

# Preparing Communities for Shale Development through Sustainable Planning

## Module 1: Introduction to Shale Development and Planning Process

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# Module Overview

- What is shale development?
- What are the social, environmental and economic impacts of shale development?
- How can a sustainable planning process be used to address these impacts holistically?



“But Global Data also flagged **the competitive advantage that U.S. companies will receive from the lower cost provided by shale gas.** And this opportunity is attracting investment from some of the industry’s bigger names. Just last week the International Energy Agency said some **30 million European jobs** are at risk as manufacturers of petrochemicals, plastics and fertilizers are relocating to the U.S.”

Source: *Shale Reshapes Petrochemicals Business.*

The Wall Street Journal. Ben Winkley (July, 2014)



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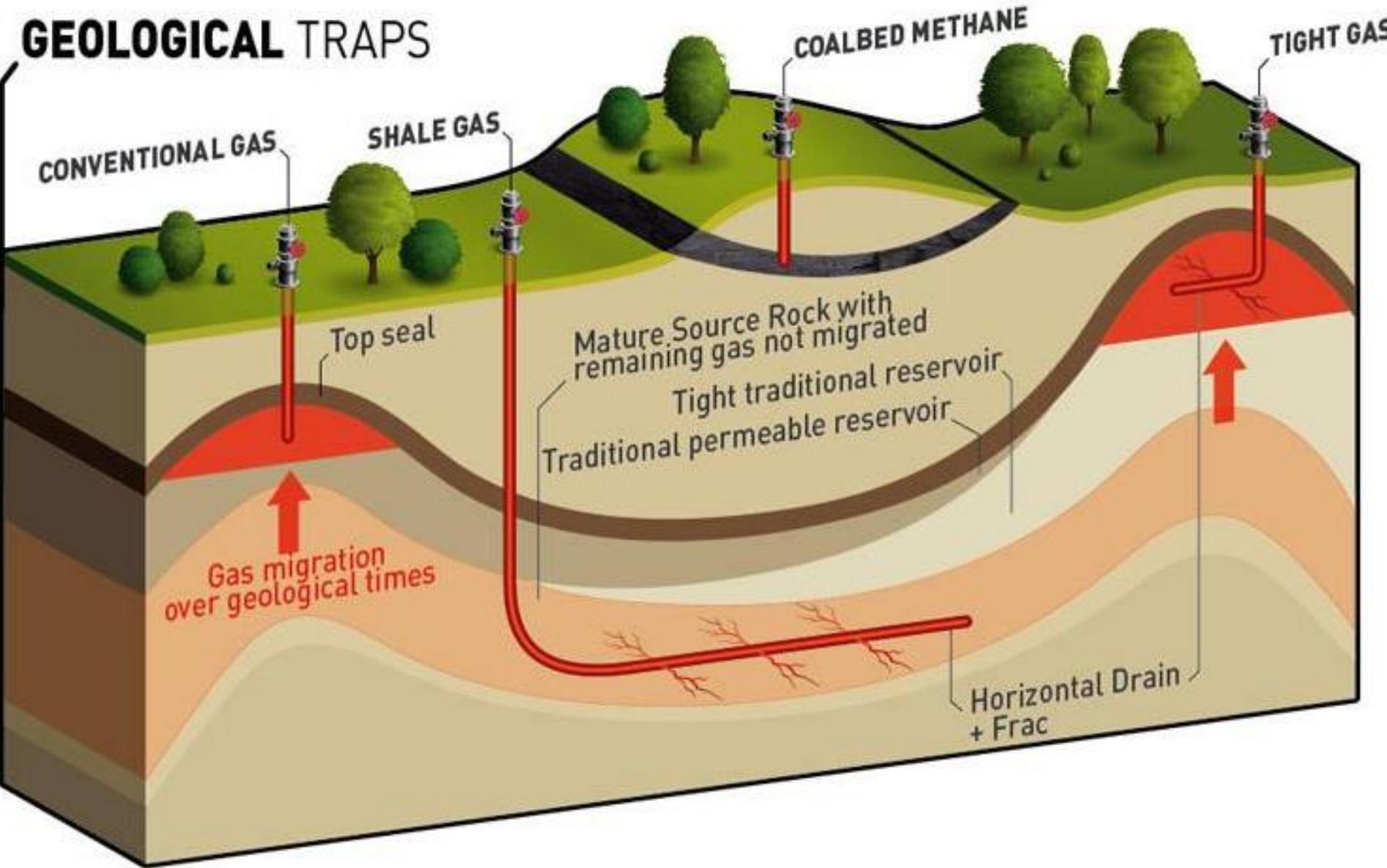
# What is Shale Oil and Gas Development?



