

Considerations for Managing Oil and Gas Development with Forest Resources

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Risk Management

- Financial – Decision Making Regarding Cost Benefit Analysis
- Legal – Information regarding mineral rights and leasing practices
- Environmental – Information regarding current regulations and new technologies and best management practices for farms and communities



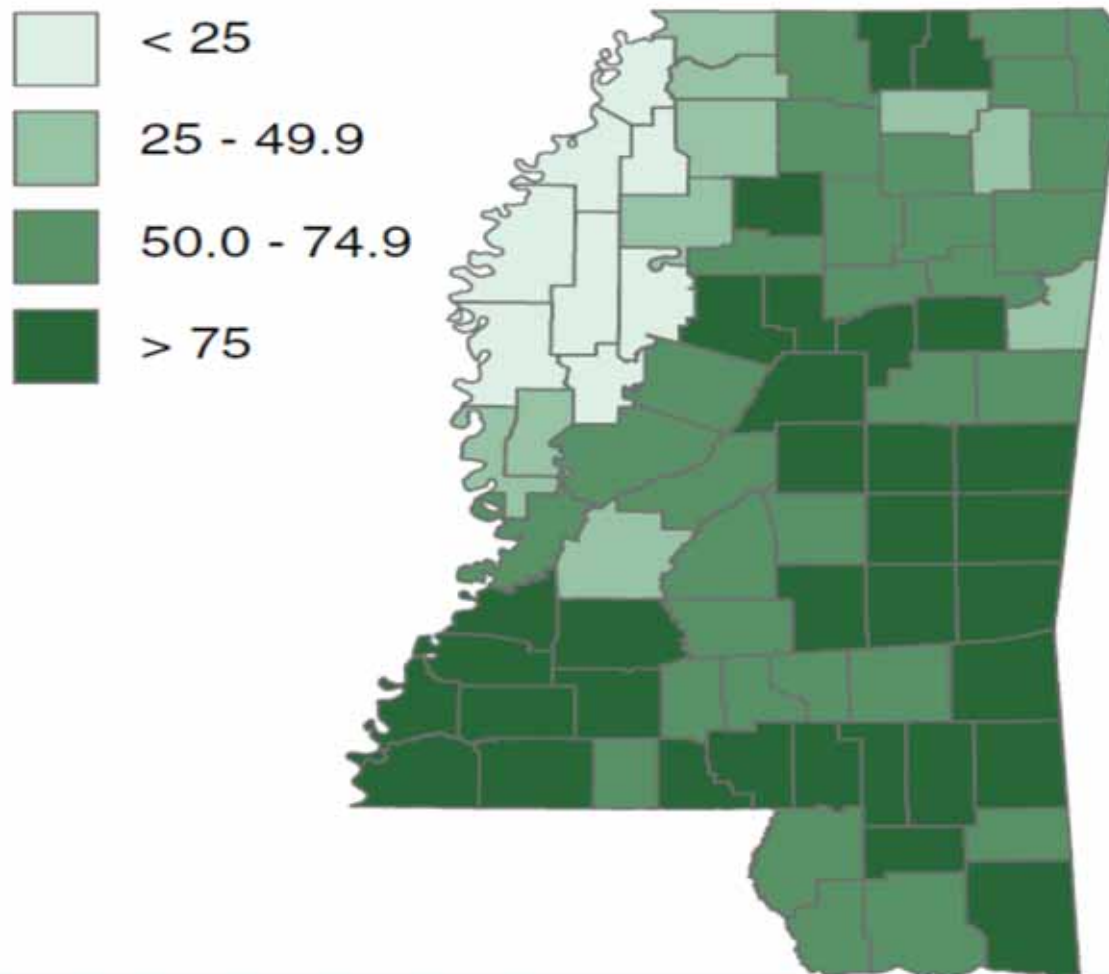
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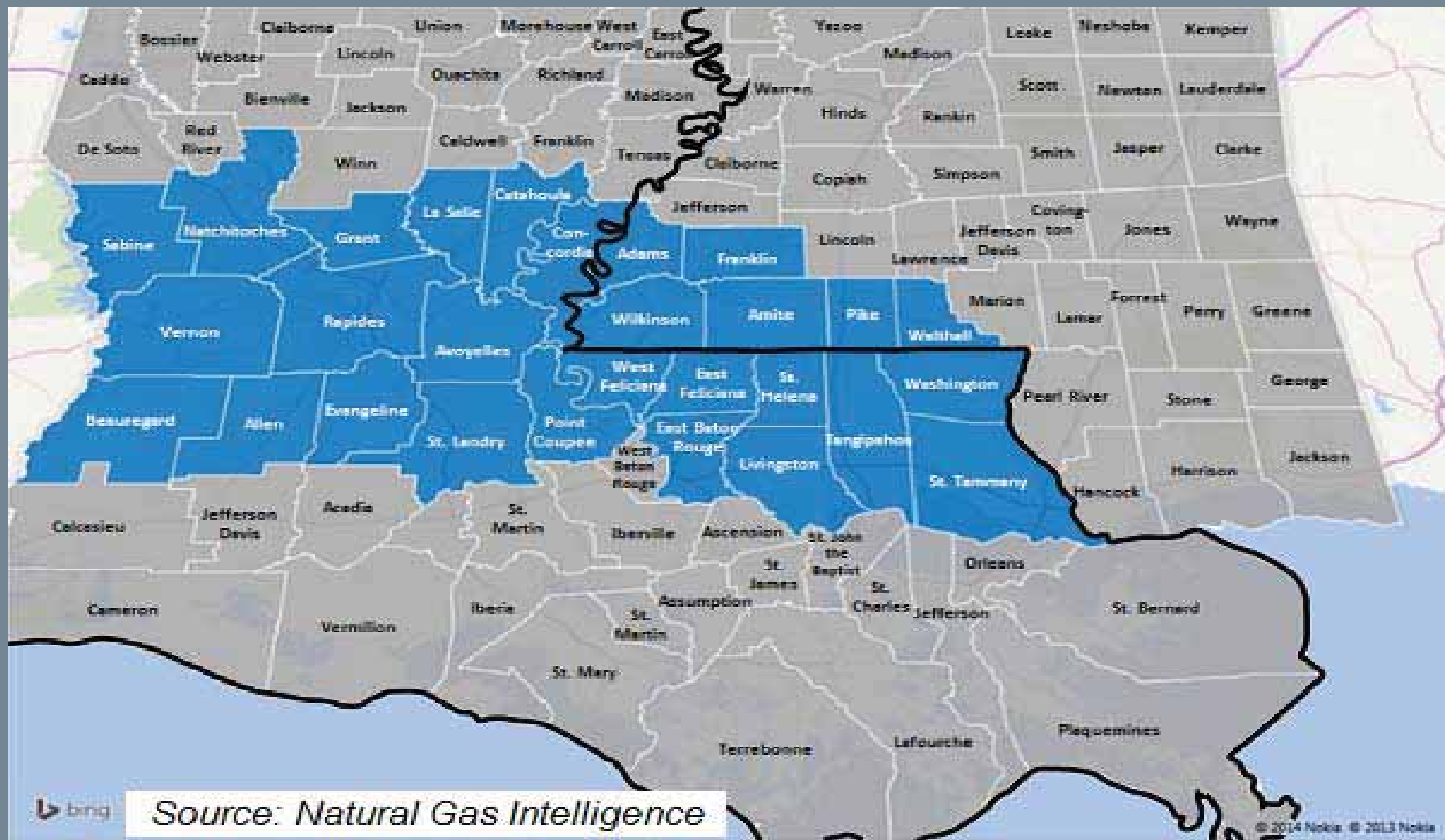
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Percentage of land in forest by county



