



OIL & GAS ROAD EFFECTS

OIL & GAS MIDSTREAM CONSTRUCTION

- Pipeline Construction
- Compressor/Processing Facilities
- Access Roads To Sites
- Future Growth and Maintenance

New Offsite Facilities



Additional Traffic



ADDITIONAL ITEMS NEEDED

- Traffic Lights
- Turning Lanes
- Roadway Widening
- Bridge Upgrades

Additional Maintenance



Additional Damage To Roadway



Additional Maintenance Problems





QUESTIONS ?



WVDOT/MPO/FHWA Planning Conference

Bob Whipp, Sr. Civil Engineer

September 18, 2013



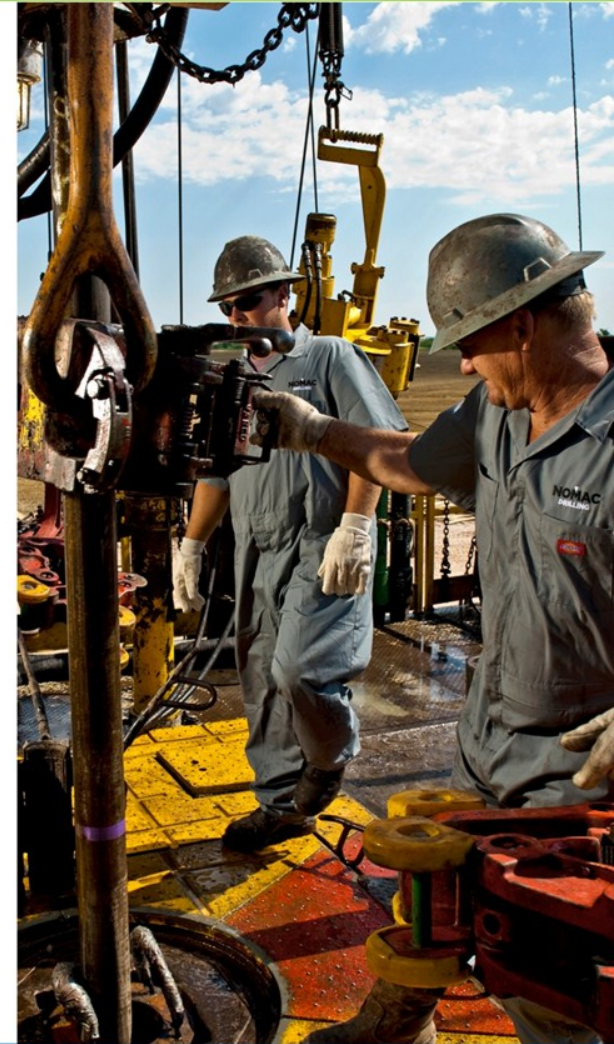
CHESAPEAKE ENERGY



- Founded in 1989
- Headquarters in Oklahoma City
- Employees in 17 states and District of Columbia
- Ranked #18 on Fortune Magazines Best Companies to Work For list
- Named to CivilianJobs.com's Most Valuable Employers for Military list for 2010 and 2011

Chesapeake Energy

- Second largest producer of natural gas
- Top 15 producer of oil and natural gas liquids
- Most active driller of new wells in the US
- Currently operates over 24,000 wells