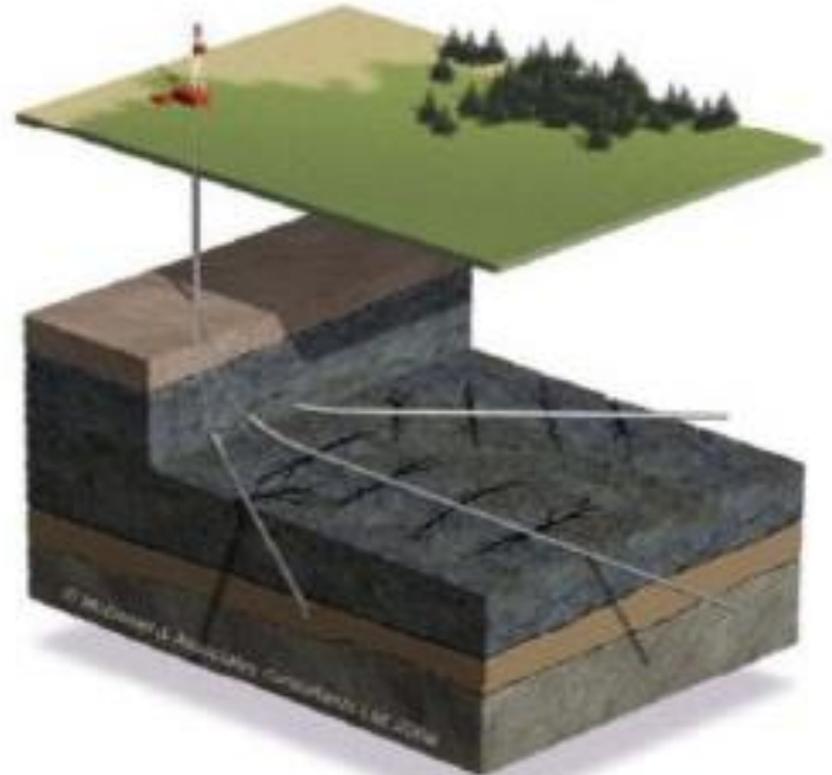
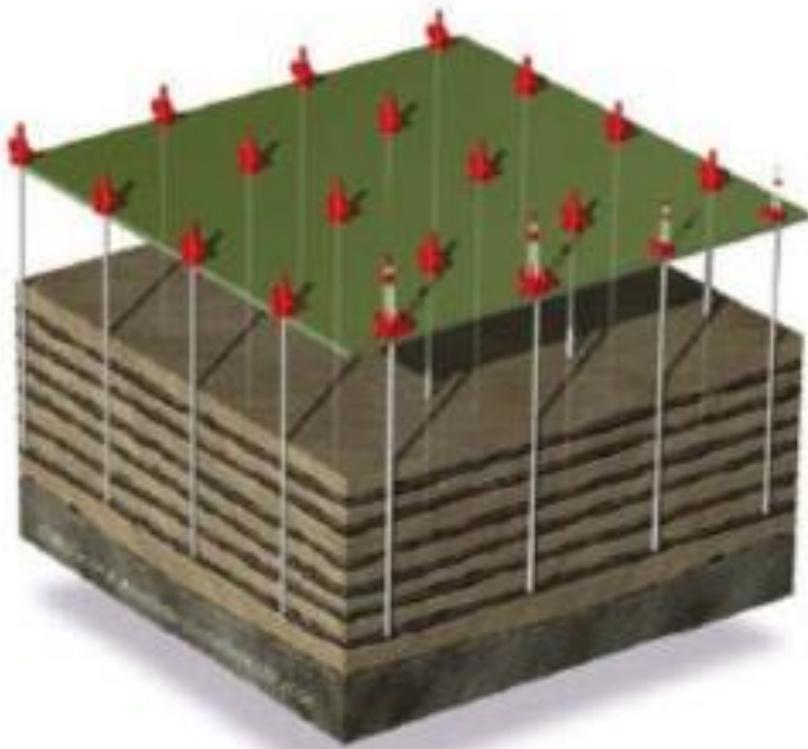
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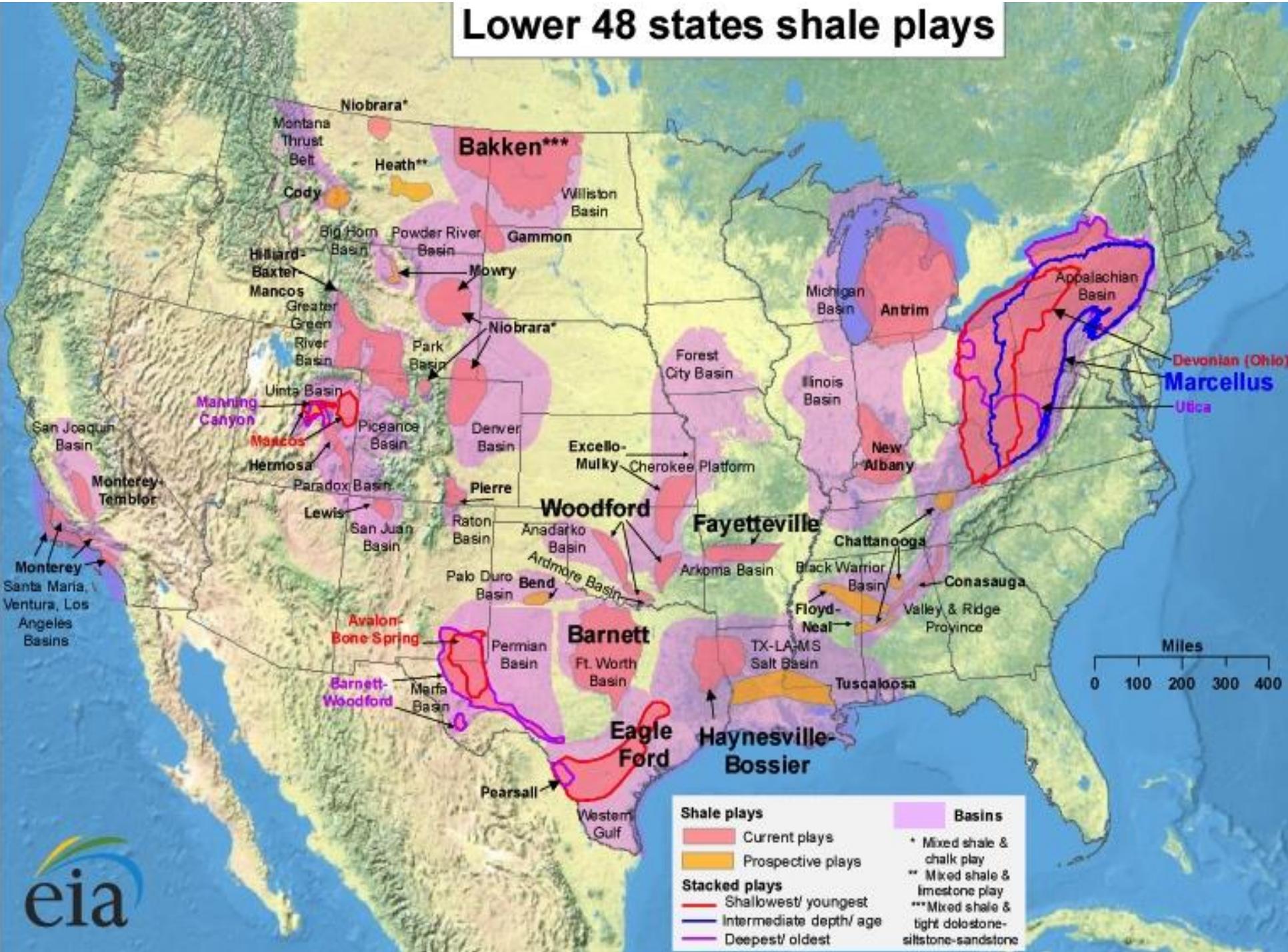
# GEOLOGICAL TRAPS