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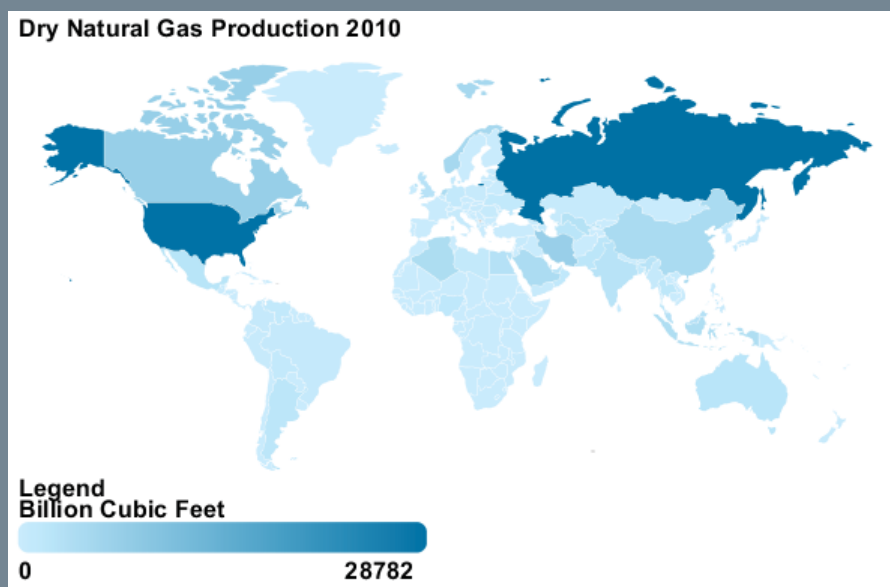
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Technology advances

