

Centre County Natural Gas Task Force

Meeting Notes

January 13, 2014 at 4:00 p.m.

Location: Central PA Institute of Science and Technology
540 North Harrison Road, Pleasant Gap, PA 16823

Present: Susan Benedict, John Ferguson, Tim Ziegler, Bob McDaniel, Dan Fisher, Greg Myers, Ken Hall, and Mike Savage.

Absent: Jeff Kern, Steve Greer and Stan LaFuria.

Sub-Committee Members Present: Art Dangel, Dean Lawrence, John Rodgers, Jack Mulfinger, Todd Taylor, and Rob Balsamo.

Sub-Committee Members Absent: Mike Schaul, John Spsychalski, Joe Urbanick, Steve Lyncha, Matt Blymire, Mary Carol Frier, Bruce Snyder, Colleen Williams, Mike Welch, Joe Hart, Andrew Sicree, Butch Davey, Dick Mulfinger, Jamie Walker, Alison Amaismeirer, Emily Gette-Doyle, Louis Glantz, and Lynn Herman.

Liaison Members Present: Doug D'Amore

Liaison Members Absent: Dan Vilello, Paula Ballaron and Rick Lamkie

Ex Officio Members Present: Sue Mascolo for Rep. Conklin

Ex Officio Members Absent: Mitzi Gallagher for Rep. Hanna and Matt Wise for Senator Corman

County Resource Persons: Sue Hannegan

Centre County Commissioners: Michael Pipe

Guests: Ellen Spinelli – South Hill Business School, Eric Cowden – Marcellus Shale Coalition, Jeff Stachowski – South Hills, Leroy Benedict – Property Owner, Matt Lock and Pat Powers -- Anadarko, Marianne Hazel – CPI Program Manager, and Matt Henderson – PSU Marcellus Center for Outreach and Research.

Total Number Present: 26

The meeting was opened by Chairman Susan Benedict at 4:00 p.m. with a quorum present.

Welcome and Introductions: All meeting attendees provided a short introduction of themselves.

Declarations of Conflict of Interest and Ex Parte Communication: In order to remove any doubt of impropriety, the following task force and/or sub-committee members have declared interests. Bob McDaniel – Business Development Coordinator, G.O. Hawbaker, Inc. supplying contract work for drilling companies; Susan Shoemaker Benedict -- property owner with natural gas lease; Steve Greer – Senior Project Manager with Arm Group, Inc., sub-contractor/consultant to various companies involved with the gas drilling industry; Ken Hall – actively involved with property lease management; Greg Myers -- Senior Engineer/Senior Geologist, DMS Environmental Services, providing services to the oil and gas industry; Joe Hart – employed by HRT, Inc. & PA Brine, who serve as sub-contractors to the natural gas industry; John Ferguson – employed by Columbia Gas of PA; Dean Lawrence – realtor with commercial real estate activity of interest to the natural gas companies; John Rodgers – banker with Fulton Bank providing financial services to the gas industry; Steve Lyncha – engineer with HRG providing consulting and engineering services to the industry; Colleen Williams working in business development for HRG resulting in frequent consultations with the industry; and Emily Gette-Doyle – employed by Christoff

Mitchell Petroleum as Vice President of Business Development and working on the development of CNG fueling stations. No additional declarations were provided.

Approval of Prior Meeting Notes:

September 19, 2013 Minutes – Ken Hall made a motion to approve the September minutes as distributed; Greg Myers seconded the motion and the task force approved the September 2013 minutes with no changes.

November 11, 2013 Minutes – Greg Myers made a motion to approve the November minutes as distributed; John Ferguson seconded the motion and the task force approved the November 2013 minutes with no changes.

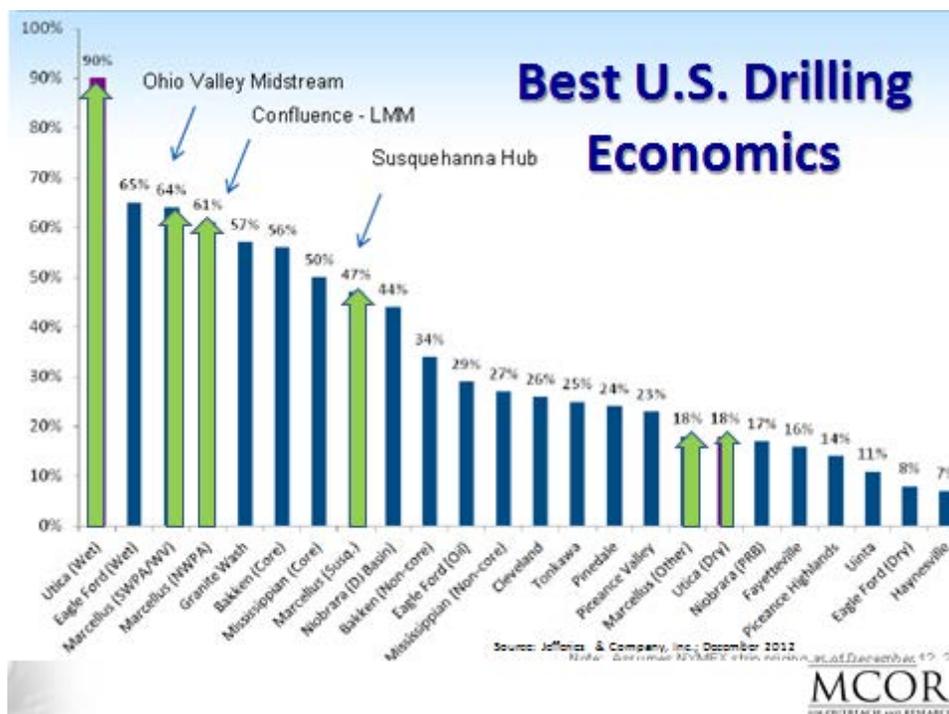
Announcements: None offered.