# The Game Changer - Vertical vs. Horizontal



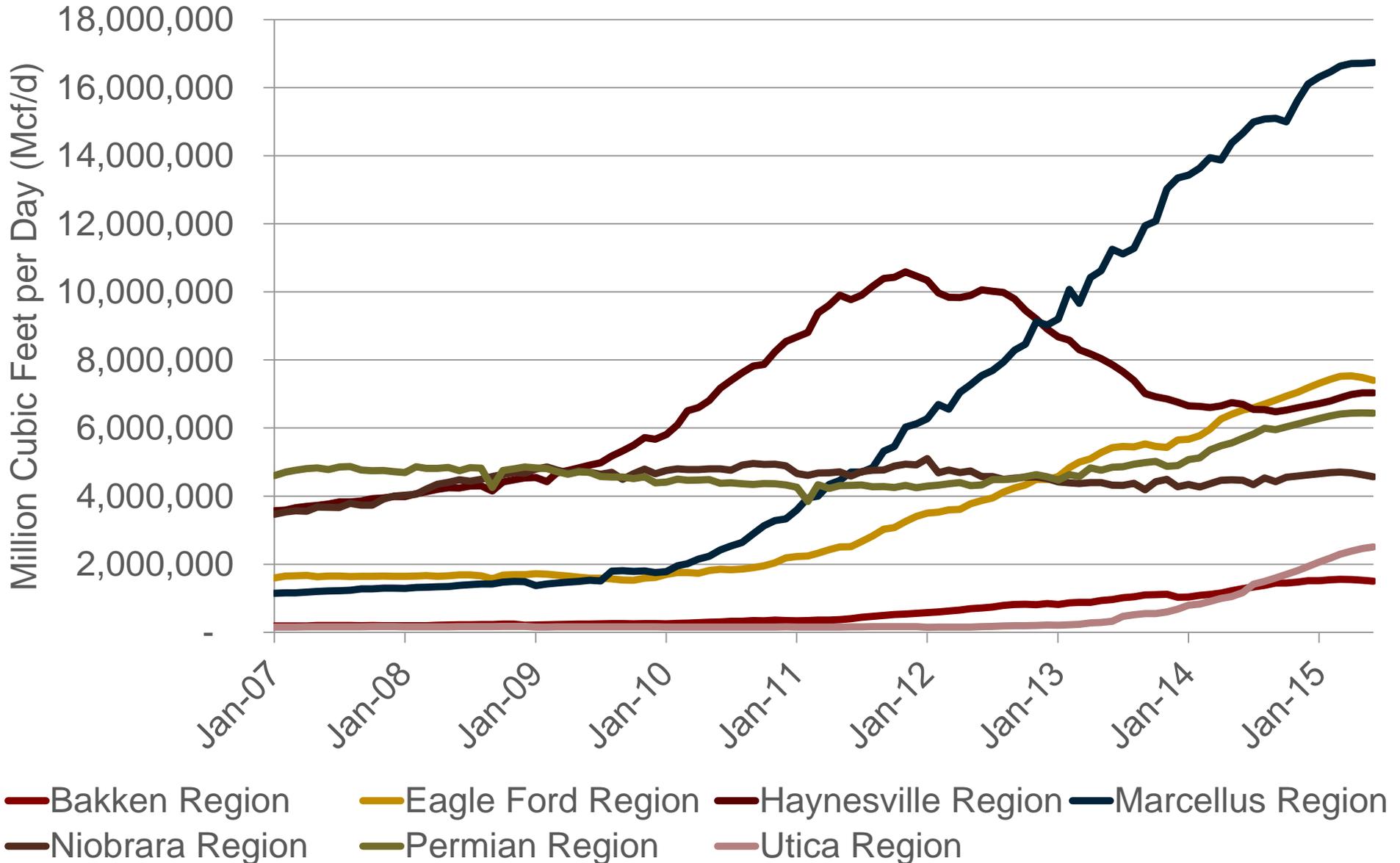
# Lower 48 states shale plays



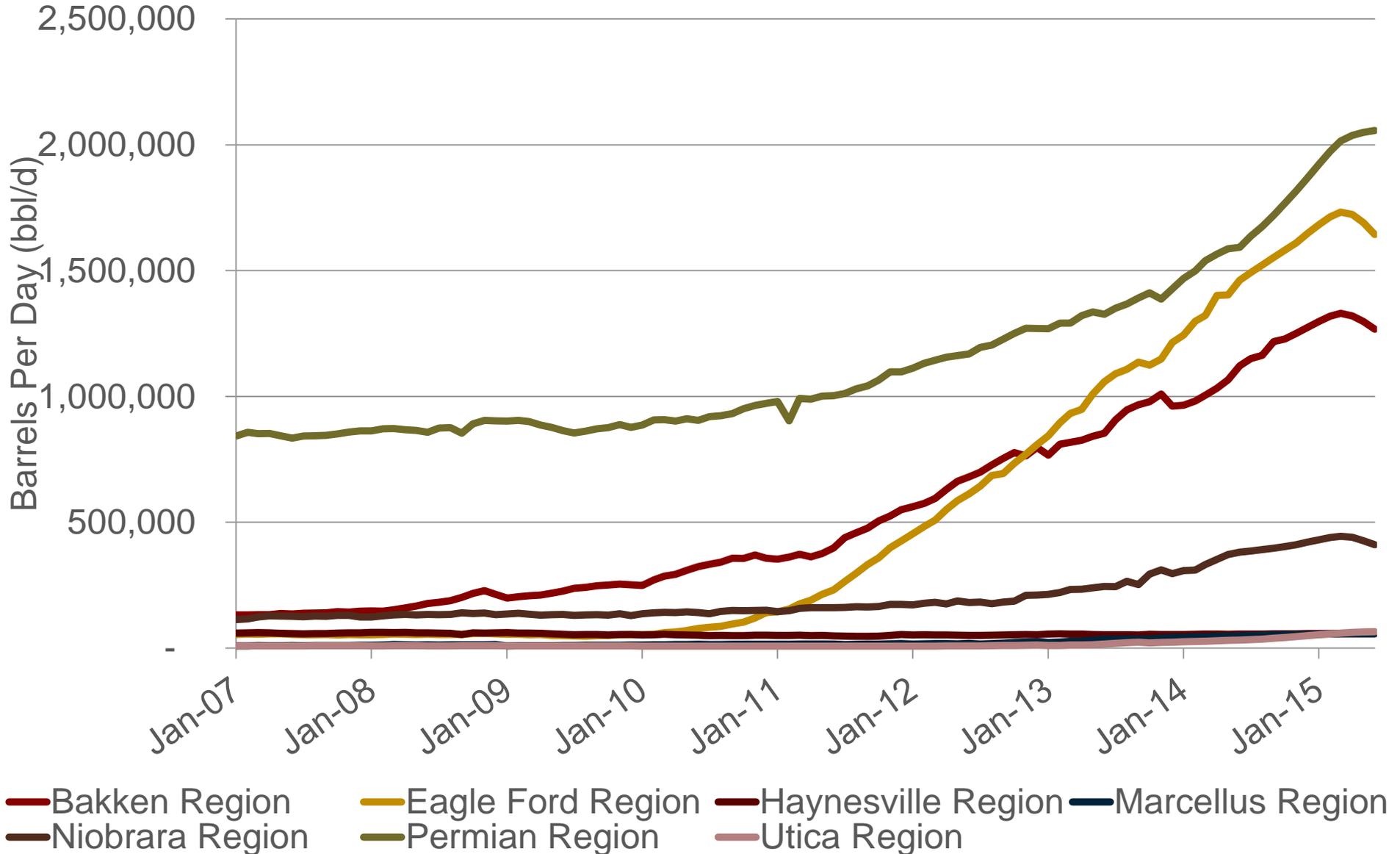
Shale plays		Basins	
<span style="color: red;">■</span>	Current plays	<span style="color: purple;">■</span>	* Mixed shale & chalk play
<span style="color: orange;">■</span>	Prospective plays	<span style="color: pink;">■</span>	** Mixed shale & limestone play
<span style="color: red; border-bottom: 1px solid red;">—</span>	Shallowest/ youngest	<span style="color: purple; border-bottom: 1px solid purple;">—</span>	*** Mixed shale & tight dolomite-siltstone-sandstone
<span style="color: blue; border-bottom: 1px solid blue;">—</span>	Intermediate depth/ age		
<span style="color: purple; border-bottom: 1px solid purple;">—</span>	Deepest/ oldest		