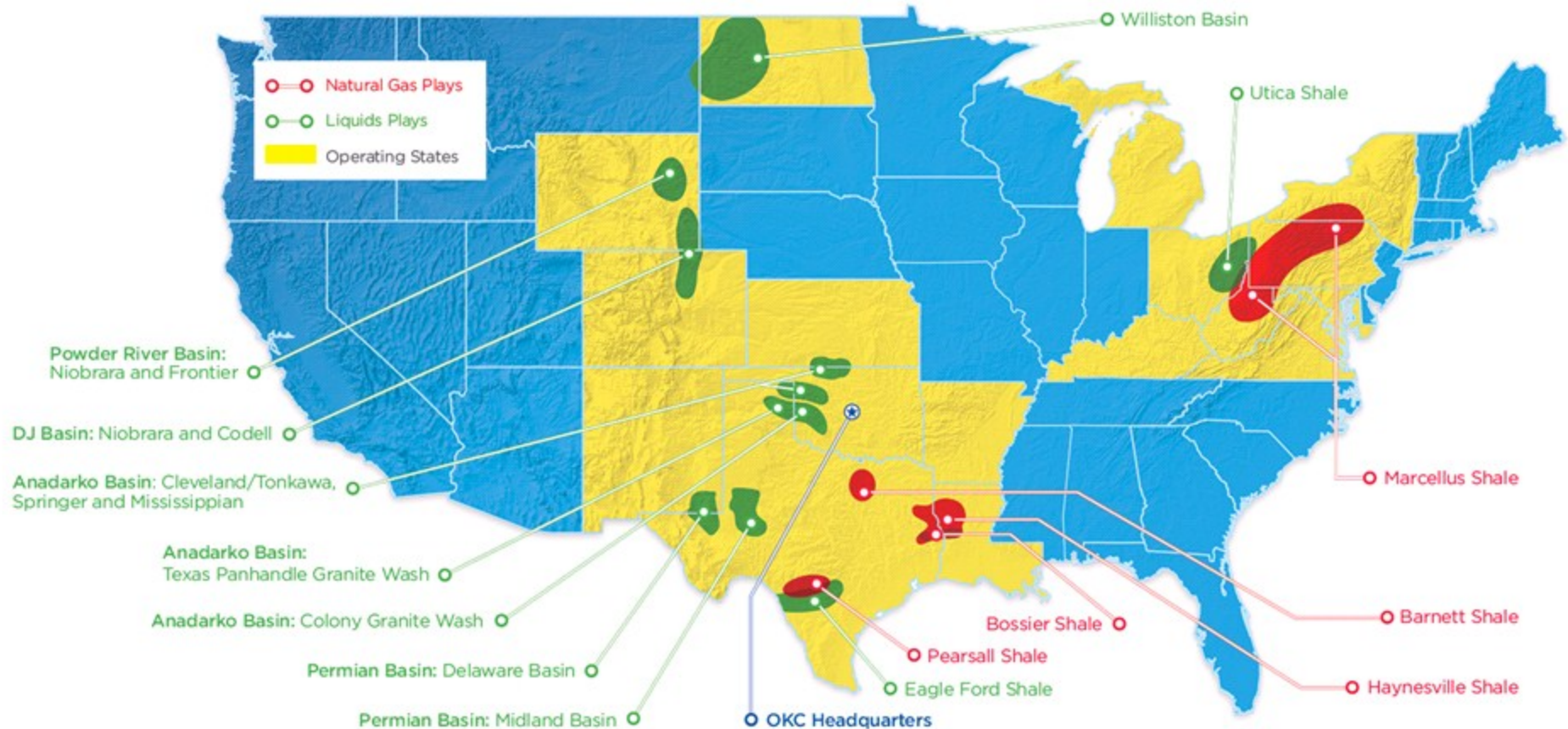
CHESAPEAKE ENERGY



- Over 10,000,000 acres under lease
- Operating in 8 different plays
- #1 Driller in the past 20 years more than 12,200 wells