Citizen Comment Period: None offered.

Presentation: “Shale Gas 2014 – Trends and NG Pipeline Development” by Matt Henderson, Shale Asset Manager, PSU Marcellus Center for Outreach and Research.

Attached to these minutes is the PowerPoint presentation provided by Matt Henderson. Additional comments are provided below:

- Think globally: While other shale resources exist worldwide, Pennsylvania is 5 years, to as much as 10 years, ahead in the development of exploration and production techniques.
- Statewide, permits have increased especially in the fourth quarter of 2013. This would indicate that most likely there will be more activity in 2014 (NOTE: Permits in Centre County remain static with one new permit in 2013 and another expiring resulting in a total permit count of 4).
- Pennsylvania is the second leading gas producer in the United States. Texas is number one.
- Efficiency of use now influences rig count resulting in a lesser number in operation this year than last. Rig count and price remain key indicators of development.
- Four of the top ten “Best U.S. Drilling Economies” are partially or entirely located in PA: Utica (wet) is #1; Marcellus SW PA/WV is #3; Marcellus NW PA is #4 and Marcellus Susquehanna is #8. The full chart is displayed below due to the interest generated by this data. Essentially, this information correlates to the return on investment with the taller arrows indicating the shale plays with the highest return on investment.



- Proposed legislation in SB 738 and SB 739 establishes 10-year financing and funding for gas line extensions.
- International interest in the development of shale gas is increasing. China Shenhua Energy Company will be contributing the first \$90 million toward drilling 25 wells in Greene County in the next 18 months.
- Looking forward to 2014, the focus will be on utilization: small scale power generation, natural gas vehicles, exporting, GTL plants, and regional ethane crackers (Shell is still moving forward with their plans in Western PA).
- The utilization of natural gas, at current rates is as follows:

What is Utilization?

- **Electric Power Generation** – sector that consists of electricity only and CHP plants whose primary business is to sell electricity and/or heat. **Natural gas = 31% of market**
- **Industrial** – gas used for heat, power or chemical feedstock by manufacturing establishments or those engaged in extraction as well as ag, forestry and fisheries. Also included are generators that produce electricity or produce heat to support above industrial activities. **Natural gas = 30% of market**
- **Residential** – used in private houses, apartments for heating, a/c, cooking, water heating and other household uses. **Natural gas = 61% of market**
- **Commercial** – gas used by nonmanufacturing establishments such as hotels, restaurants, wholesale/retail, and other services businesses. Also includes local, state and federal gas usage. **Natural gas = 49% of market**
- **Vehicle fuel** – estimated gas use for transportation of on road vehicles. **Natural gas = 3% of market (160,000 retail gasoline stations and 1,000 NG stations)**
- **Lease and plant fuel** – gas used in well, field or lease operations such as drilling operations, heaters, dehy's, field compressors and NG processing plants
- **Pipeline & distribution** – gas used in compressors

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MCOR
FOR OUTREACH AND RESEARCH

- **In response to questions:**
 - The decline curve in production will be released soon.
 - Exporting will have a trickle-down effect for Pennsylvania
 - PA gas is currently exported to Canada and Mexico under a free trade agreement.
 - Leasing in north central PA is only being done to fill a unit.
 - The number one location for a cracker plant is PA due to the cost of feedstock – as per the Wall Street Journal.

Committee Reports:

Economic Development: Greg Myers explained that high priority pipeline projects for industrial and commercial users have been identified and will be included in the work being done under a SEDA-COG EDA grant that will evaluate the expansion of natural gas pipeline infrastructure in three counties: Centre, Clinton and Mifflin. Sue Hannegan provided an update on NGV conversions as a result of recent grant awards to Centre County.

Education: Todd Taylor introduced Dr. Marianne Hazel who is now serving as CPI's Program Manager; and announced an upcoming Open House at the new CPI Transportation Training Center for the Marcellus Shale/ Natural Gas Related industries.