# Total Natural Gas Production By Shale Region

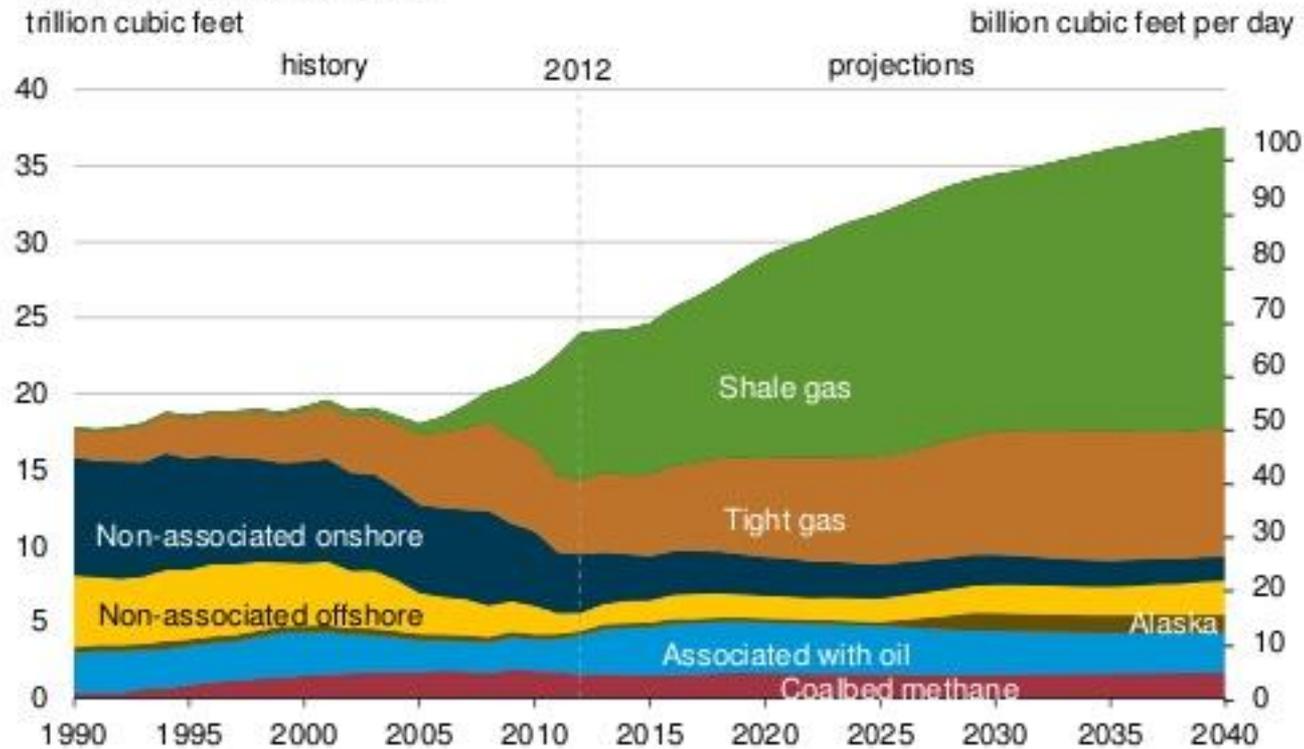


# Total Oil Production By Shale Region



## U.S. shale gas leads growth in total gas production through 2040, when production exceeds 100 billion cubic feet per day