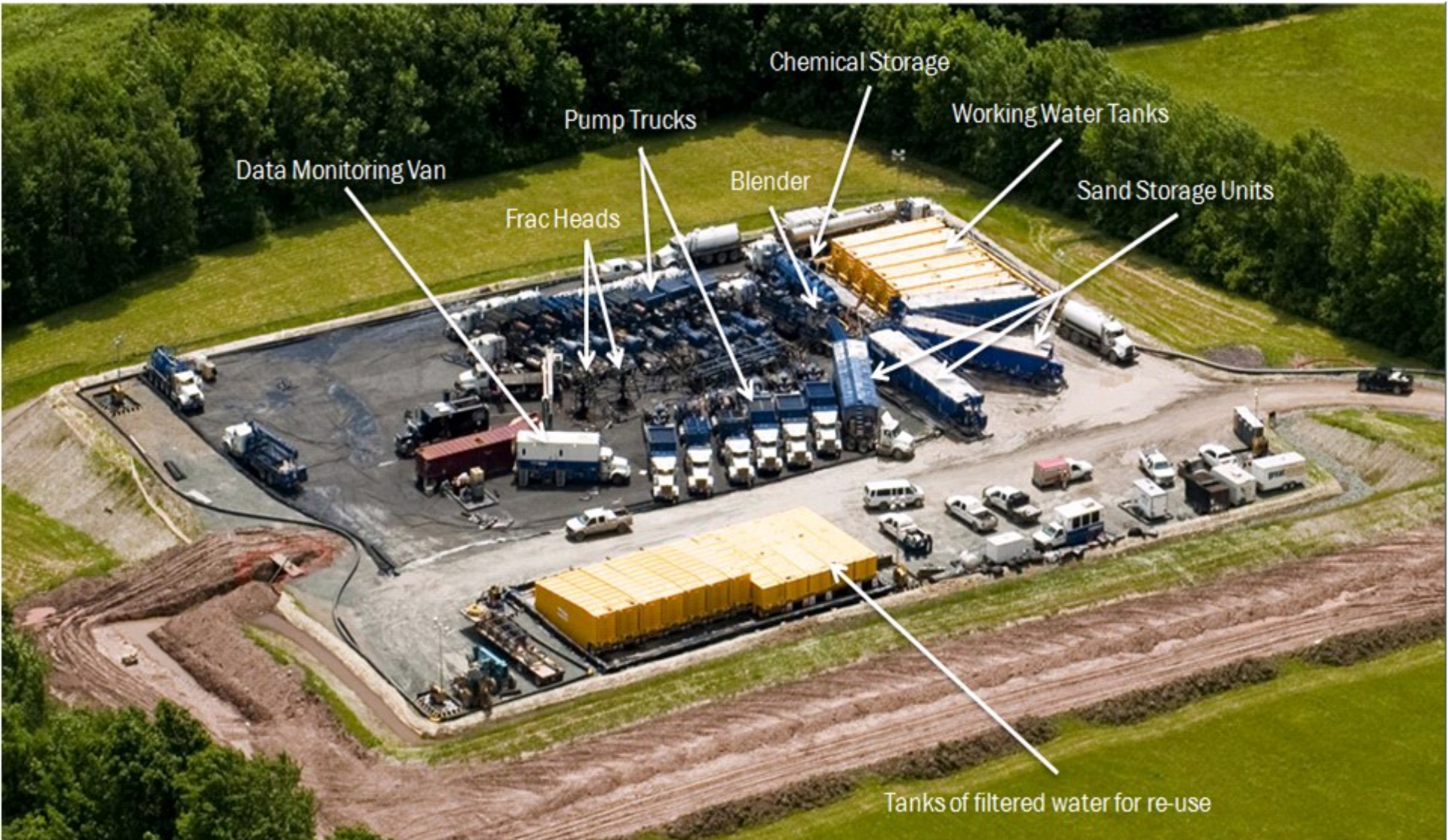
Chesapeake's Key Operating Areas



Typical Drilling Setup

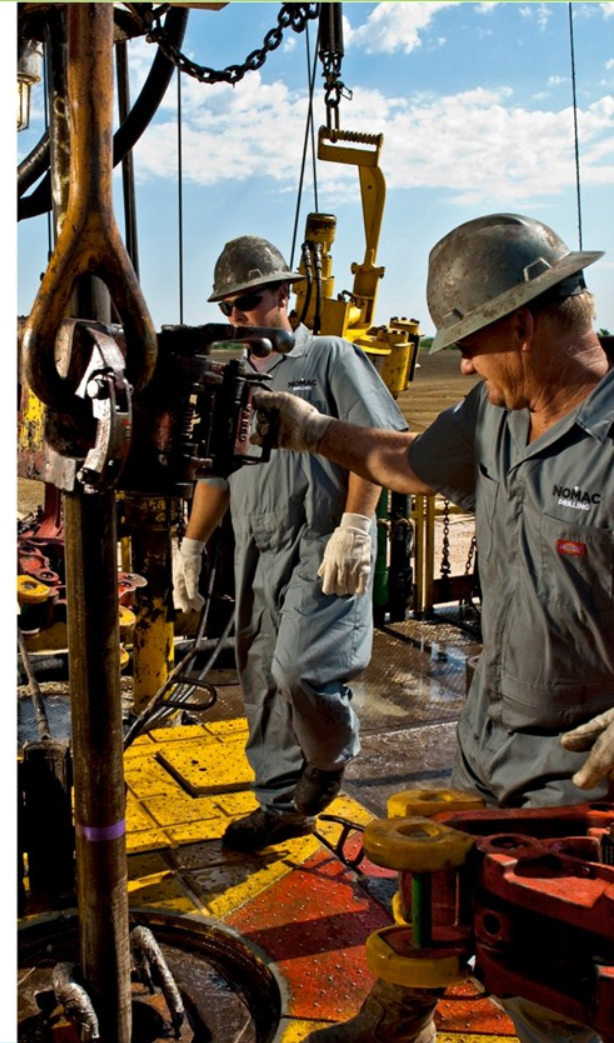


Hydraulic Fracturing Site Layout



Typical Truck Traffic

- Pad construction
 - Construction equipment
 - Stabilization equipment
 - Stone trucks
- Drilling Operations
 - 60 to 70 trucks
 - Only 15 to 20 are overweight
 - Daily truck traffic
 - Rig move out
- Completions Operations
 - Equipment is lighter
 - Daily deliveries of sand and water
 - Water may be pumped



Air Compressors



Booster



Mud Pump 14'h, 11'w, 74,000#



Mud Pump Motor



Miscellaneous



Shakers



Shaker Pit

14' h, 11' w, 75' l, 74,000#



Kayden Tank

14' h, 12' w, 90' l w/ 10-15' OH, 65,000#



Draw Works

14'h, 12'w, 75'l, 77,000#



Pipe Handler
14'6" h, 12' w, 85', 90,000#



Tower Crown Section 13'6" h, 80' l w 5' overhang



HB House

14'6" h, 14' w, 95' l w/ 20' OH, 65,000#



HB Rentals
A HARBOR ENERGY SERVICES COMPANY
www.hbrental.com
1-800-262-6790

Roads



- Most lower class roads evolved and were never built
- Adequate for normal traffic
- Cannot sustain continuous heavy loads
- Damage can be serious

