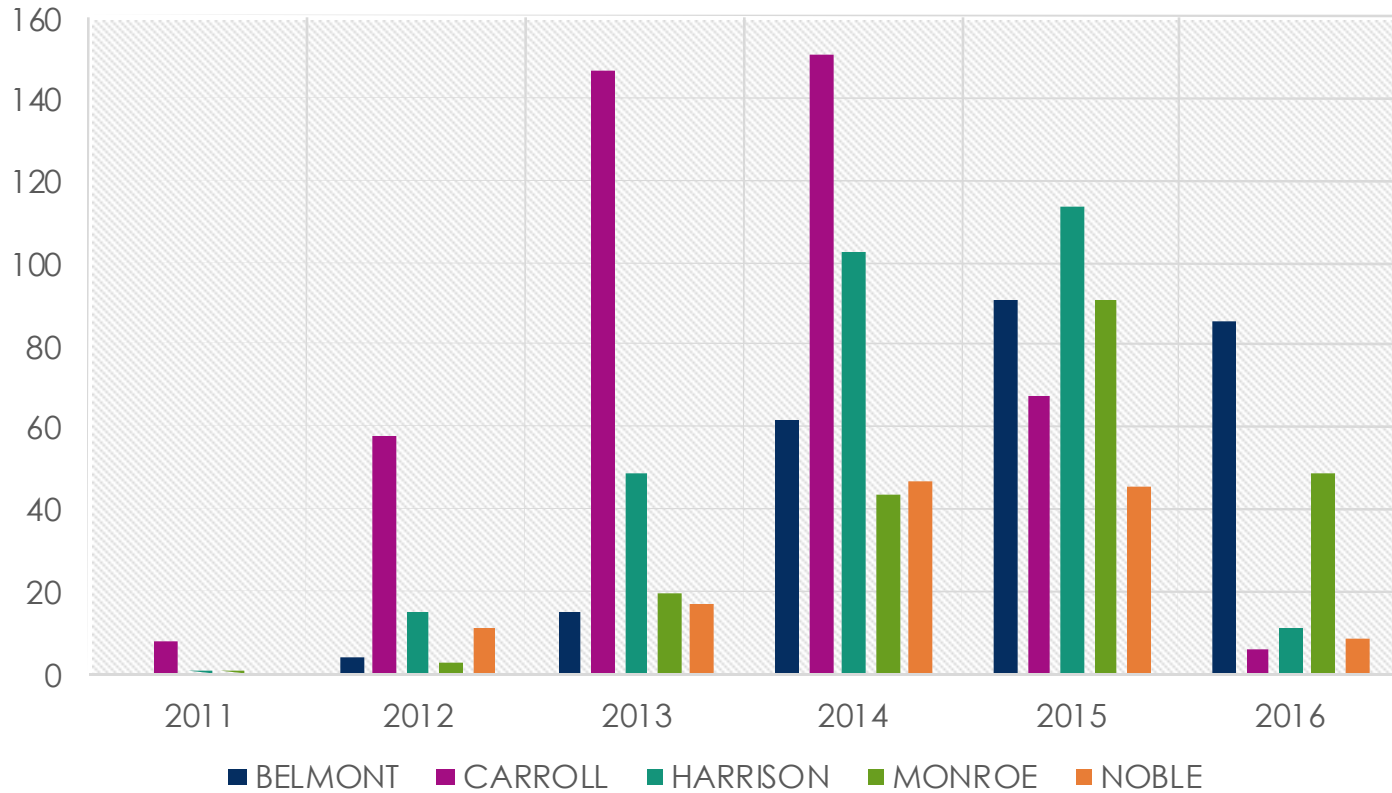


OH COMP-PROD BY TOP 80% OP



OPERATOR	PRIOR	2014	2015	2016	TOTAL
CHK	292	211	139	11	653
GULFPORT	49	71	74	34	228
ANTERO	21	45	66	31	163
ASCENT	3	25	67	25	120
ECLIPSE	3	37	21	3	64
HESS	14	23	23	4	64
CONSOL	13	17	15	7	52
Other	73	75	62	62	272
TOTAL	468	504	467	177	1,616

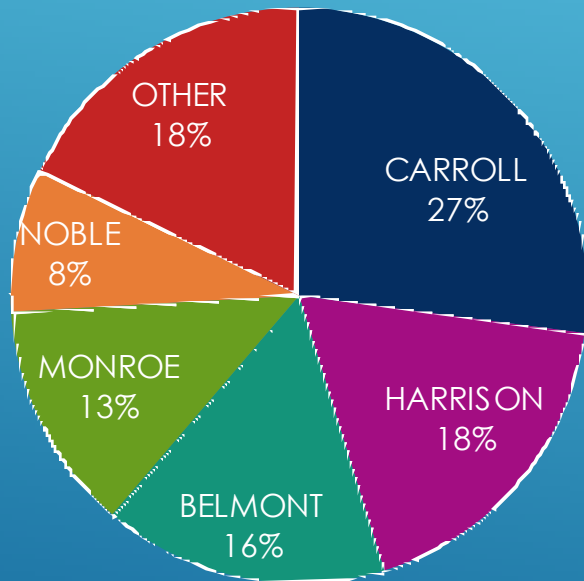
OH COMP-PROD BY TOP 80% CO



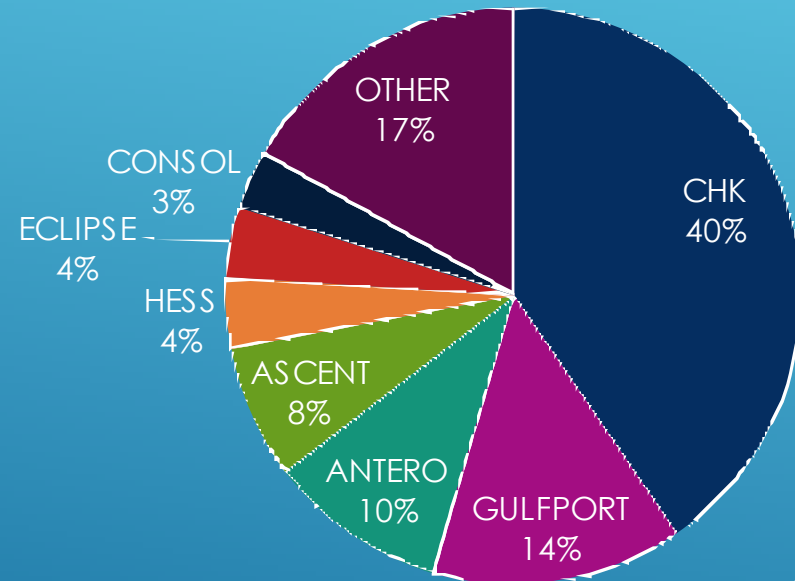
COUNTY	PRIOR	2014	2015	2016	TOTAL
CARROLL	213	151	68	6	438
HARRISON	65	103	114	11	293
BELMONT	19	62	91	86	258
MONROE	24	44	91	49	208
NOBLE	28	47	46	9	130
Other	119	97	57	16	289
TOTAL	468	504	467	177	1,616