U.S. dry natural gas production  
trillion cubic feet

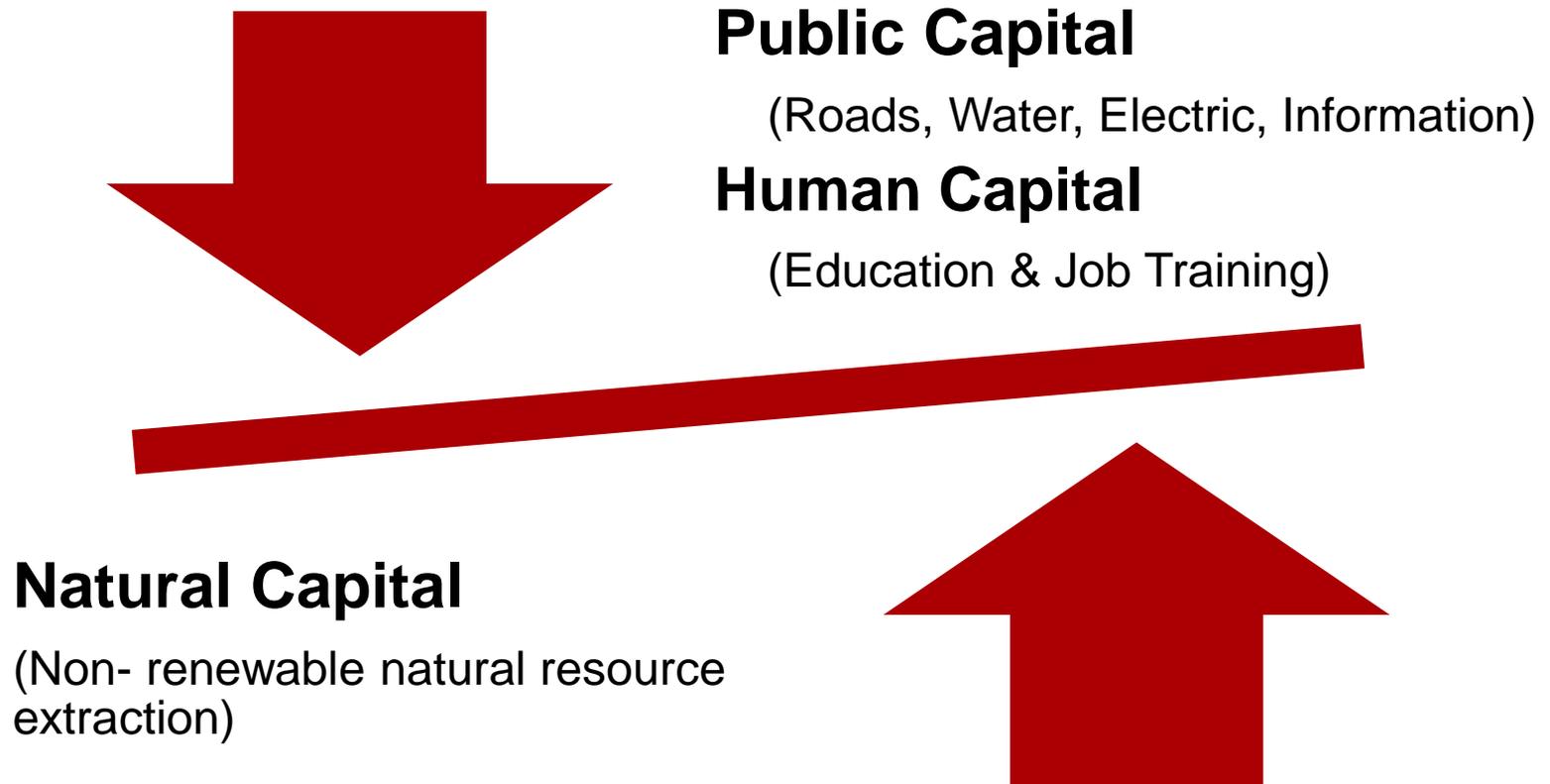


Source: EIA, Annual Energy Outlook 2014 Reference case

# There is More to Oil & Gas Development than Drilling Wells



# Natural Resource Based Economies: Boom/Bust



# Oil and Gas Development Community Impacts



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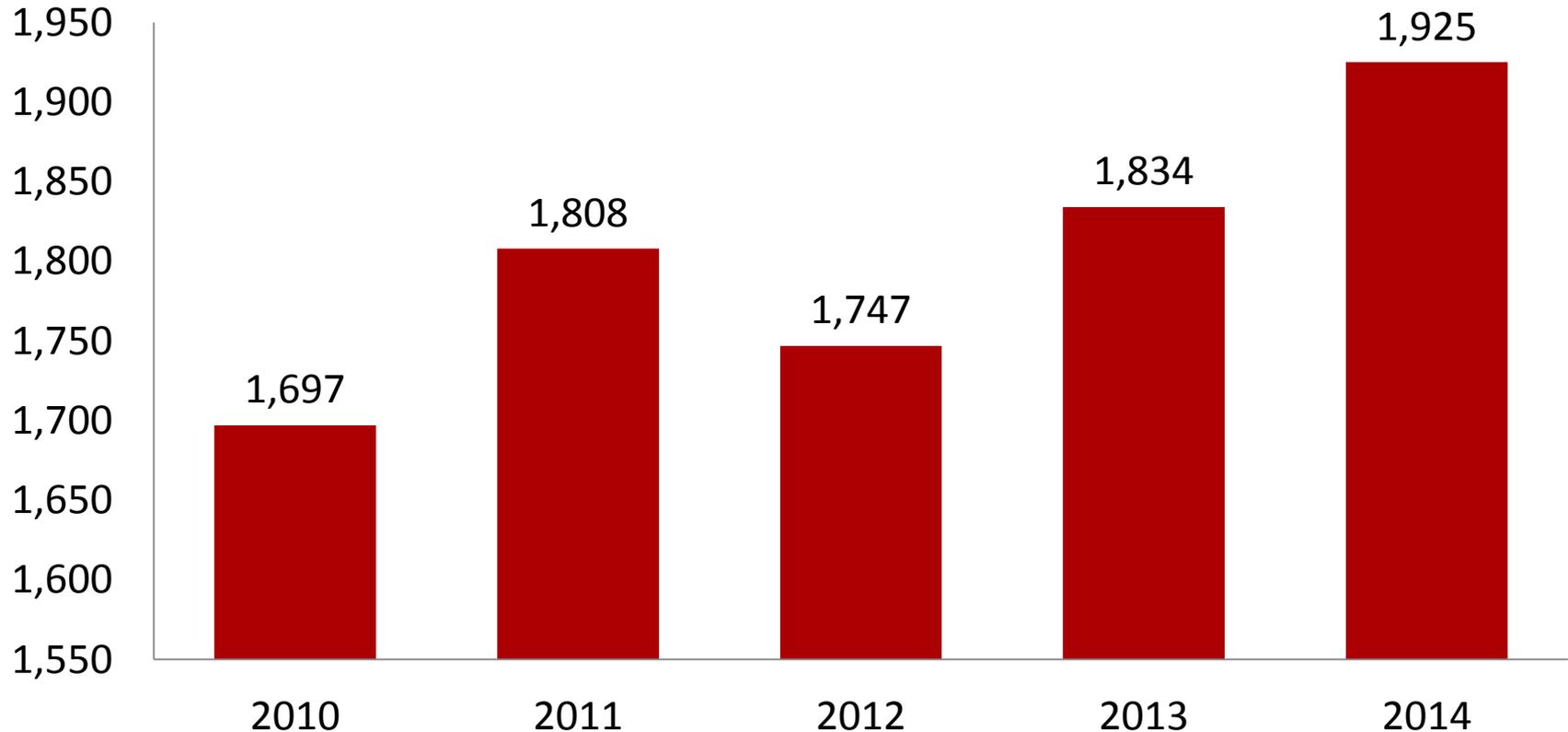
# Shale Development Impacts are Comprehensive

- Shale development impacts on all sectors of community – social, environmental and economic
- Impacts are both short and long-term
- Impacts bring both benefits and challenges
- What might be a positive impact in one sector may be a negative impact in another



# SOCIAL Impacts of Shale Development

OVI Arrests by Year in One Region in Eastern Ohio (2010-2014)



■ OVIs

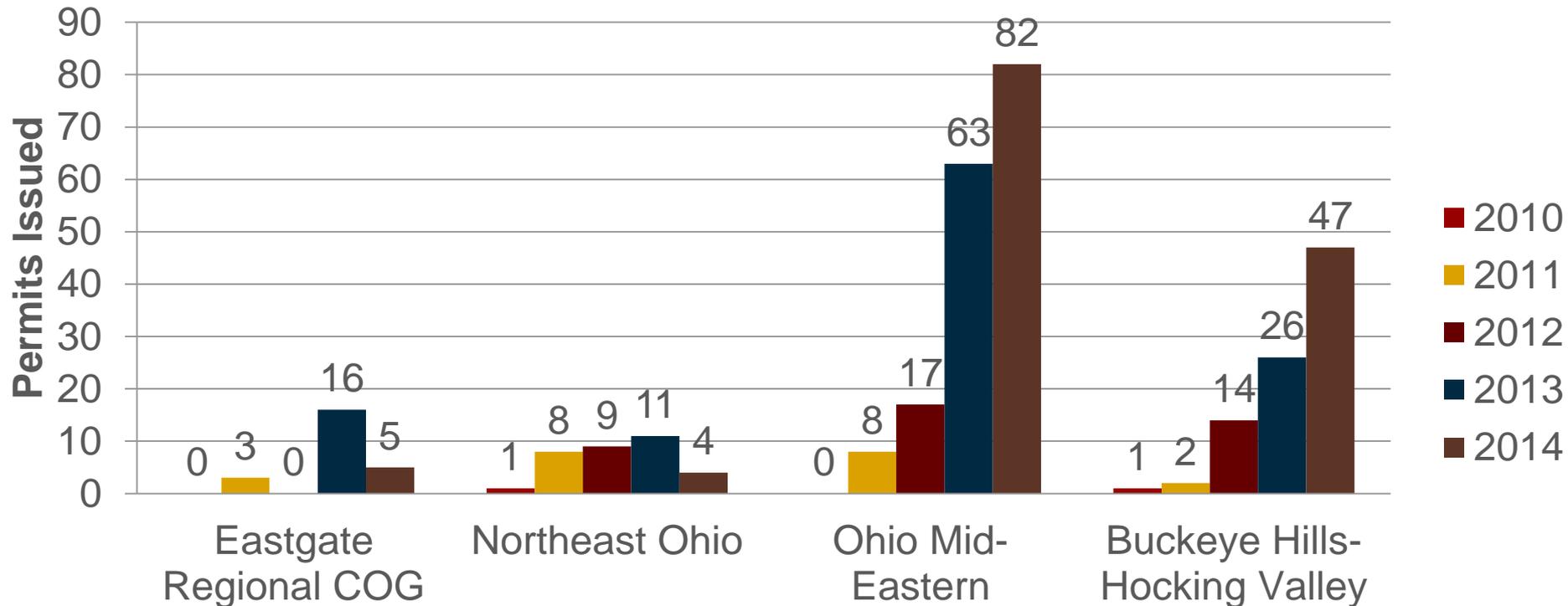


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# ENVIRONMENTAL Impacts of Shale Development

