

the Energy to Lead

New Albany Shale Project Project Update

**Presented at Mid-Continent Gas Shale
Forum and RPSEA Member Meeting**

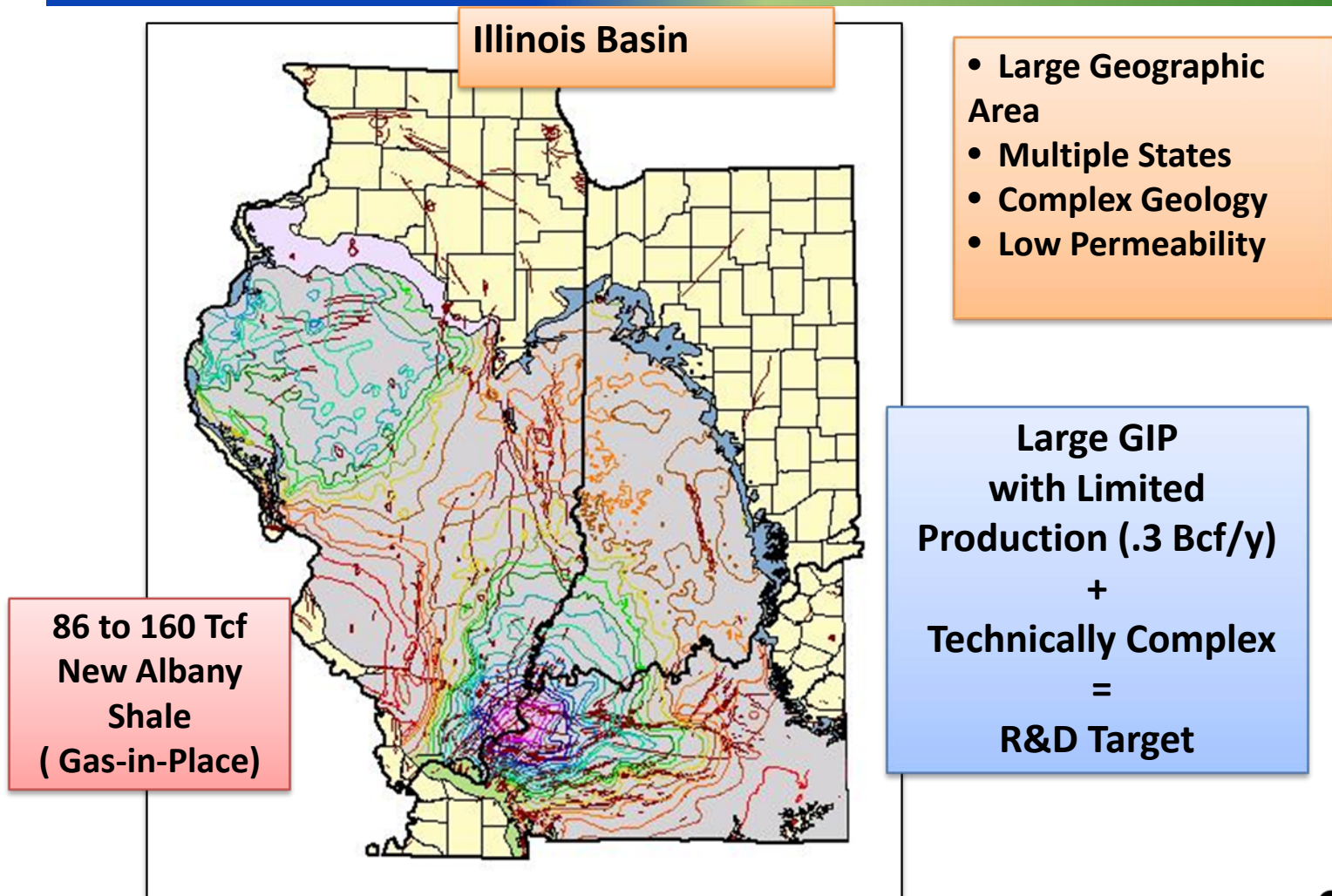
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New Albany Shale



Active and Promising Shale Gas Formations in the U.S.