Also, the next task force meeting will be held in the Transportation Training Center with a request to consider this location as a long-term meeting location. If not preferred, the task force will continue to meet in Rooms 150 / 151 of the main educational building.

Environment / Infrastructure: With the completion of the "Forest" Chapter for the Centre County Comprehensive Plan Update, Tim Ziegler stated that the committee expects to meet in February to discuss 2014 priority activities.

Public Policy, Planning and Legal Issues: Ken Hall announced that there is an upcoming webinar on ACT 13 that will address the impact of the Supreme Court's denial to reconsider a motion filed by the PUC and the PA DEP. Sue Hannegan will send out the webinar announcement to everyone.

Old Business: None.

New Business: Tim Ziegler announced that the Transportation Bill signed by the Governor late in 2013 included funding for dirt and gravel roads.

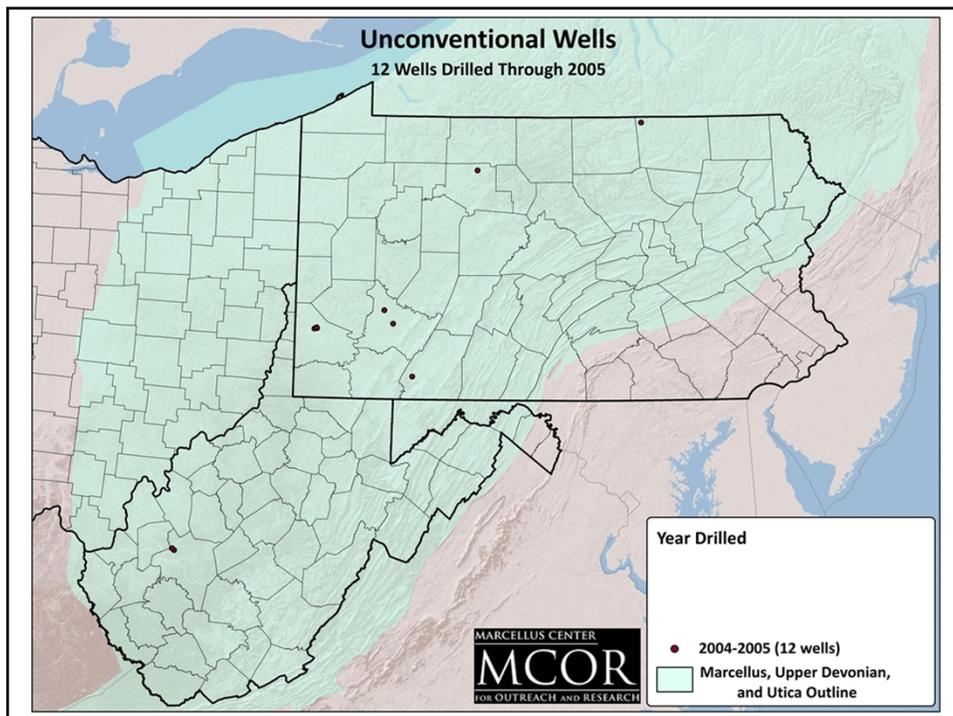
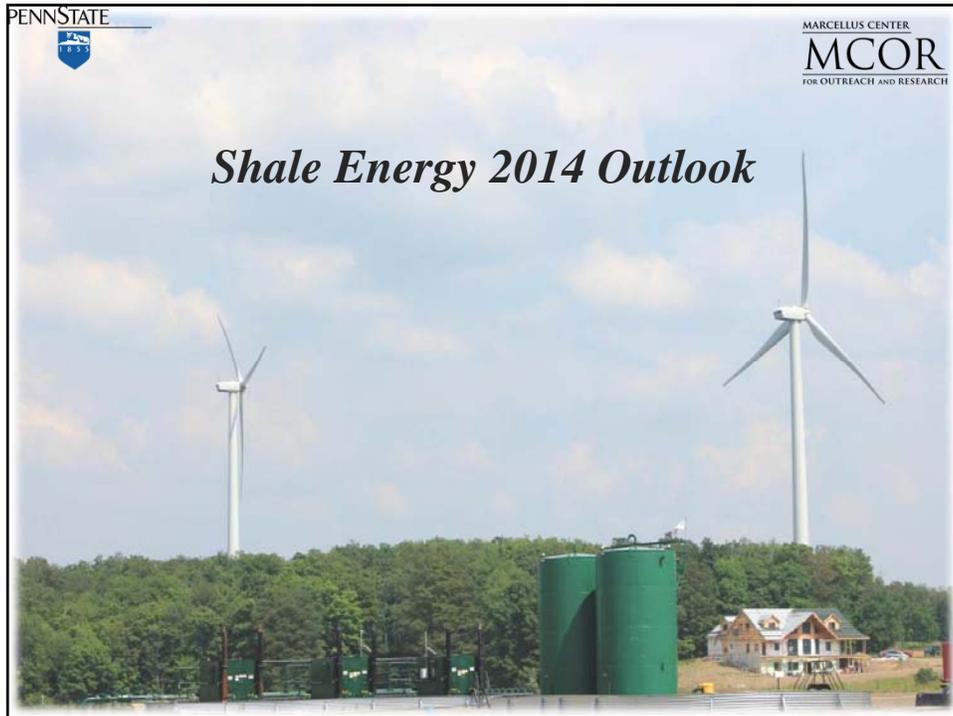
Meeting Schedule:

- CCNGTF: March 10th at 4 p.m. – CPI, 540 North Harrison Rd, Pleasant Gap, PA
- Economic Development Sub-Committee: February 13th at 8:00 a.m. – Willowbank Bldg. 3rd Floor
- Environmental Sub-Committee: February 18th at 9:00 a.m. – Willowbank Bldg. 3rd Floor

Meeting Adjourned: With no further business, the January meeting of the Centre County Natural Gas Task Force was adjourned at 5:25 p.m. following a motion by Bob McDaniel; seconded by Tim Ziegler.

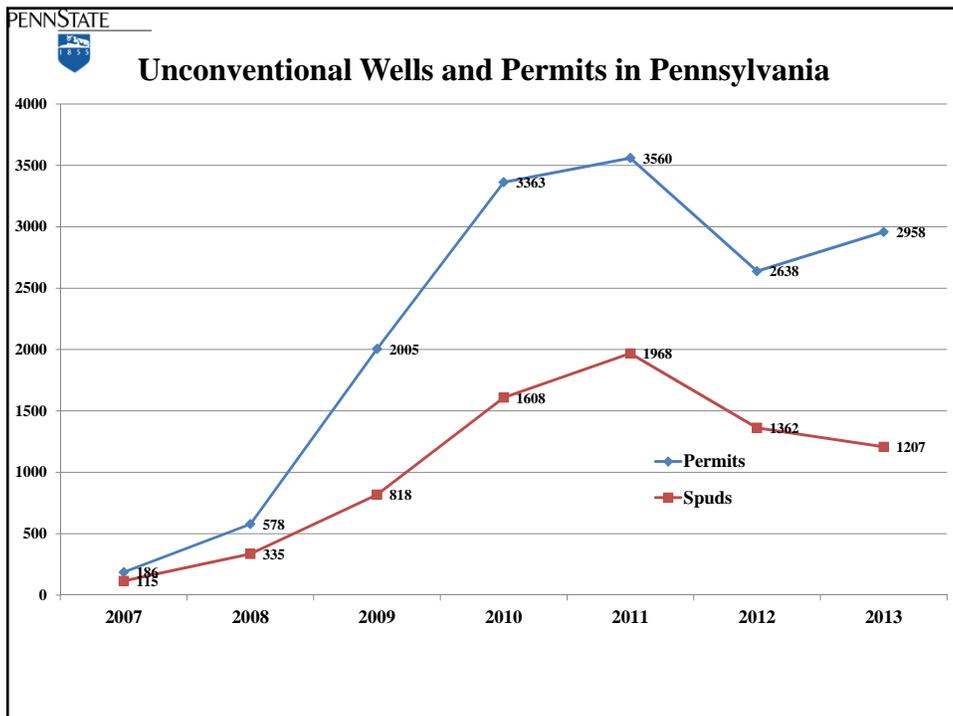
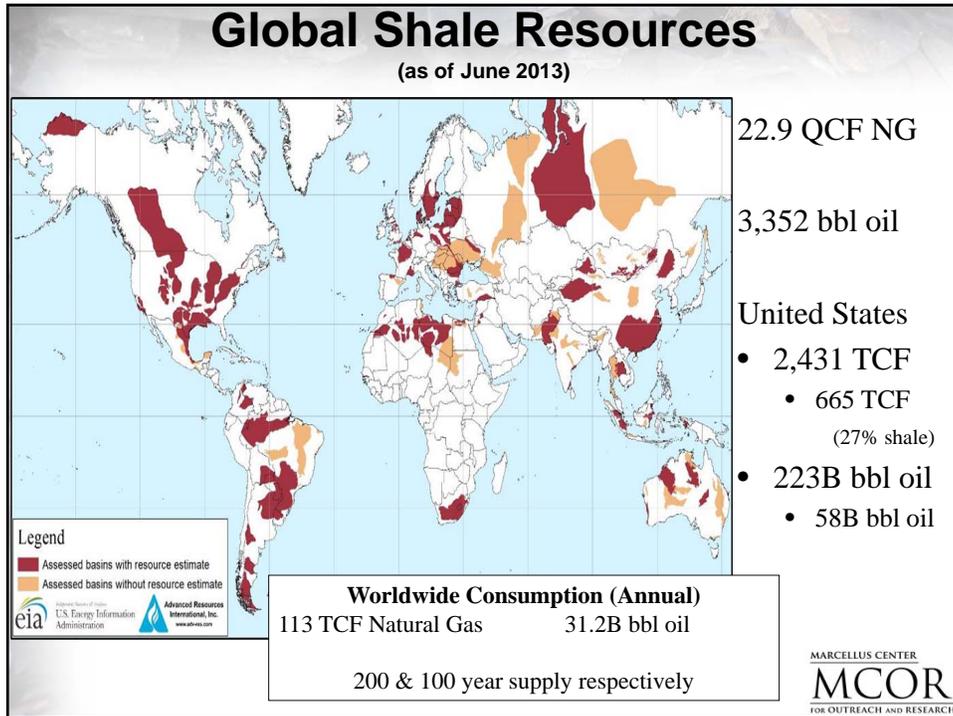
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December 3, 2013