## Ohio EPA Gas Well and Compressor Station Air Permits Issued per Region (2010-2014)



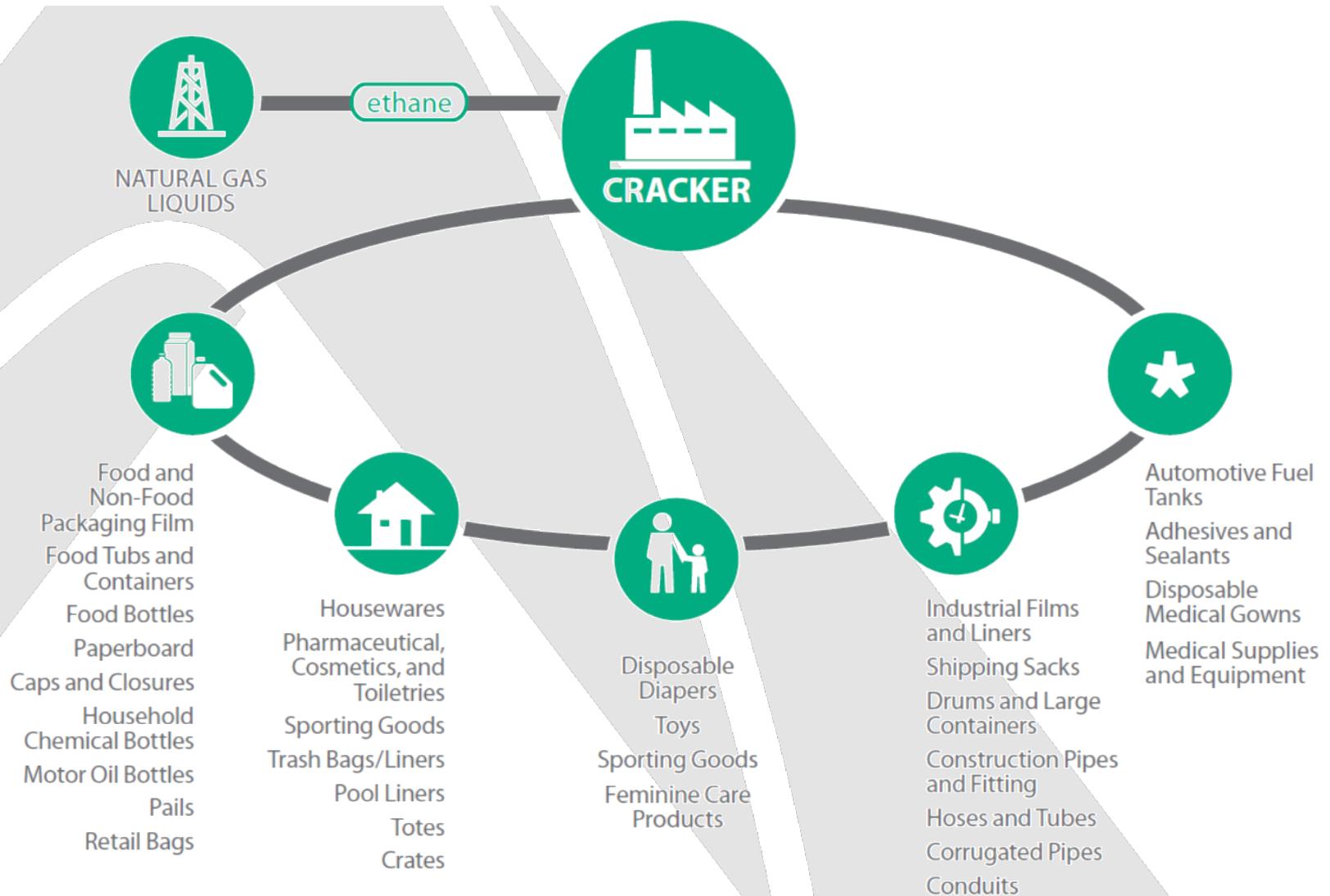
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# ECONOMIC Impacts of Shale Development

NAICS	Description	Ohio Net Job Change Q4 2011-13
211111	Crude Petroleum and Natural Gas Extraction	-1,127
211112	Natural Gas Liquid Extraction	319
213111	Drilling oil and gas wells	572
213112	Support Activities for Oil and Gas Operations	1,467
237120	Oil and Gas Pipeline and Related Structures Construction	3,451
486210	Pipeline Transportation of Natural Gas	4
<b>Total Jobs</b>		<b>4,686</b>

# Downstream Value Chain Markets



# EDA Project Focus: Diversification and Sustainability

- Focus on diversifying economy.
- Make investments that make community more attractive to locate new businesses.
- Encourage small businesses, entrepreneurs, and innovation.
- Build Human Capital - High levels of human capital have been strongly associated with high regional economic growth rates (Simon, 1998).



# Sustainable Planning Process



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# Sustainable Communities

*Sustainable development is a dynamic process in which communities anticipate and accommodate the needs of current and future generations in ways that reproduce and balance local social, economic, and ecological systems, and link local actions to global concerns.*

Berke and Conroy  
American Planning Association Journal  
Vol. 66, No. 1, Winter 2000



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# How does sustainability help with shale planning?

- Promotes Balance & interconnection
- Builds Inclusion
- Addresses Long term
- Multidimensional



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## Cornerstones

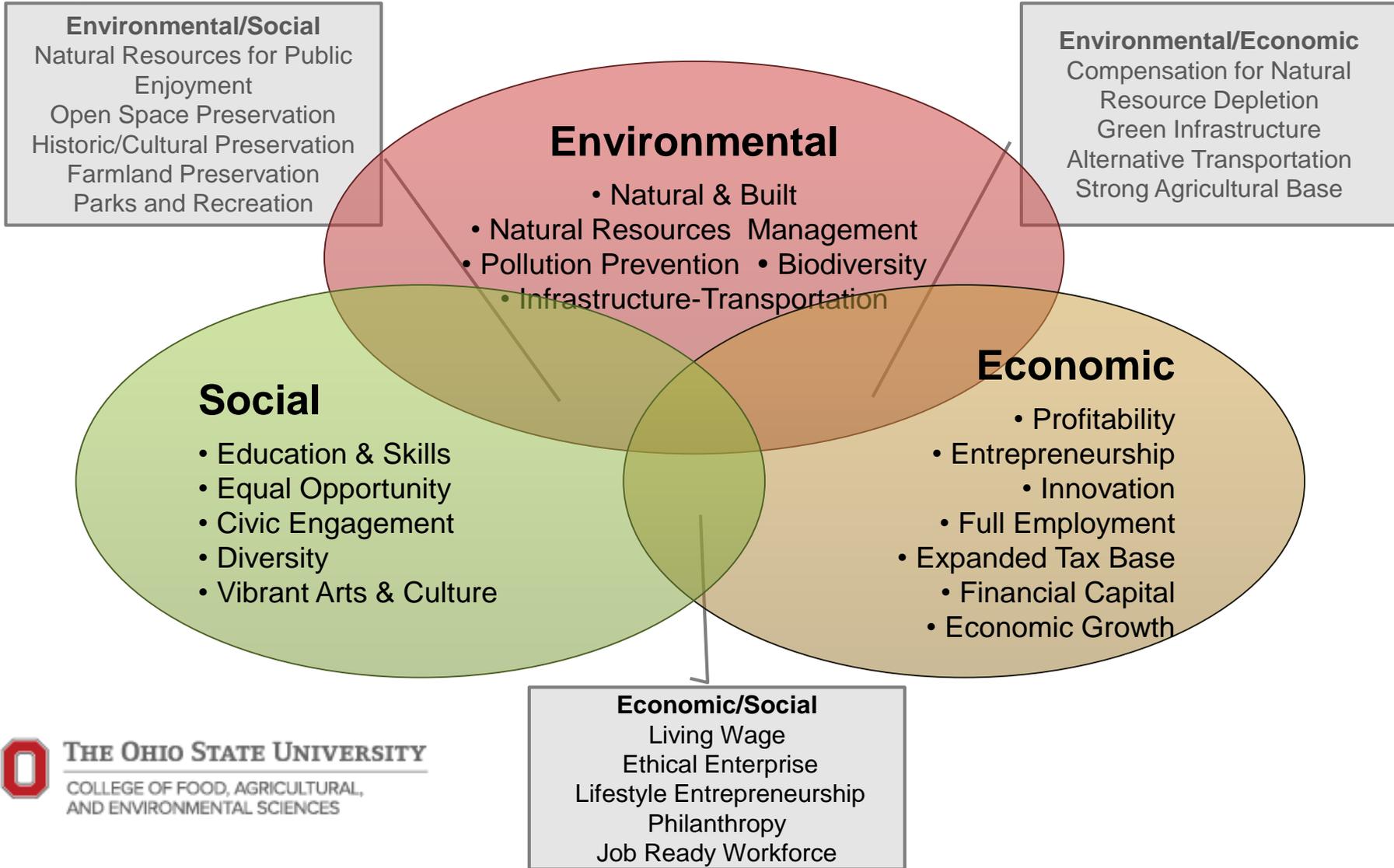
- Inclusion
- Long Term
- Balances/Links three Sectors
- Multidimensional Benefit to 3 Sectors