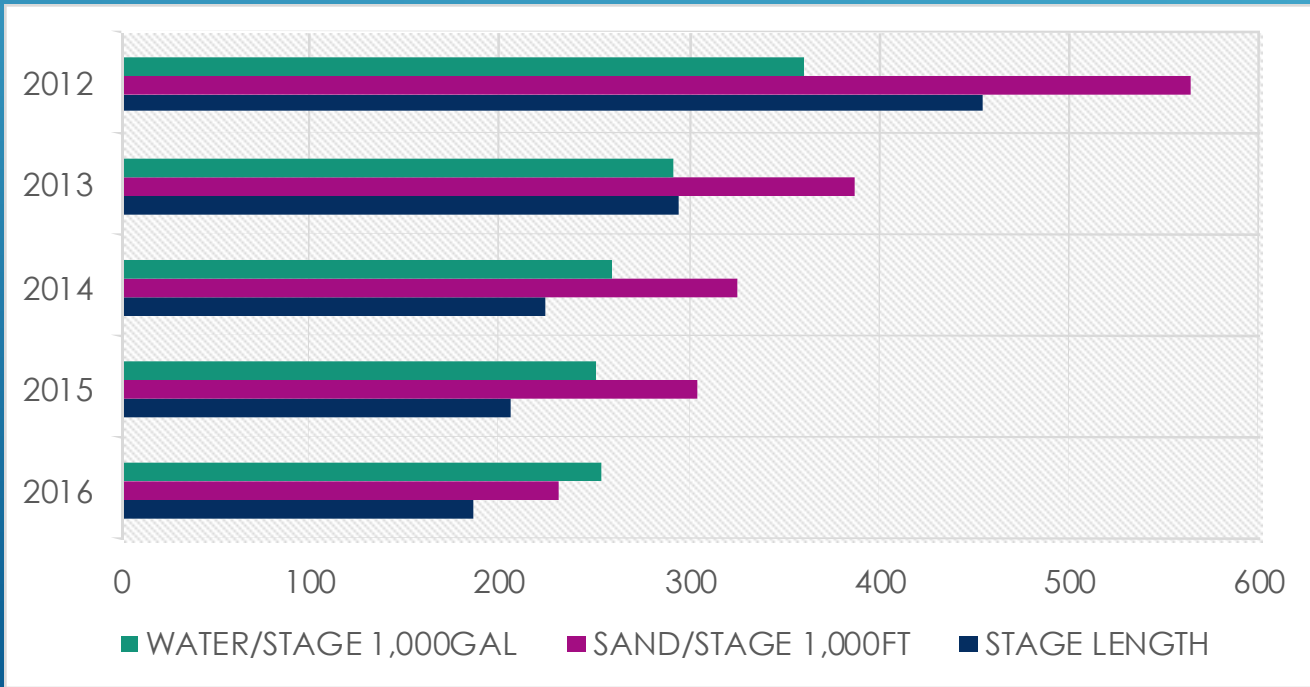
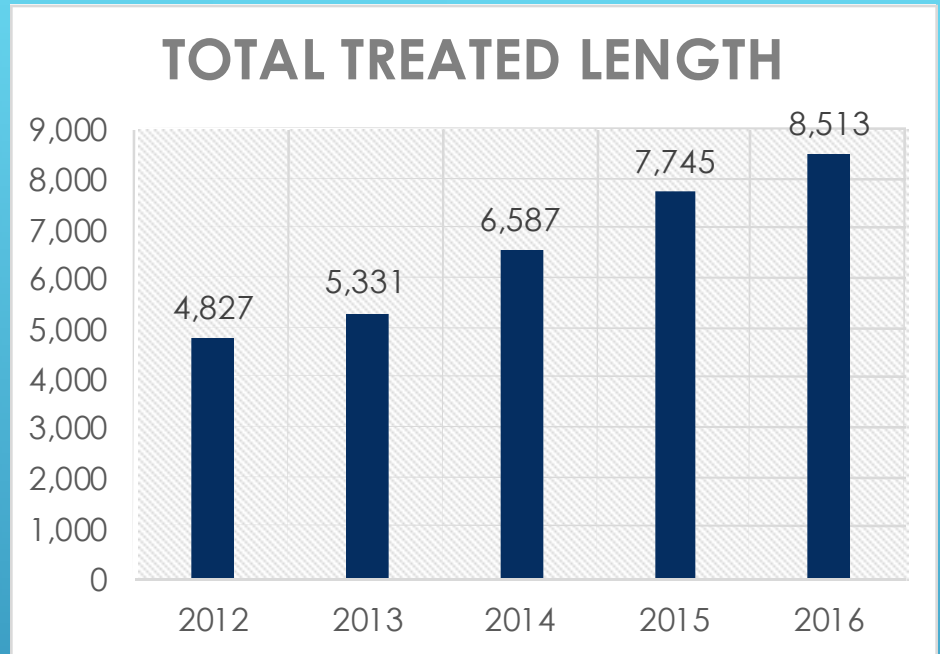
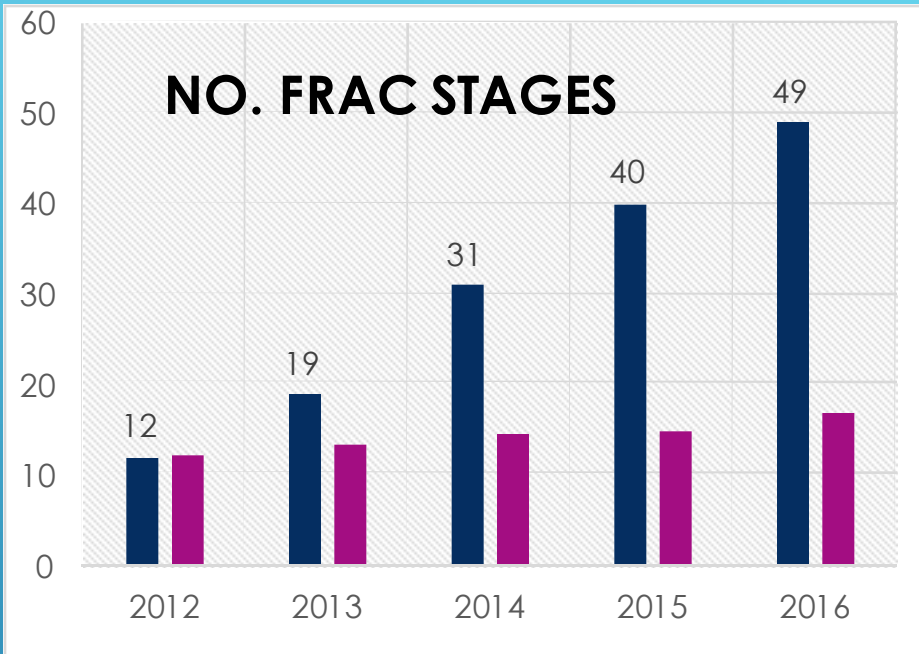
COMP-PROD WELLS