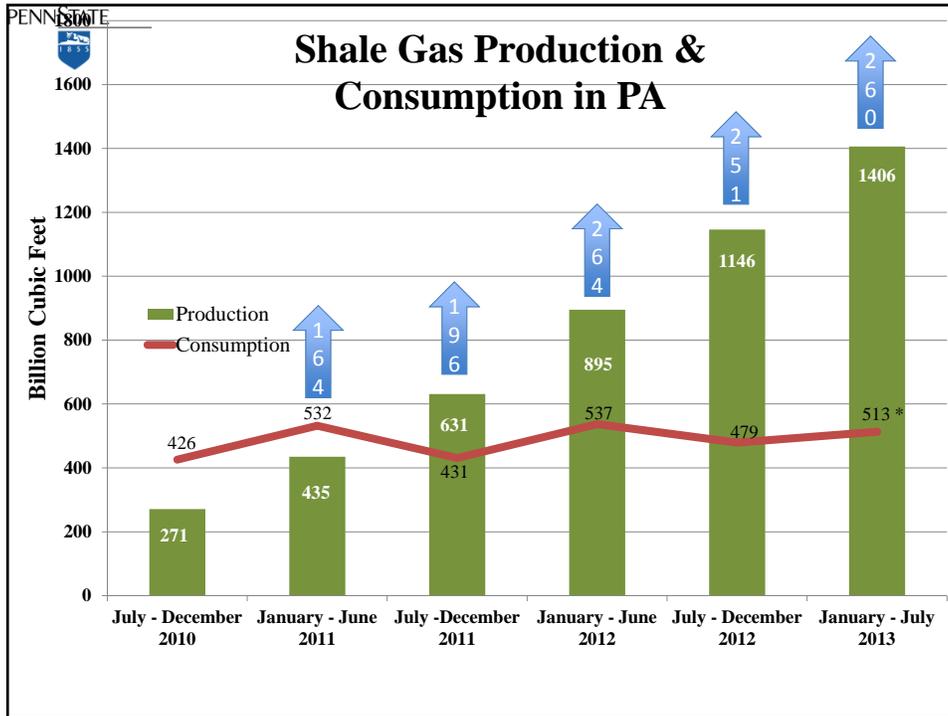
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1. TX (7.2 TCF) (3.6 1H 2013 estimated)
2. LA (3.0 TCF) (1.3 TCF 1H 2013 estimated)
- 3. PA (2.2 TCF) (1.4 TCF 1H 2013)**
4. WY (2.1 TCF)
5. OK (2.0 TCF)

*14th in 2010, 6th in 2011

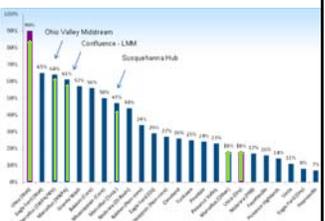
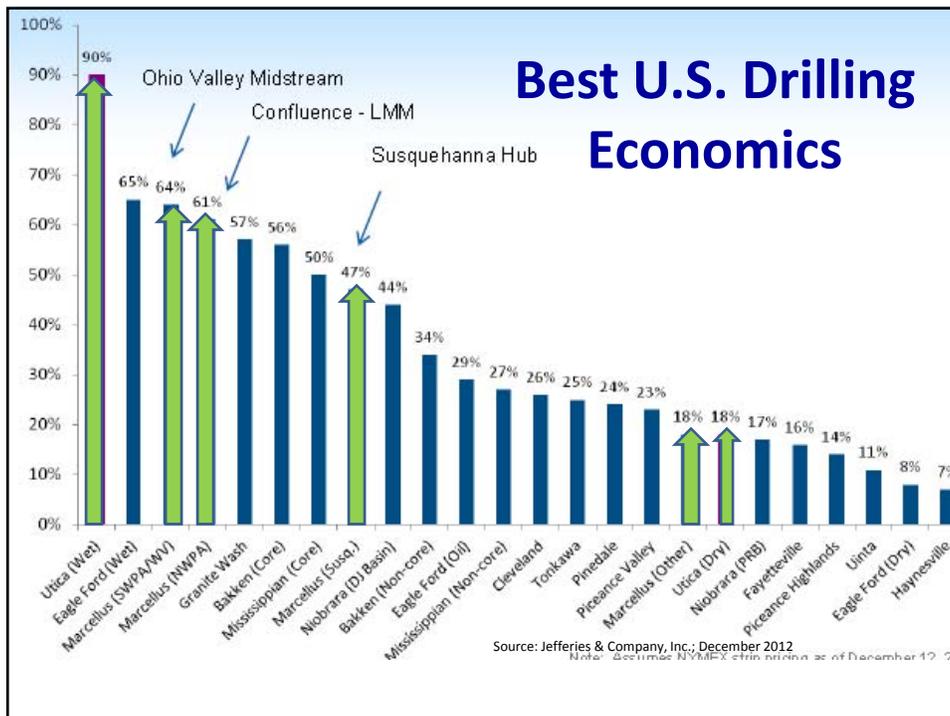
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- Economics of development
 - Technology and innovation key drivers
 - Supply chain more than drilling