## Applicability

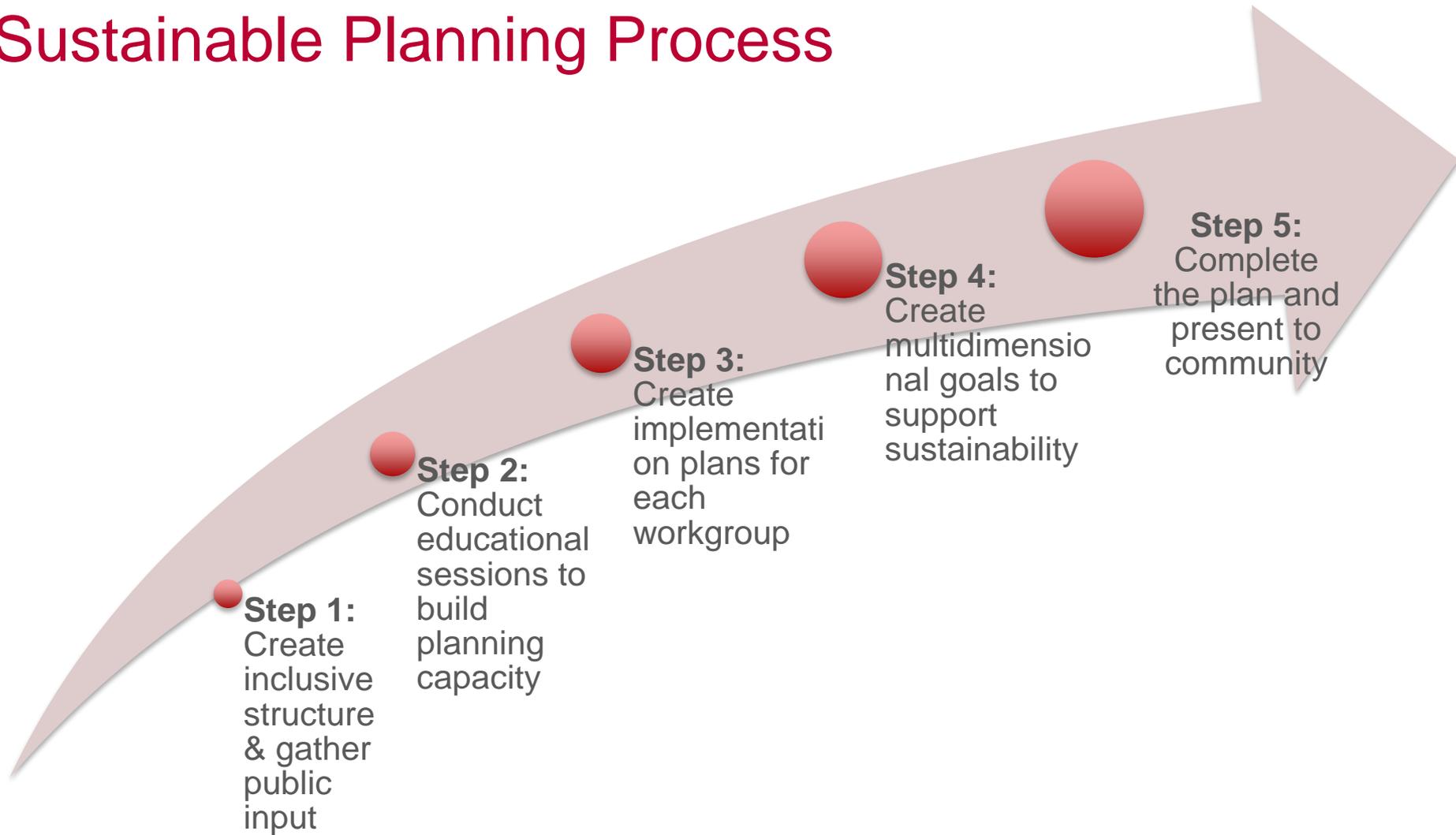
- Vision based planning through engaged community
- Considers future generations to transcend boom-bust cycles
- Addresses shale impacts on all 3 sectors & links/balances needs of each
- Goals intentionally linked to benefit social, environmental & economic future