COUNTIES

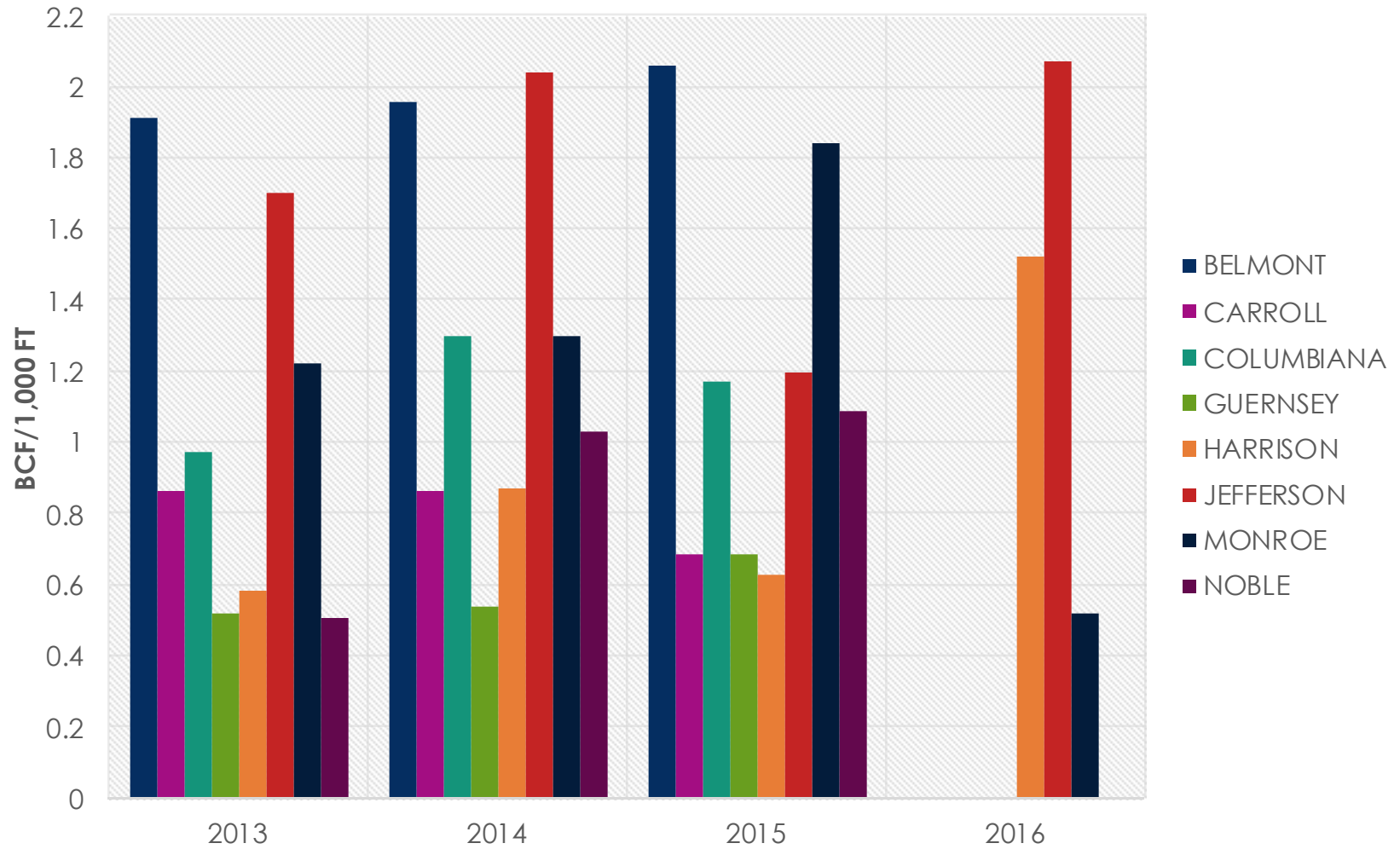


OPERATORS

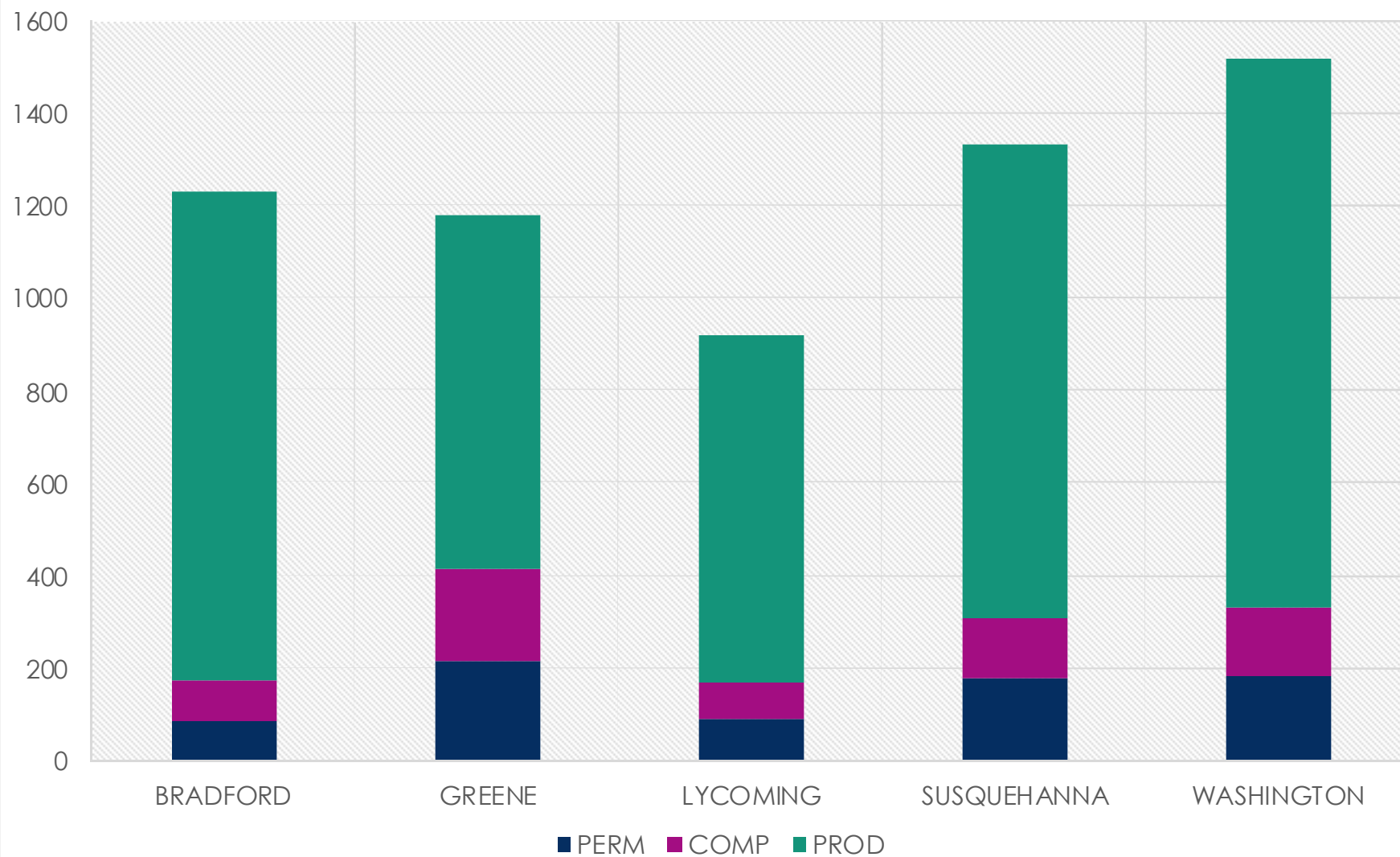




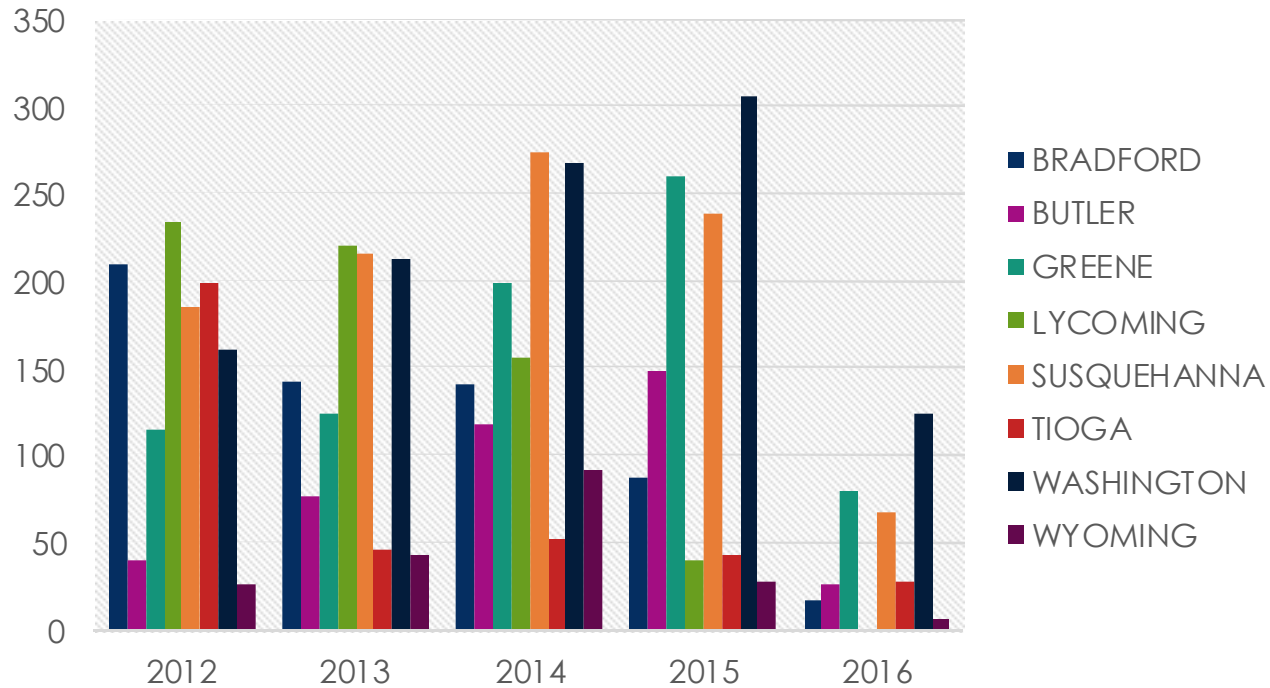
EUR BCF/1,000 FT



PA WELL ACTIVITY BY COUNTY

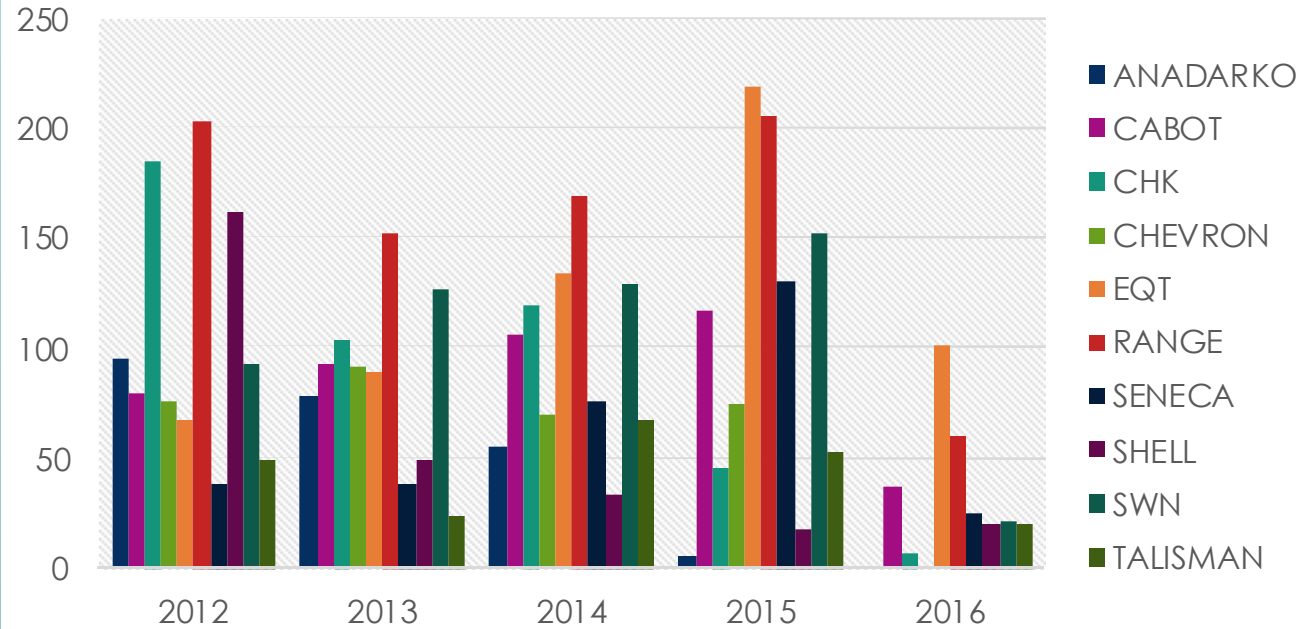


PA COMP-PROD BY TOP 80% CO



COUNTY	PRIOR	2014	2015	2016	TOTAL
WASHINGTON	674	268	307	124	1,373
SUSQUEHANNA	624	274	240	68	1,206
BRADFORD	905	142	88	17	1,152
GREENE	440	200	261	80	981
LYCOMING	648	156	40		844
TIOGA	584	53	43	29	709
BUTLER	150	119	149	26	444
WYOMING	106	92	28	7	233