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December 3, 2013

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		PA	TX	OH	WV
Jan	2013	70	825	30	26
Jan	2014	56	835	35	34

Leading PA Counties

Washington	14
Susquehanna	12
Lycoming	6
Wyoming	6

** Bakers-Hughes*

Source: CME Group
Powell Shale Digest, Jan. 8, 2014

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- Economics of development
 - Technology and innovation key drivers
 - Supply chain more than drilling
- Public perception/acceptance
 - More opportunities allows for movement (state or national)
- Regulatory & legislative

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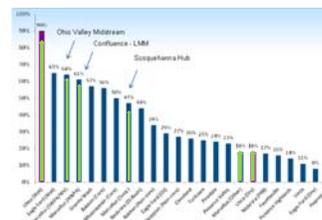
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- Act 13 Uncertainty
- Natural Gas Extension – SB 738 & SB 739
 - PUC-approved utility plans evaluating extension opportunities
 - 10-year financing
 - Funding for gas line extensions
- Unconventional Well Permit Fee Increase
 - Flat fee of \$5,000/horizontal and \$4,200/vertical
 - Approved for 30 day public comment July 16th
- Chapter 78 (Oil & Gas) Proposed Rulemaking
 - Public hearings around the Commonwealth
 - Updating surface activity standards
 - Implement provisions of Act 13

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- Economics of development
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 - Supply chain more than drilling
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- Regulatory & legislative
 - Act 13 uncertainty
 - Ch. 78 updates
 - Permit fee increase to staff DEP
- Growing international interest



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China is coming to town!

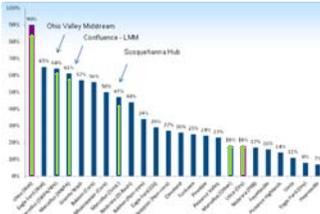
Energy Corporation of America (ECA) and China Shenhua Energy Co. have entered into a 50/50 joint venture.

- develop 25 natural gas wells in Greene County the next 18 months.
- Shenhua will contribute the first \$90 million toward drilling the wells
- ECA will be the operator of the properties

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- Regulatory & legislative
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 - Permit fee increase to staff DEP
- Growing international interest
- Politics – federal and state
 - Election year
 - Severance tax?
 - Uncertainty = industry nervousness



Region	2009	2010	2011	2012	2013
Ohio Valley Midstream	100	150	200	250	300
Confluence - LMM	100	150	200	250	300
Appalachia Hub	100	150	200	250	300

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- Marcellus
 - Midstream development; test boundaries
- Utica / Upper Devonian
 - Exploration
- Industry focus on utilization
 - Small scale power gen
 - NGV's
 - Exporting
 - GTL Plants
 - Regional Ethane Crackers – NE a hub?

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- Exporting NG & Oil Debate

Proposed LNG Export Sites

- 20 proposed projects could export up to 29 billion cubic feet per day
- A more realistic export number may be 7 to 9 billion cubic feet per day... and this could be a few years

Key Milestone Activities	Date/Anticipated Date
Commencement of Front End Engineering Design (FEED)	December 2010
Request to FERC to initiate Pre-filing Review Process	December 2010
Application to DOE for Long-Term Authorization to Export LNG to non-FTA countries	December 2010 & 2011
Filing of formal NGA Section 3 Application to FERC	August 2012
Issuance by FERC of Environmental Assessment/Environmental Impact Statement	July 2013
DOE's Issuance of Authorization to Export LNG to non-FTA Countries	Early 2013
FERC's Issuance of Authorization to Construct and Operate	3Q 2013
Commencement of Construction	3Q 2013
Liquefaction Project In-Service Date	2017

EIA said natural gas prices may rise by between 3% and 9% if exports are increased, with a corresponding 1% to 3% rise in overall utility bills for residential consumers

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- **Manufacturing Renaissance**

- Not as cyclical as rig activity
 - \$10B+ annual development in region
 - Impact - \$1.8M wages, 44 jobs, \$2.5M GPD per mile*
- Regional constraints, additional 1 BCF/day capacity added in Nov 2013. Lowest spot price in nation

(*Economic Analysis of the Northeast Upgrade Project in NJ and PA. 2011. M. Lahr et. al.)