Road Damage

» Some damage in Pennsylvania



Comparison of States



» West Virginia

» Most roads under jurisdiction of the DOT

» CR routes must be bonded

» WV and US routes do not need bonded

» Driller responsible for repairs in lieu of upgrades

Comparison of States

» Pennsylvania

» DOT and Township Roads

» Certain DOT routes require bonding and upgrades

» Most Township roads need upgraded or repaired

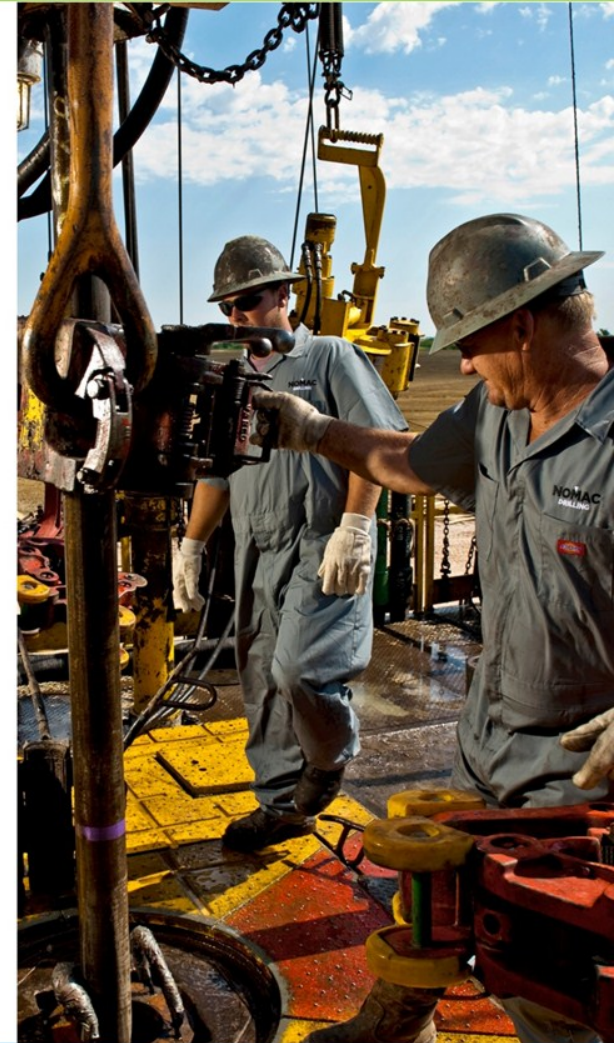
» Must have agreement with the Township



Comparison of States

» Ohio

- » DOT, County and Township Roads
- » States routes are excellent and no agreements
- » Majority of county roads need upgraded or repaired
- » Almost all township roads need upgraded
- » Use RUMA's Road Use Maintenance Agreement



Road upgrades



- » Stone with geotech fabric
- » Chip Seals
- » Asphalt base repairs
- » Asphalt overlays
- » Full depth reclamations (FDR)with cement and asphalt overlay
- » Developing FDR with chemical additives and enzymes

Traffic Concerns

- » Post Chesapeake speed limits where allowed
- » Post Chesapeake directional routes where allowed
- » Post Chesapeake no traffic signs where allowed
- » Electronic speed check message board with camera and online capabilities
- » Pilot trucks
- » Security patrols

Traffic Concerns

- » Dust treatments
- » Flaggers
- » FTP site with haul routes
- » Require all drivers to have driving directions
- » Remove un-cooperative drivers or companies

Questions/Comments?



Thank you

OHIO DEPARTMENT OF TRANSPORTATION

ODOT UPDATES ON RUMA & OIL AND GAS ISSUES

LLOYD V. MACADAM, P.E., P.S., CPM
DISTRICT 11 DEPUTY DIRECTOR



JOHN R. KASICH, GOVERNOR

JERRY WRAY, DIRECTOR

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Why?

Potential for 7,000 to 15,000 wells in OHIO!



Statistics for **2011-2013** (06/08/2013 ODNR data)

	<u>Statewide</u>	<u>District 11</u>
Producing	108	82
Drilled (no prod)	244	201
Drilling	14	7
Permitted	371	252
Totals	737	542