OTHER	911	250	354	72	1,587
TOTAL	5,042	1,554	1,510	423	8,529

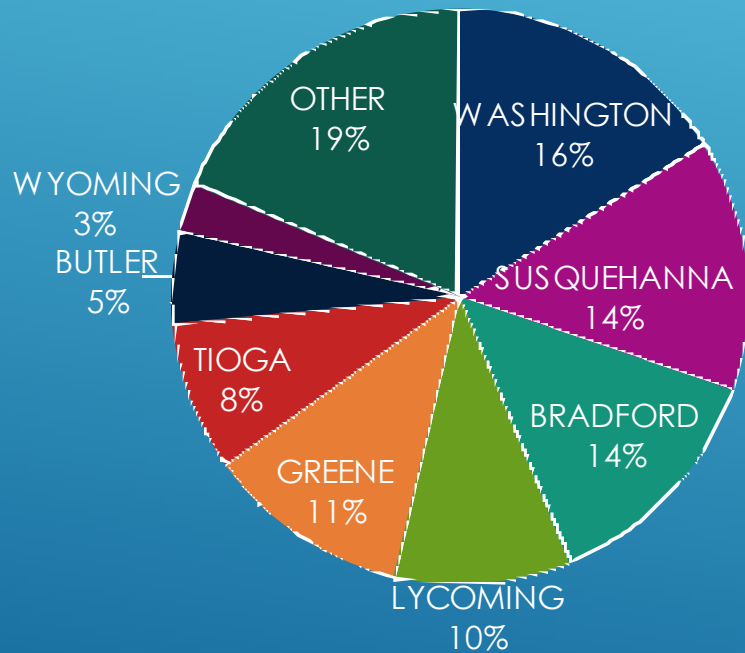
PA SPUD-PROD BY TOP 5 OP



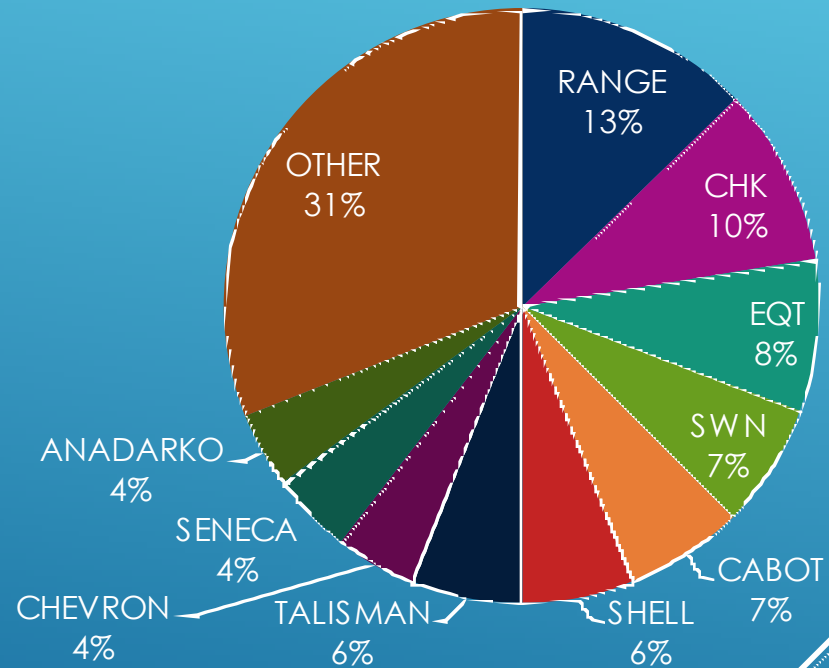
OPERATOR	PRIOR	2014	2015	2016	TOTAL
RANGE	655	169	206	60	1,090
CHK	656	120	46	7	829
EQT	248	134	219	102	703
SWN	270	129	153	22	574
CABOT	291	107	117	37	552
SHELL	448	34	18	20	520
TALISMAN	369	68	53	21	511
CHEVRON	231	70	75		376
SENECA	142	76	131	25	374
ANADARKO	294	55	6		355
OTHER	1,438	592	486	129	2,645
TOTAL	5,042	1,554	1,510	423	8,529