	Barnett	Fayetteville	Haynesville	Marcellus	Woodford	Antrim	New Albany
Area (mile ²)	5,000	9,000	9,000	95,000	11,000	12,000	43,500
Depth (ft)	6,500 – 8,500	1,000 – 7,000	10,500 - 13,500	4,000 - 8,500	6,000 – 11,000	600 – 2,200	500 – 2,000
Net Thickness (ft)	100 - 600	20 - 200	200 - 300	50 - 200	120 - 220	70 - 120	50 - 100
TOC %	4.5	4.0 – 9.8	0.5 – 4.0	3 - 12	1 - 14	1 - 20	1 - 25
Total porosity	4 - 5	2 - 8	8 - 9	10	3 - 9	9	10 - 14
Gas in place (tcf)	327	52	717	1500	23	76	160
Technically recoverable gas (tcf)	44	41.6	251	262	114	20	19.2

Source: Modern Shale Gas Development in the United States, NETL, April 2009.

New Albany Shale Project

- > **Description:** A field-based cooperative research project for identification and characterization of parameters that impede the development of New Albany Shale Gas and to develop techniques to alleviate these impediments
- > **Objective:** Develop drilling and completion techniques aimed at improving exploration success ratio, production rate, and ultimate recovery of natural gas from New Albany Shale

New Albany Shale Project

➤ Industry Partners

- Aurora Oil and Gas
- CNXGas
- Diversified Operating
- Noble Energy
- Trendwell Energy
- NGAS
- Deka Exploration
- Atlas America
- Breitburn Energy
- Inflection Energy

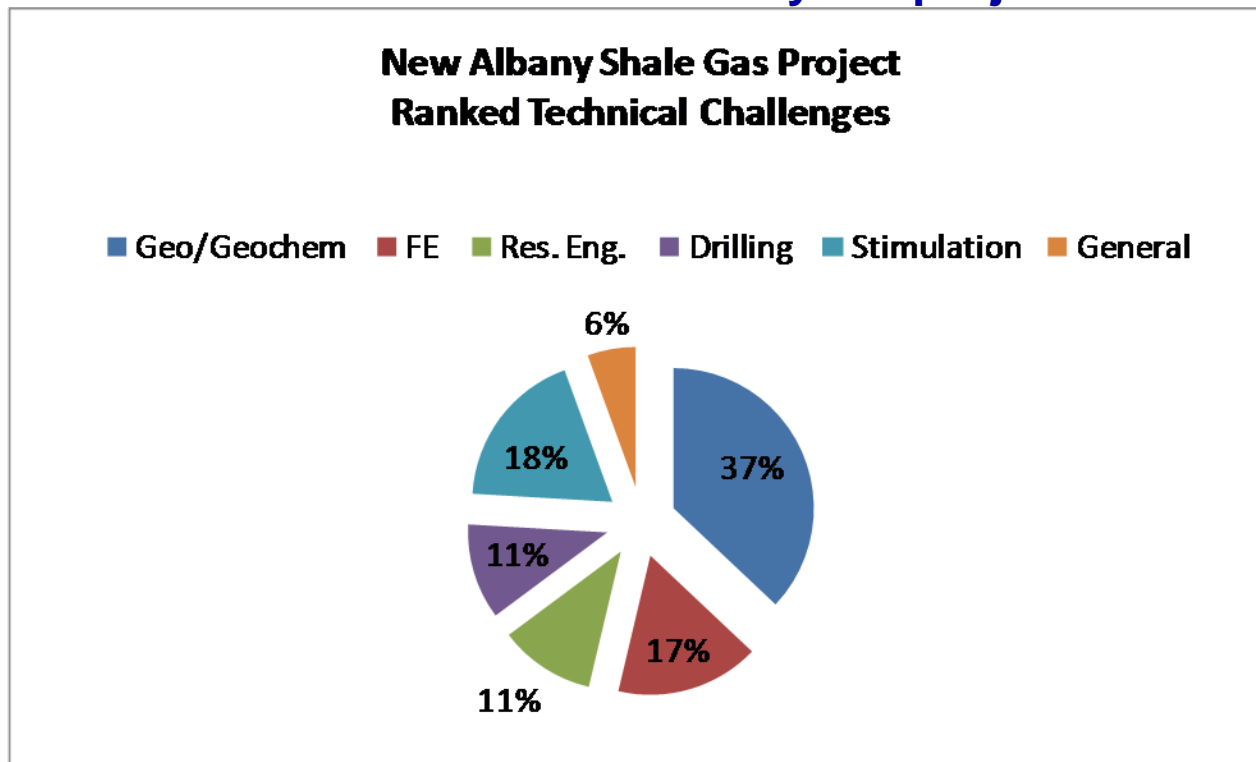
➤ Research Team

- GTI
- Amherst College
- Bureau of Economic Geology (BEG)
- Pinnacle Technologies
- ResTech
- Texas A&M
- West Virginia University