# Using Sustainability to Build Capacity in Shale Impacted Communities

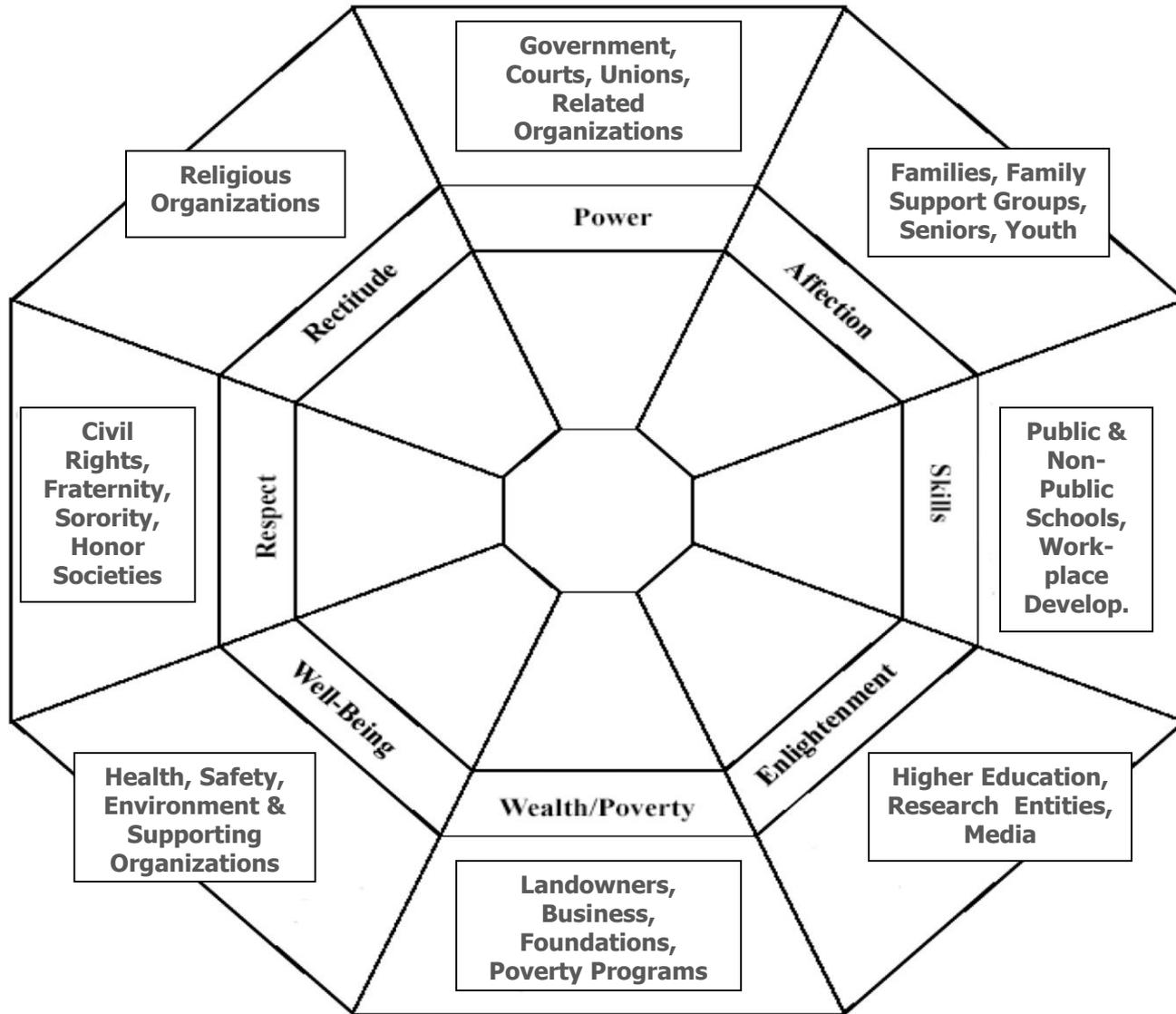


# Sustainable Planning Process



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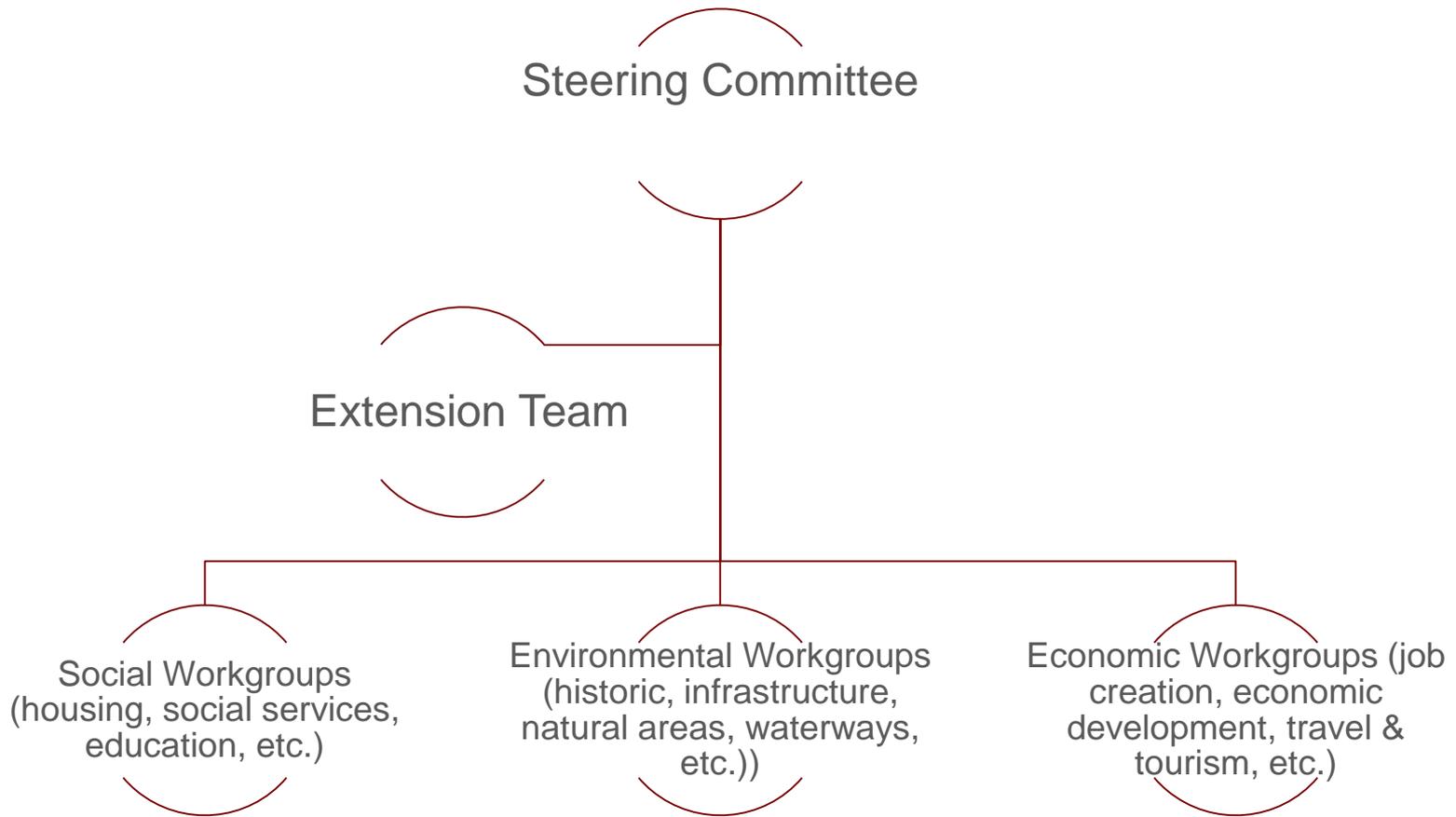


## Inclusionary

### Lasswell's Values/Institutions Categories "Lasswell's Wheel"

Harold D. Lasswell, *POLITICS: WHO GETS WHAT, WHEN, HOW*, Meridian Books, THE WORLD PUBLISHING COMPANY, Cleveland and New York, 1958, p. 202. Revised by: Myra Moss and Bill Grunkemeyer, OSU Extension Sustainable Development Initiatives, 2009

# Structure of Sustainable Planning Process



## Themes



## Sustainable Goals

- Agriculture
  - Infrastructure
  - Collaboration & Cooperation
- Land Use plan preserves ag lands, protects open space/ rural quality of life, & enhances ag's economic contribution
  - Extend/improve infrastructure to developed areas
  - Business, Government, Agencies & residents form "Champion Group"



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# Lessons Learned from Guernsey County Pilot Program



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# Group Exercise

1. What are your community's assets?
1. What challenges do you think the community might experience as a result of shale development?
1. What benefits do you think the community might experience as a result of shale development?



## Questions?

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