COMP-PROD WELLS

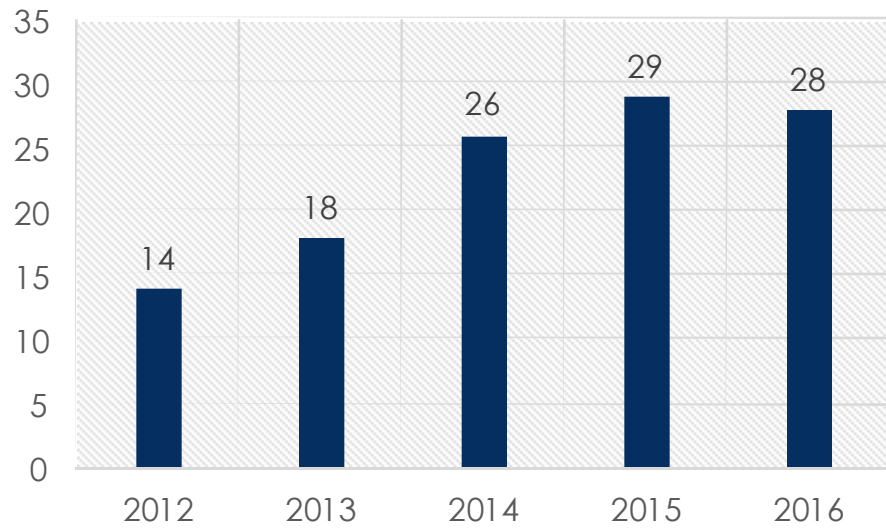
COUNTIES



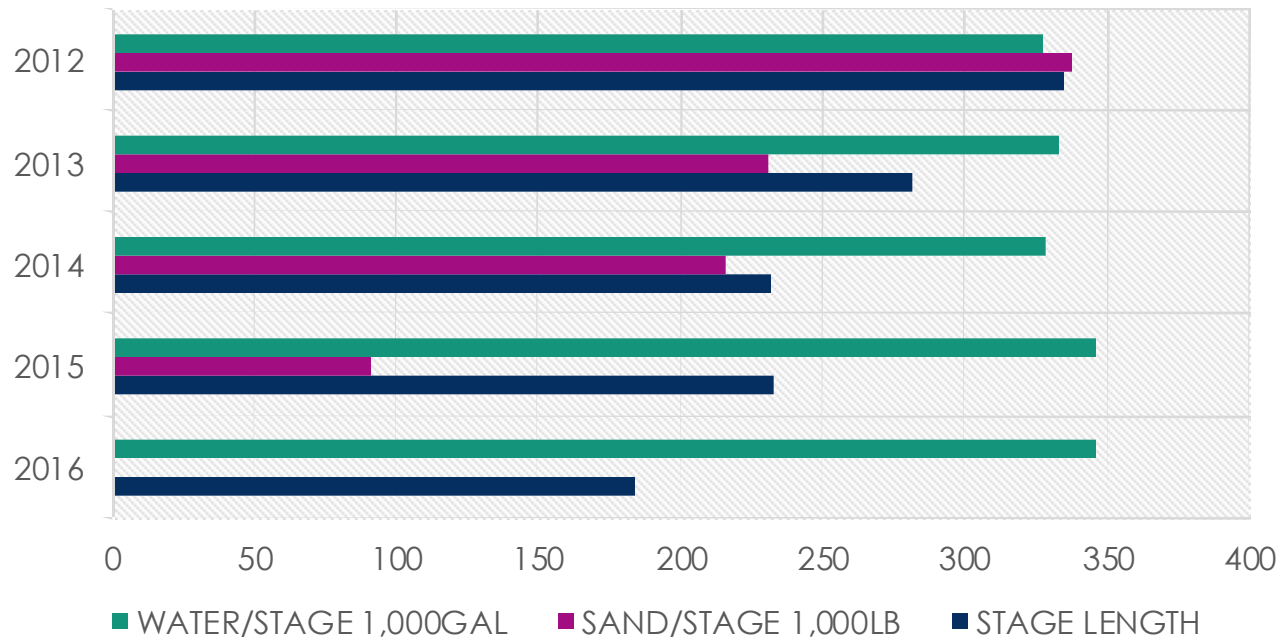
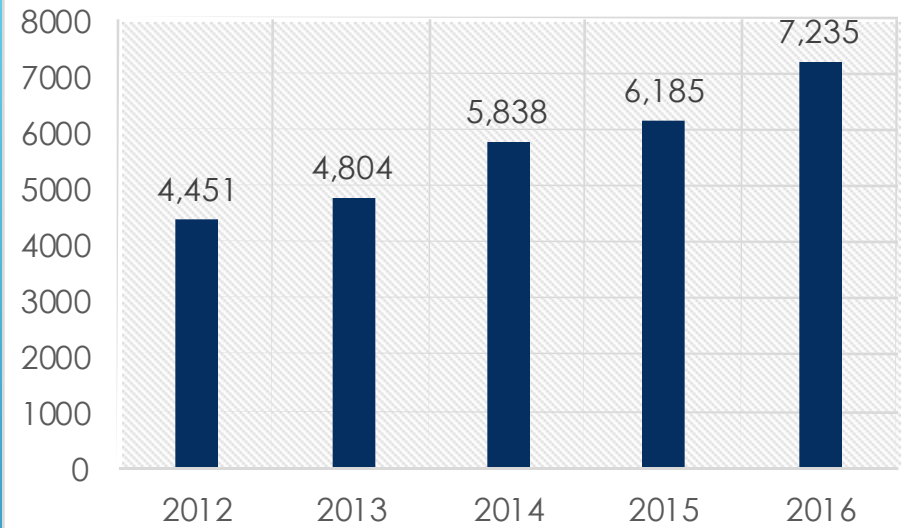
OPERATORS