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Infrastructure Needs?

Natural Gas Daily Delivery Prices

For the Week Ended Friday, January 3, 2014			
Price \$/MMBtu			
Delivery Location	Week's End	High for the Week	Low for the Week
Henry Hub	\$4.34	\$4.40	\$4.32
Transco Zone 3	\$4.38	\$4.42	\$4.32
Transco Zone 6 NY	\$13.82	\$30.58	\$6.05
Panhandle East	\$4.83	\$4.83	\$4.37
Opal	\$4.52	\$4.52	\$4.30
Marcellus NE PA 	\$2.47	\$3.59	\$2.47
Haynesville N LA	\$4.27	\$4.29	\$4.17

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- Constitution pipeline = NE PA-> New England
 - At FERC, online 2015??
- NGL's – moving to Gulf
 - Temp or perm?
 - Regulation standards at federal level expected

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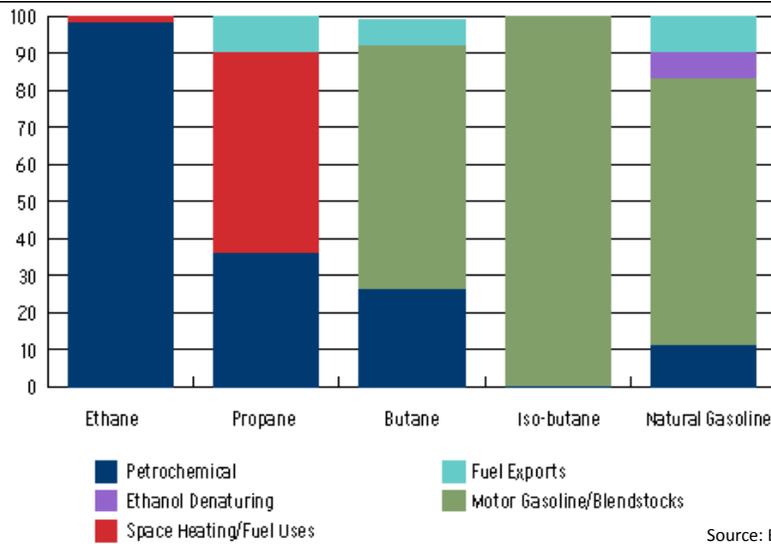
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Marcellus/Utica NGL Significance

Rich Gas Shale Play	Gallons of NGL per MCF
Bakken (shale oil)	6 to 12
Barnett	2.5 to 3.5
Eagle Ford (oil and gas)	4 to 9
Green River (shale oil)	4 to 6
Niobrara (shale oil)	4 to 9
Marcellus/Utica (oil and gas)	4 to 9

Source: Verensen, EPRINC

Who Consumes What?



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 - Regulation standards at federal level expected
- Increased interest in local planning on midstream development; integrating pipelines into landscape
- Workforce needs exceeding supply?