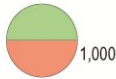


Potential Utica

UTICA HORIZONTAL WELL STATUS THROUGH 4/6/2013 REPORTED INITIAL PRODUCTION

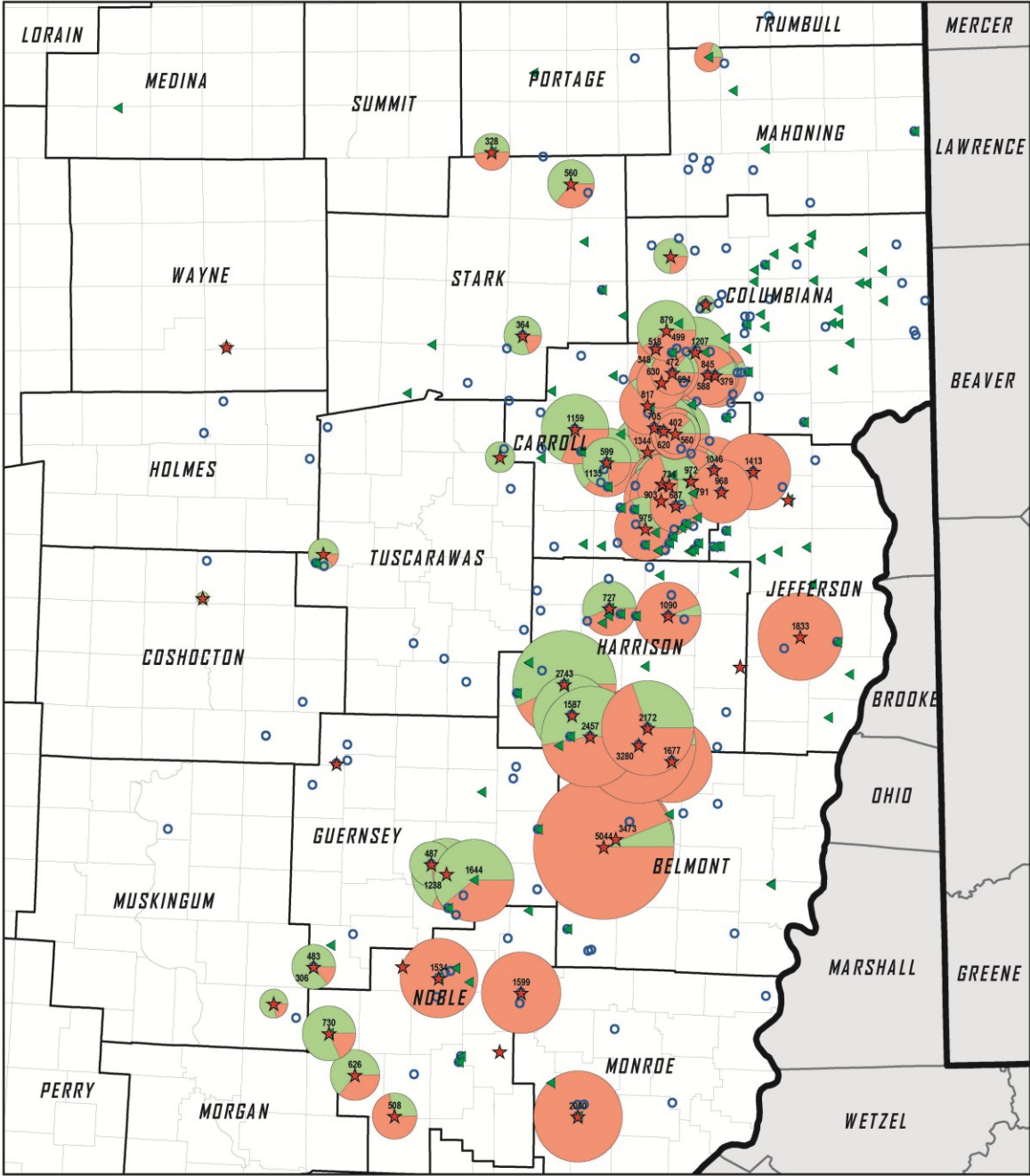
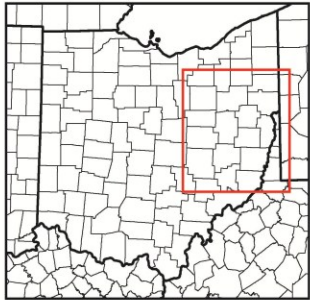
- ★ PRODUCING (81)
- ▲ DRILLED, DRILLING OR INACTIVE (201)
- PERMITTED OR NOT DRILLED (314)

INITIAL PRODUCTION AS REPORTED
BBLs OIL EQUIVALENT PER DAY



- PRODUCED AS OIL
- PRODUCED AS GAS

IP VALUES AS REPORTED TO THE STATE ON COMPLETION REPORTS. BARRELS OF OIL EQUIVALENT (BOE/D) CALCULATED AS 6 MCF NATURAL GAS PER DAY EQUALS 1 BOE/D. IP VALUES GREATER THAN 300 BOE/D ARE POSTED (SOME VALUES ARE NOT SHOWN FOR CLARITY).



Chesapeake Energy Utica Shale Drill Site in Carroll County



Initial Drilling Activity on a 3 to 5 Acre Pad



Hydraulic Fracturing Activity



Why a RUMA?

- The development of a Road Use and Maintenance Agreement (RUMA) became apparent as a result of:
 - Regional Government to Government meetings held by ODNR in summer of 2011 in Steubenville, New Philadelphia, Youngstown, Marietta and Zanesville
 - Local Township and County officials had concerns about notification prior to Drilling Activity.
 - No guarantee of maintenance on Township and County road system which has not been designed for repetitive legal truck loads that the horizontal drilling process requires.
 - ODOT District 11 Quarterly County Engineers meeting
 - May 2011 meeting in Jefferson County Engineer Jim Branagan's office
 - September 2011 meeting in Holmes County Engineer Chris Young's office for Chesapeake Energy presentation
 - The issue of needing a standardized RUMA was apparent by both the local government side (County and Townships) as well as the shale development industry.