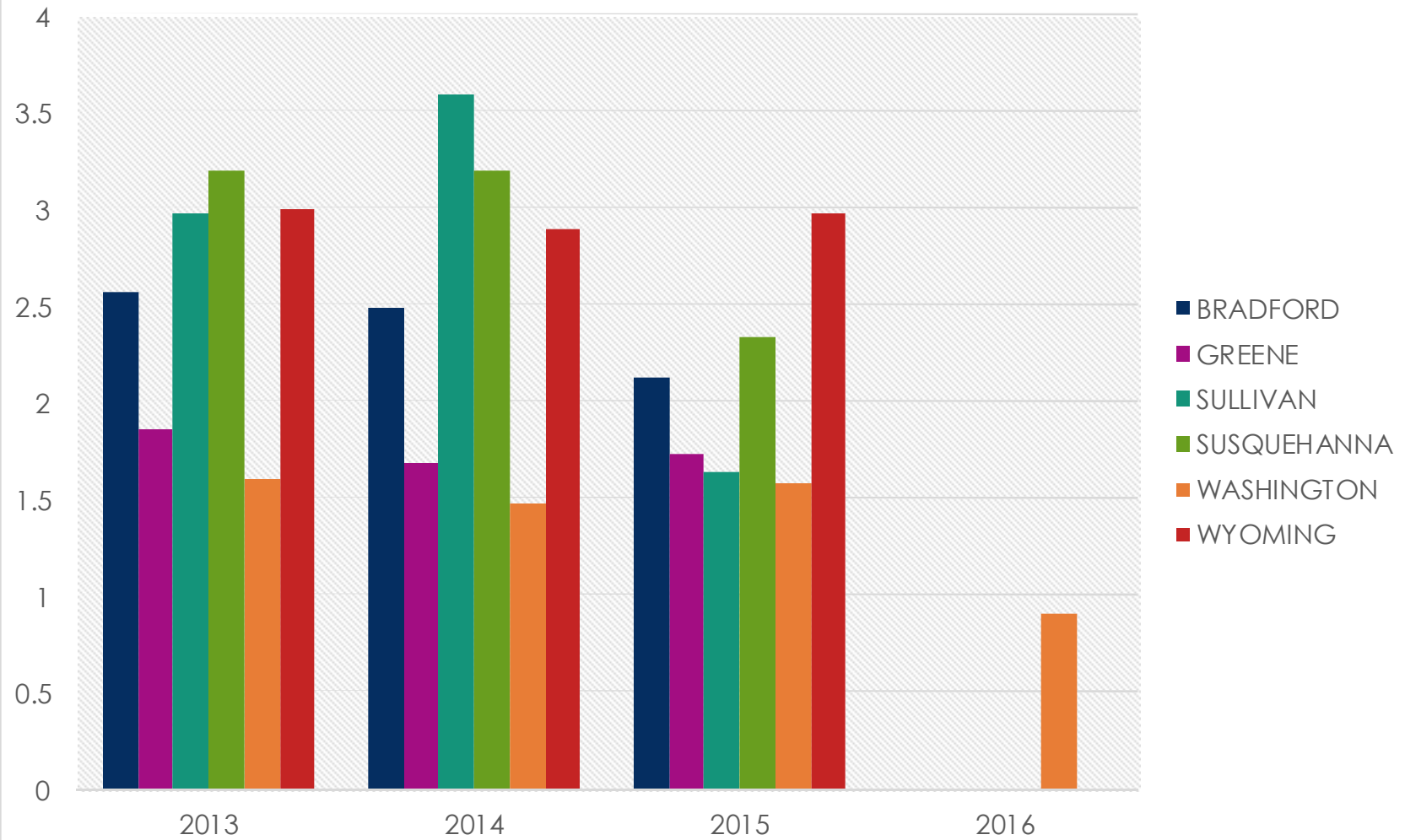
NO FRAC. STAGES



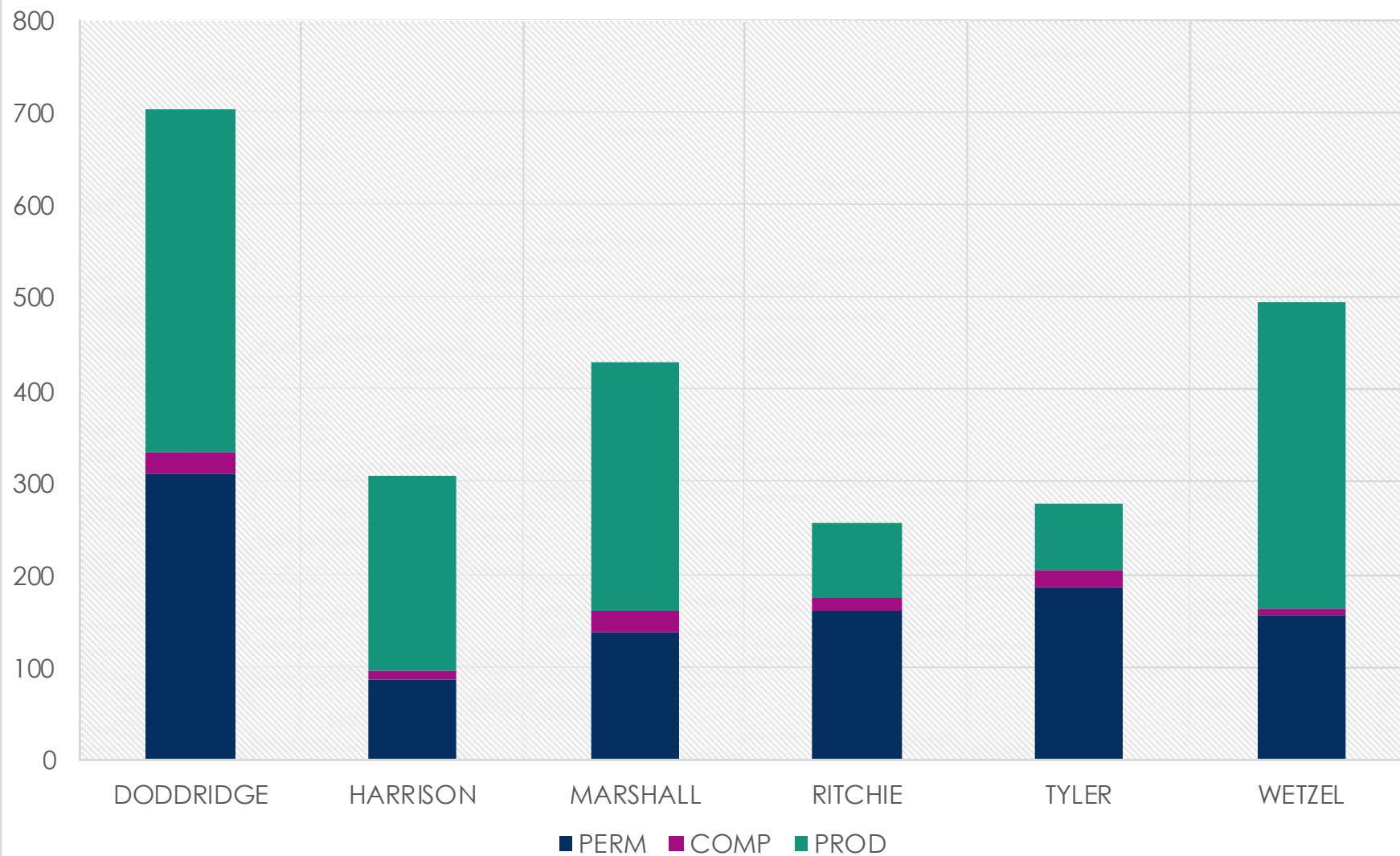
TOTAL TREATED LENGTH



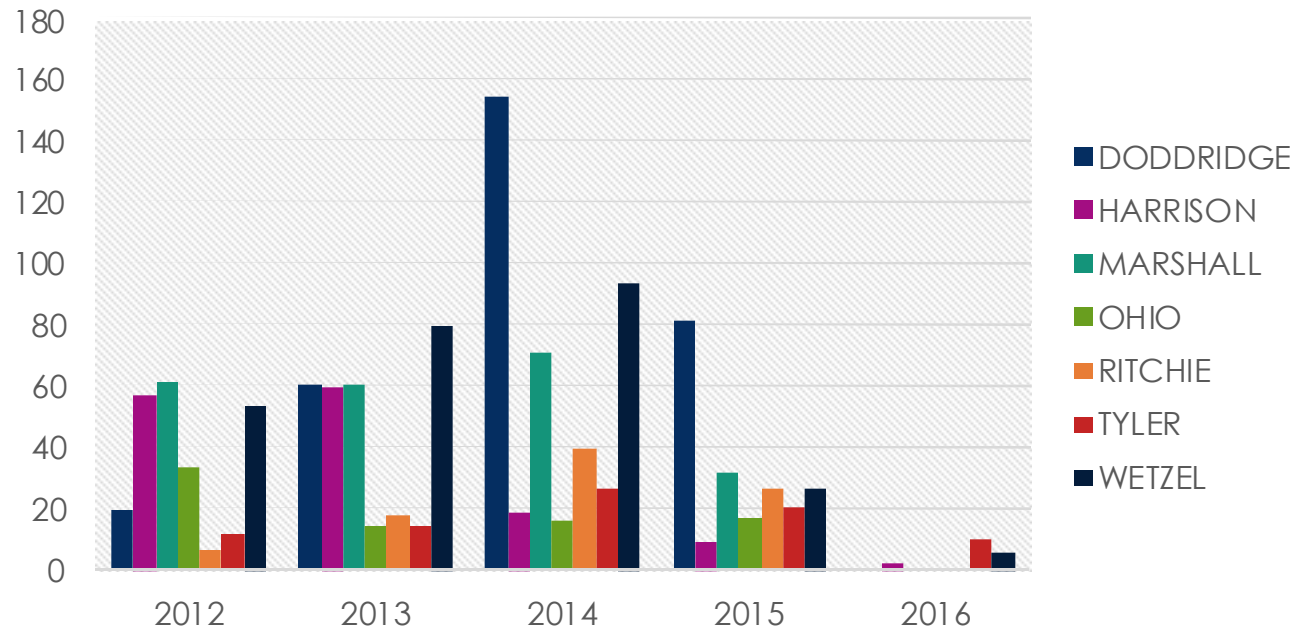
EUR BCF/1,000 FT



WV WELL ACTIVITY BY COUNTY

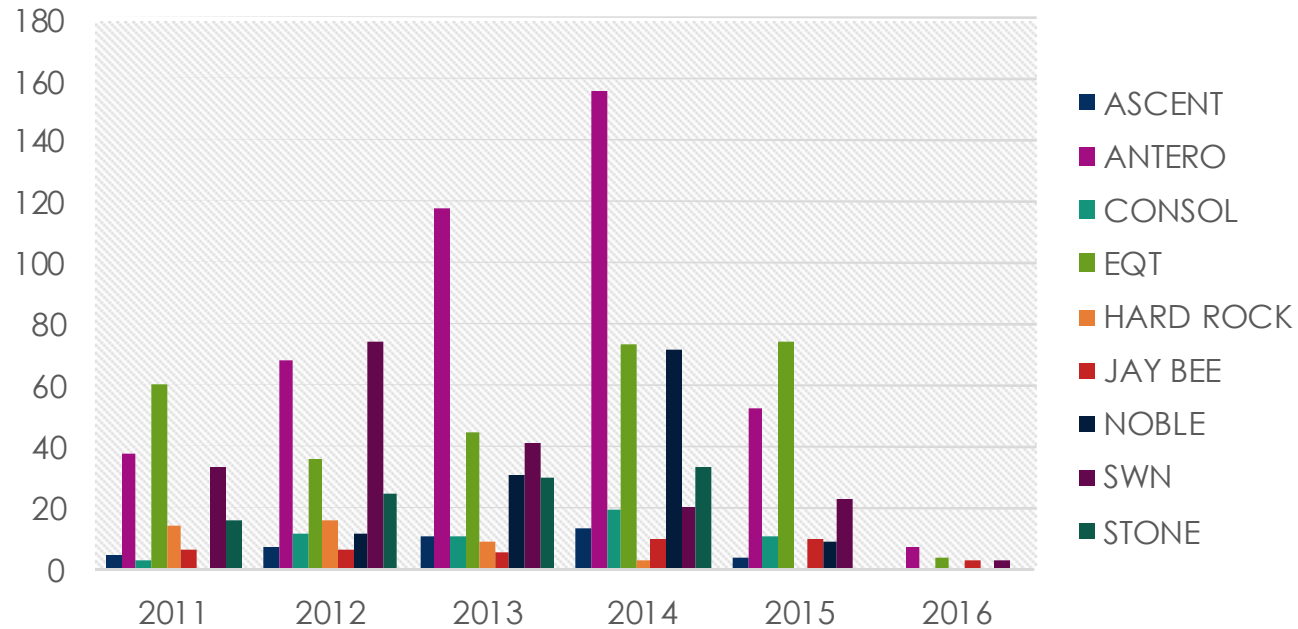


WV COMP-PROD BY TOP 80% CO



COUNTY	PRIOR	2014	2015	2016	TOTAL
DODDRIDGE	156	155	82		393
WETZEL	211	94	27	6	338
MARSHALL	188	71	32	1	292
HARRISON	192	18	9	2	221
RITCHIE	27	40	27	1	95
OHIO	58	16	17		91