In this team effort, the industry partners provide data and wells of opportunity for field data acquisition and testing and identify key technical issues to be addressed by the research team

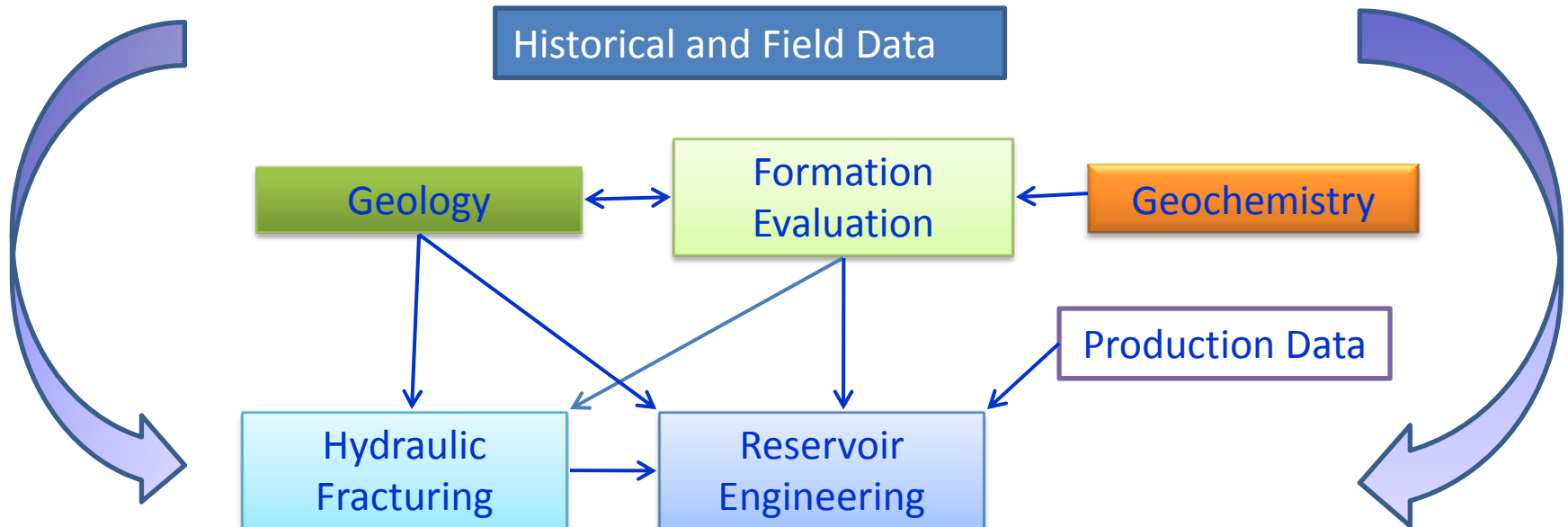
New Albany Shale Project

In August 2008, a team of producing and service company partners and research organizations identified and ranked six key technical issues to be addressed by the project






New Albany Shale Project

Work , data, and information flow



New Albany Shale Project (Project Schedule)

Project Phase	Phase 1		Phase 2																							
	Year 1 (Aug 08 - Jul 09)												Year 2 (Aug 09 - Jul 10)													
Project Year	Year 1 (Aug 08 - Jul 09)												Year 2 (Aug 09 - Jul 10)													
Project Month	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J		
Project Management Plan	→																									
Technology Status Assessment	→																									
Technology Transfer Plan	→																									
Data Gathering (existing data)	→												→													
Geology	→												→													
Geochemistry	→												→													
Formation Evaluation	→												→													
Reservoir Engineering	→												→													
Fracture Modeling	→												→													
Hydraulic Fracturing & Diagnostics	→												→													
Best Practice Analysis	→												→													
Environmental and Carbon Management	→												→													
Field Data Acquisition and Field Verification	→												→													
Coordination, Integration, Tech Transfer	→												→													

-  Major Field Events (Fracture diagnostic surveys, coring and logging, well testing)
-  Intermittent Events (Data gathering, field data acquisition)
-  Continuous Events (Analytical work and interpretation)