RUMA Development Process

- 🕒 In response to the County Engineers and the Oil and Gas Drillers request, ODOT District 11 agreed to assist them in the development of a locally-supported RUMA.



- 🕒 The intended outcome was to develop a model agreement to be used regionally and perhaps statewide.

RUMA Development Process

Working Session #1 – Oct. 3, 2011 at ODOT District 11

- Attendees for initial meeting included:
 - All seven of District 11's County Engineers, plus the Ashland County Engineer



- Josh Hahn, Senior Policy Analyst from the County Commissioners Association of Ohio (CCAO)
- Matt DeTemple, Executive Director of the Ohio Township Trustee Association
- Engineers shared their positive experiences with the first Drilling Companies and brought copies of the RUMA's used.
- After about an hour discussion, the group decided to utilize Columbiana County Engineer Bert Dawson's version as the starting document and added components from other RUMA's as needed.

Example of Proactive Maintenance by Drilling Company in Carroll County (Bay Road)



RUMA Development Process

Working Session #1 – Oct. 3, 2011 at ODOT District 11

- ⌚ After the first initial draft was complete, all Engineers agreed to share with their Prosecutors, and ODOT agreed to share with the OOGA for their comments.
- ⌚ ODOT also agreed to meet with ODNR's Oil and Gas Division to get their buy-in for a requirement of a RUMA in place prior to permitting a well utilizing the Horizontal Drilling process.



RUMA Development Process

Working Session #2 – Nov. 8, 2011 at ODOT District 11

- ☉ Participants in the process grew to include a total of 25 people from the following agencies in addition to the original group:

- ☉ Stark County Engineer
- ☉ Coshocton County Engineer
- ☉ Jefferson County Commissioner
- ☉ OOGA
- ☉ Chesapeake Energy/CESO
- ☉ Enervest
- ☉ ODNR
- ☉ Ohio Railroad Association
- ☉ CEO Executive Director
- ☉ ODOT District 4



- ☉ We went through several pages of comments from the Prosecutors, the Railroads, and the Oil and Gas industry and incorporated changes to the RUMA.

RUMA Development Process

Working Session #3 – Dec. 6, 2011 at ODOT District 11

- ☉ Participants in the process grew to include a total of 31 people from the following agencies in addition to the original group:
 - ☉ Salem Township Trustee from Jefferson County
 - ☉ Hess Energy
 - ☉ Governor's office Reps
 - ☉ Director of the Office of Appalachia
 - ☉ Ohio Township Association
 - ☉ OHIO EMA
- ☉ Again, we went through several pages comments from the Railroads and the Oil and Gas industry and incorporated further changes to the RUMA.



RUMA Development Process

- ☛ Results of the process so far include the following:
 - ☛ Coordination with ODNR to change legislation to require applicants to include in the application form either:
 1. a copy of an approved road use maintenance agreement OR
 2. a notarized affidavit demonstrating that a good faith effort was made on the part of the applicant but no agreement could be reached
 - ☛ New law will make site review a requirement prior to the issuance of a permit
 - ☛ Law went into effect Sept. 1, 2012.
 - ☛ A RUMA that is supported from both the Oil and Gas Industry and Local Governments.

RUMA Development Process

☉ Results of the process so far include the following:

☉ Results by County:

1. CARROLL County – 150+ RUMA's signed >\$50 million in improvements to County and Township system
2. COLUMBIANA County – 72 RUMA's signed >\$17 million in improvements to County and Township system
3. HARRISON County - 65 RUMA's signed >\$12 million in improvements to County and Township system
4. BELMONT County – 22 RUMA's signed >\$2.8 million in improvements to County system-several pending final approval
5. JEFFERSON County - 5 RUMA's signed >\$7.5 million in improvements to County and Township system

Example of Proactive Maintenance by Drilling Company in Columbiana County (Trinity Church Road)



Example of Proactive Maintenance by Drilling Company in Carroll County (Chapel Road)



Example of Proactive Maintenance by Drilling Company in Carroll County (Buttercup Road)