TYLER	33	27	21	10	91
OTHER	670	56	23	4	753
TOTAL	1,535	477	238	24	2,274

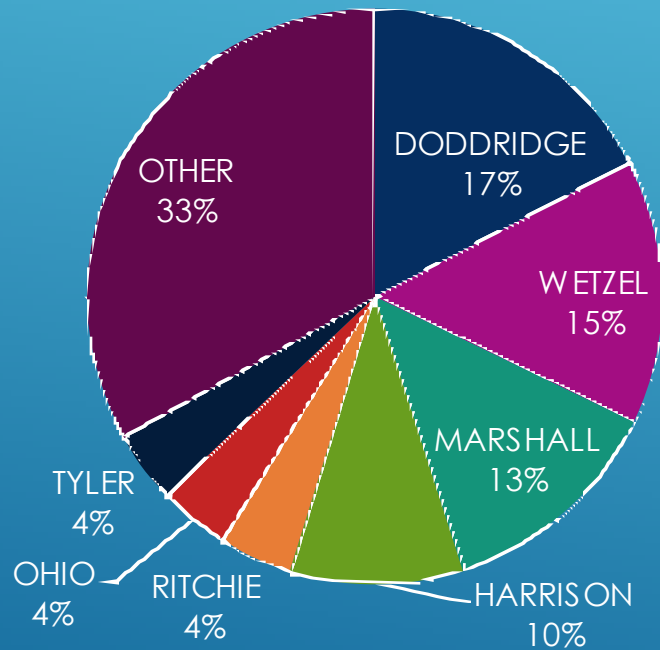
WV COMP-PROD BY TOP 80% OP



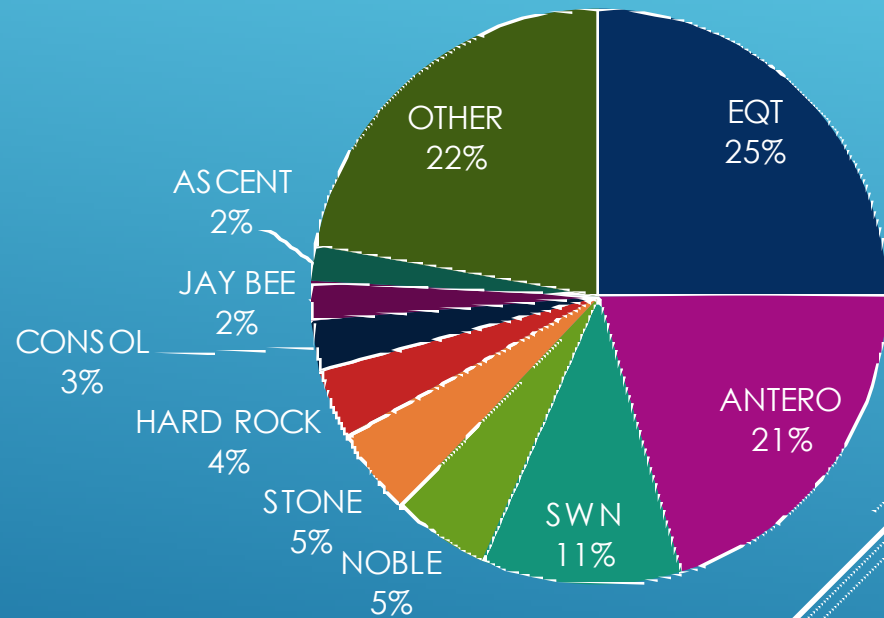
OPERATOR	PRIOR	2014	2015	2016	TOTAL
EQT	412	74	75	4	565
ANTERO	248	157	53	8	466
SWN	209	21	23	3	256
NOBLE	43	72	9		124
STONE	76	34			110
HARD ROCK	87	3			90
CONSOL	34	20	11		64
JAY BEE	26	10	10	3	49
ASCENT	28	14	4		46
OTHER	372	72	53	6	503
TOTAL	1,535	477	238	24	2,274