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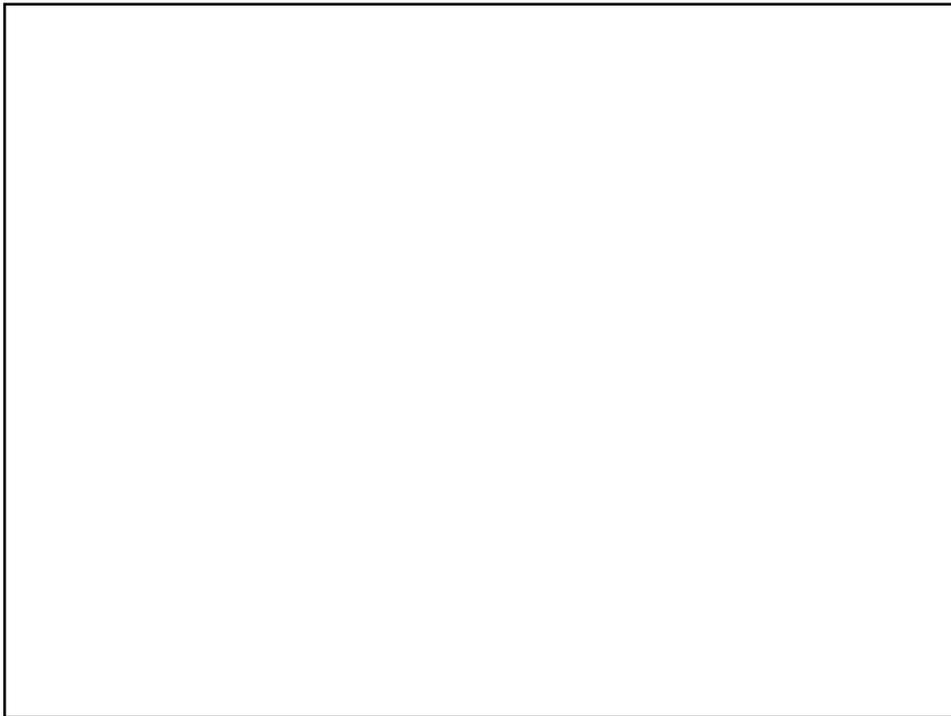
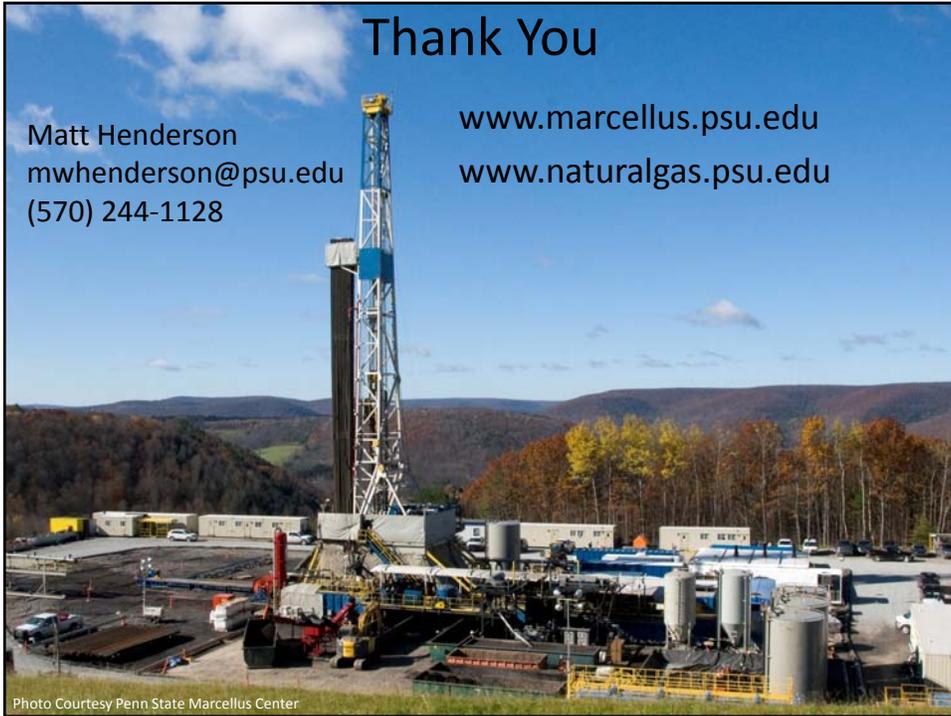
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Thank You

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www.naturalgas.psu.edu



Shell News 12-9-13

- [Royal Dutch Shell PLC](#) reported that it will not move ahead with a proposed 140,000 b/d Gulf Coast [gas-to-liquids](#) project in Louisiana and will suspend any further work.
- Shell in September had set its sights on Louisiana for the proposed \$12.5 billion, world-class facility ([OGJ Online, Sept. 24, 2013](#)).

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News.....

- The U.S. is poised to become a [net exporter of chemicals](#) thanks to the shale oil boom, *FT* reports; the American Chemistry Council forecasts net U.S. chemical exports of ~\$2.7B this year and expects exports to rise 45% over the next five years to nearly \$30B by 2018.
- U.S. companies such as Exxon Mobil, Dow Chemical, Chevron, and Phillips 66 are among the leaders [in investing in new capacity](#), but even producers from Asia and the Middle East are looking at projects in the U.S.
- Dow's Andrew Liveris speaks for [big companies that want curbs on U.S. exports](#) of liquefied natural gas to ensure their energy cost advantage; with five LNG projects now approved for export sales by the Obama administration, "where they are right now seems to be fine," he says.

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AND, IN OTHER NEWS.....

**** EQT said it will spend about \$1 billion for Marcellus Shale drilling in 2014.**

**** TGP has signed a 15-year deal with Seneca Resources to ship 158,000 dekatherms per day of natural gas to eastern Canada.**

Cabot O&G with Pacific Summit Energy to supply 350,000 MMBtu per day of Marcellus Shale gas for 20 years through Dominion's Cove Point LNG.

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News: ShaleDigest, 1-4-14

The latest from the EIA.....

- Marcellus production has now reached **13 billion cubic feet a day**.
- If the Marcellus Shale region were a country, its natural gas production would **rank third in the world, after Russia and the rest of the U.S**
- Decline rates **not as steep** as those for wells in the Bakken or Eagle Ford.

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