RUMA Development Process

MODEL ROADWAY USE AND MAINTENANCE AGREEMENT FOR HORIZONTAL DRILLING PROJECTS AND INFRASTRUCTURE

THIS AGREEMENT is entered into at _____, Ohio, by and between _____ COUNTY / TOWNSHIP _____, a political subdivision, whose mailing address is _____ (hereafter "Authority"), and _____, whose address is _____ (Hereafter "Operator"), and shall be as follows:

RECITALS

WHEREAS, Authority has control of the several county/township roads within _____ Township, in _____ County, Ohio and is required by law to keep such roads in good repair; and

WHEREAS, Operator is the operator of certain oil and gas wellhead, and intends to develop and operate the [DEVELOPMENT SITE NAME], including the equipment, facilities, compounds, and pipelines necessary for the operation of the [DEVELOPMENT SITE NAME] (hereafter collectively referred to as "oil and gas development site") located in _____ Township, in _____ County, Ohio; and

WHEREAS, Operator intends to commence use of _____ of _____ and _____ miles of CR/TR (_____) for the purpose of access to a _____ [DEVELOPMENT SITE NAME], for traffic necessary for the purpose of constructing sites and drilling horizontal oil and gas wells, and completion operations at the [DEVELOPMENT SITE NAME] (hereafter referred to collectively as "Drilling Activity"); and

WHEREAS, Authority and Operator desire to enter into an agreement, providing for the repair and maintenance of said roads and bridges thereon as a result of such Drilling Activity; and

WHEREAS, if any county or township roads contemplated herein contain a railroad crossing, Section 3a of the _____ Law shall apply;

NOW THEREFORE, in consideration of the good faith performance by each party of the mutual covenants hereinafter set forth, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Operator agrees to the maintenance (repair) of said roads and bridges, to their pre-Drilling Activity condition or as modified pursuant to Appendix A, thereon for any damages thereto, as a result of Drilling Activity caused to such roads.

FURTHER, Operator shall also provide for the strengthening and upgrading of the roads and bridges if mutually agreed to be necessary prior to the start of Drilling Activity. The areas and structures required to be strengthened and/or upgraded shall be determined by an engineer provided by the Operator with the approval of the County Engineer. The engineer shall be provided within thirty (30) days of a written request submitted by the Operator. Operator's engineer shall provide a written report to the County detailing the condition of the roads and appurtenances covered under this Agreement along with any recommendations, if necessary.

Page 1



The current RUMA is available for use and can be found on the County Engineers Association of Ohio Website at:

www.ceao.org



To make sure it remains a useful tool, we will periodically host meetings to invite feedback and modify this agreement as necessary.

What is in the Model RUMA?

- ❑ Definition of the needed route from State Route to Pad
- ❑ Bonding requirement unless one of the following conditions is met:
 - ❑ A geotechnical report shows the road can withstand the expected truck traffic
 - ❑ Drilling Operator agrees to pay for or perform upgrade to route
 - ❑ A bond or surety covering the Agency is already in place
- ❑ Maintenance of the route during the drilling activity
- ❑ Notification for the Railroad industry if a crossing is involved
- ❑ Requirement for an engineering report, including videotaping of the route prior to drilling activities
- ❑ An Appendix for County and/or Township requirements which can be agreed upon with the Drilling company
- ❑ Requirement for a list of 24-hour emergency contacts

What is NOT in the Model RUMA?

- ❑ Hard and fast bonding ranges (negotiable).
- ❑ Expiration dates – Gives an “out” to both parties with a 30 day requirement notice.
- ❑ A release of the Operators to get overweight, over height, over-width permits (These permits are still required.)

Issues on ODOT's Roadway System

- ❑ Damage to low volume State Routes not use to seeing significant truck traffic
- ❑ Pipeline crossings and construction
- ❑ Midstream major plant development
- ❑ Permit volume has more than doubled
- ❑ Protestors causing sight distance issues

Water Trucks on SR 164 in Carroll County



Pipeline Installation



Pipeline Installation



Pipeline Installation



Superloads: Challenges with Eastern Ohio Roadways



Midstream Processing Facilities Markwest Facility in Cadiz



Midstream Processing Facilities

Chesapeake M₃ Facility near Kensington



Protestors



OHIO DEPARTMENT OF TRANSPORTATION

ODOT UPDATES on RUMA & OIL and Gas Issues

QUESTIONS?



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