COMP-PROD WELLS

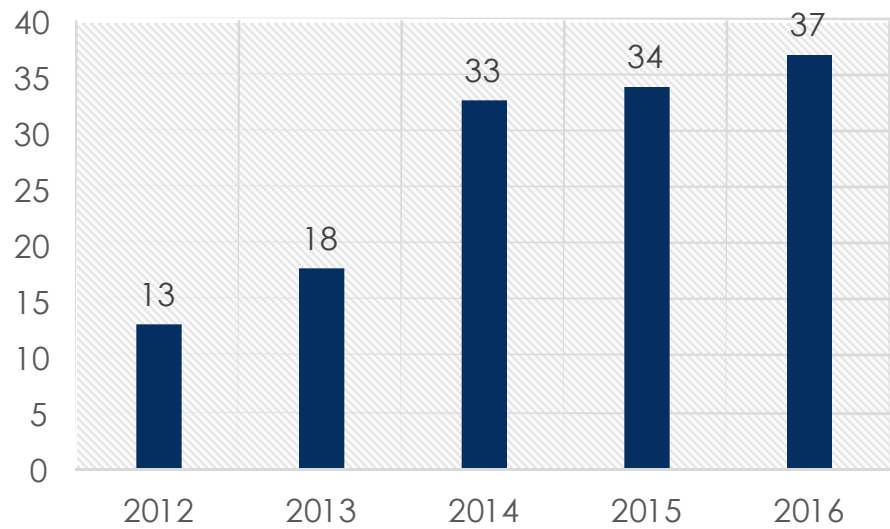
COUNTIES



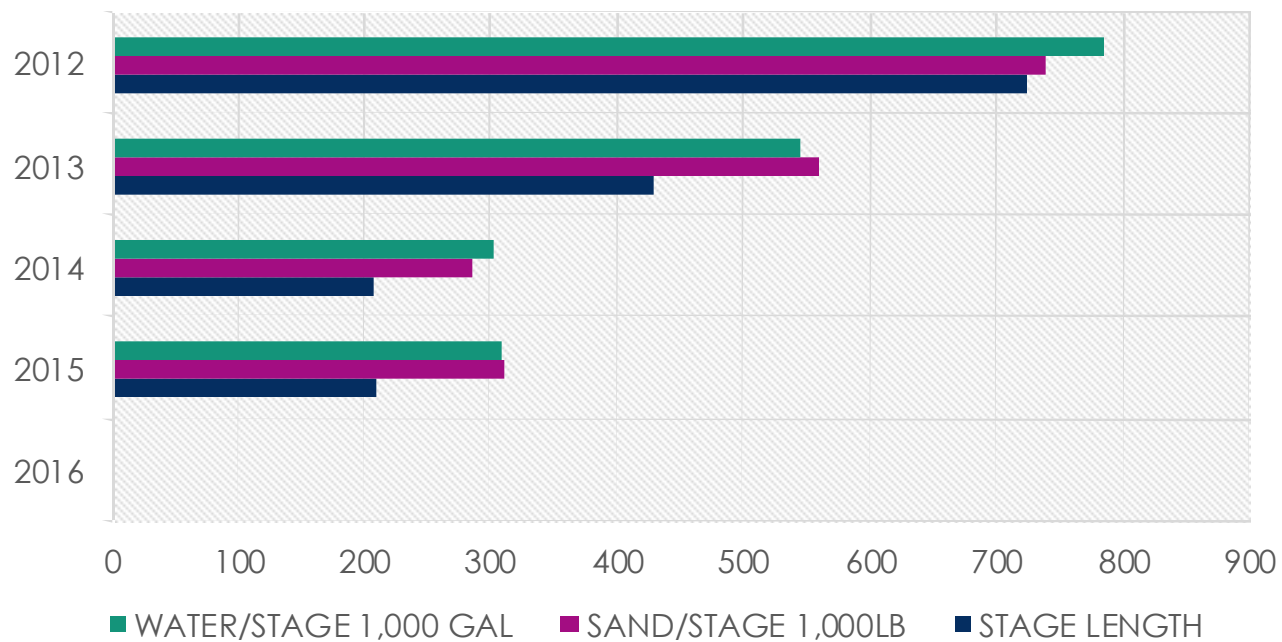
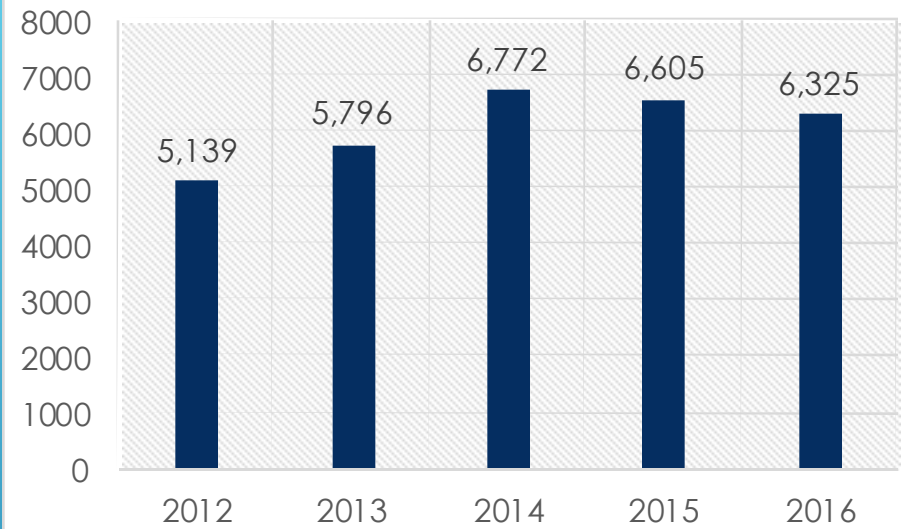
OPERATORS



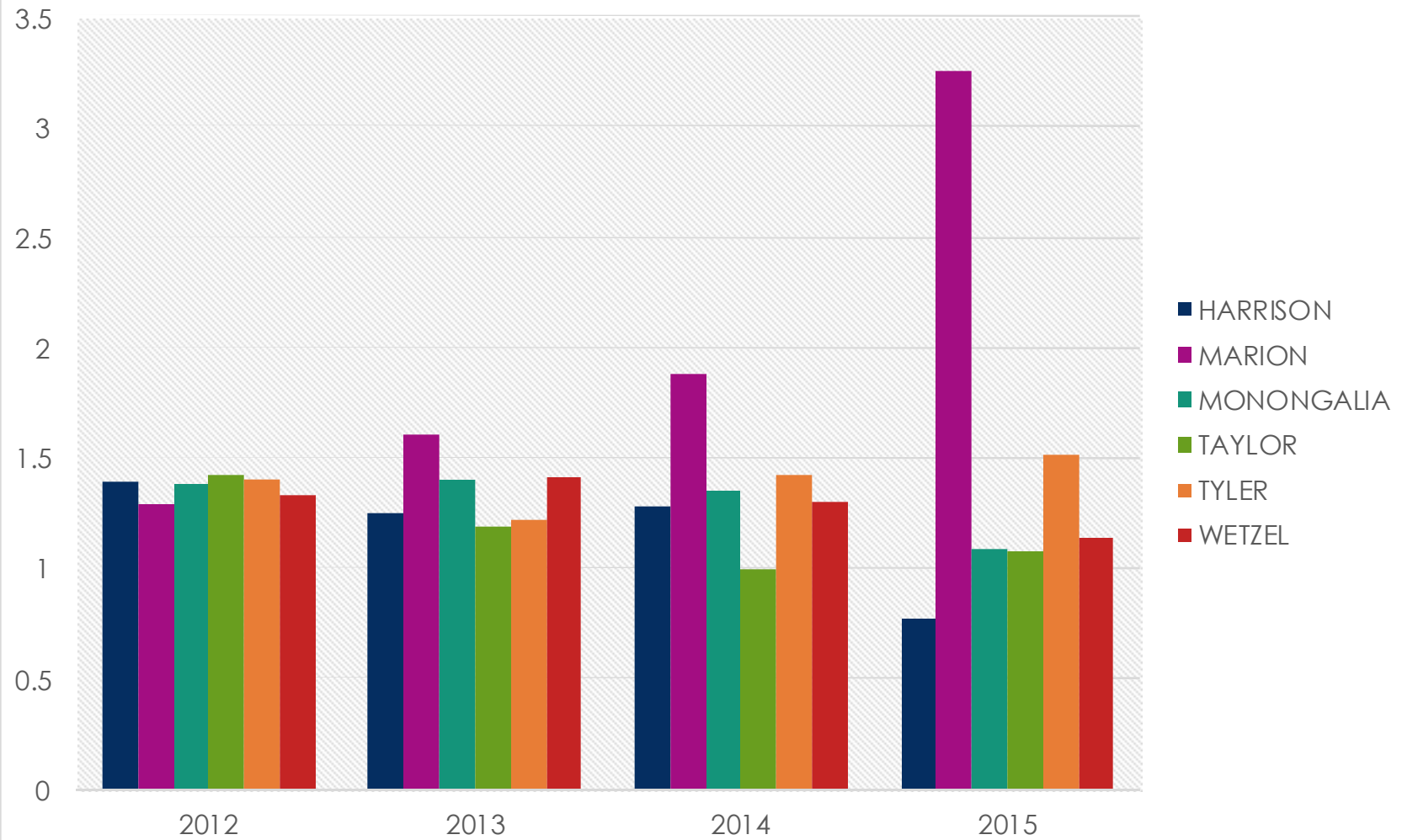
NO FRAC STAGES



TOTAL TREATED LENGTH



EUR BCF/1,000 FT



Top 16 Operators

70% of wells, 80% of production

Operator	Total Prod Wells	Gas BCF/M	Oil BBLS/M
Chesapeake Energy	1,482	24.30	464,682
EQT Production	1,268	41.00	-
Range Resources	1,090	42.02	278,458
Southwestern Energy	830	34.96	27,629
Antero Resources	629	16.42	67,151
Cabot Oil and Gas	552	62.01	-
Shell	520	10.55	-
Talisman (Repsol)	511	16.06	-
Chevron	376	13.93	-
Seneca Resources	374	19.27	-
Anadarko	355	10.87	-
Gulfport Energy	228	22.66	57,539
Ascent Resoures	166	31.79	-
Noble Energy	124	5.298	-
Consol Energy	116	22.51	41,078
Stone Energy	110	1.235	-
Other	3,688	190.43	680,923
Total	12,419	565.32	1,620,183

Top 13 Counties

70% of wells, 90% of production

County	State	Total Prod Wells	Gas BCF/M	Oil BBL/M
Washington	PA	1,373	74.15	310,001
Susquehanna	PA	1,206	106.96	-
Bradford	PA	1,152	65.33	-
Greene	PA	981	50.61	-
Lycoming	PA	844	33.65	-
Tioga	PA	709	17.98	-
Butler	PA	444	15.64	19,051
Carroll	OH	438	13.76	283,334
Doddridge	WV	393	24.47	52,090
Wetzel	WV	338	15.74	25,144
Harrison	OH	293	14.76	449,414
Marshall	WV	292	11.31	147,860
Belmont	OH	258	49.71	7,599
Other		3,698	71.24	325,690
Total		12,419	565.32	1,620,183

Thank you!

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