- Hydraulic Fracturing Techniques - “Hydraulic fracturing is a well stimulation process used to maximize the extraction of underground resources; including oil, natural gas, geothermal energy, and even water.” (EPA, 2014)
- Horizontal Drilling - Horizontal drilling is the process of drilling and completing, for production, a well that begins as a vertical or inclined linear bore which extends from the surface to a subsurface location just above the target oil or gas reservoir called the "kickoff point," then bears off on an arc to intersect the reservoir at the "entry point," and, thereafter, continues at a near-horizontal attitude tangent to the arc, to substantially or entirely remain within the reservoir until the desired bottom hole location is reached. (EIA, 1993)



Natural Gas Production Around the World



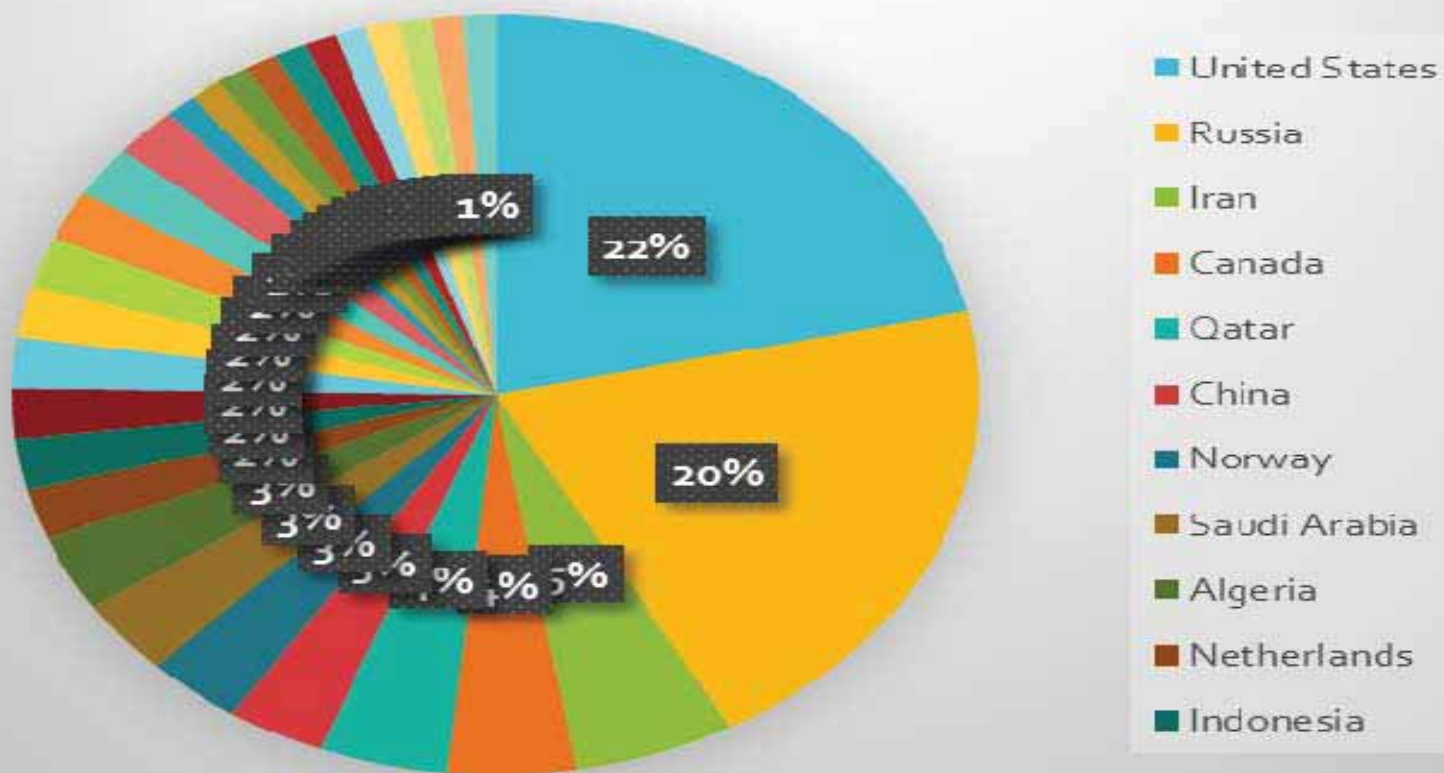
Energy Information Administration



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Percent of Production Natural Gas



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Tradeoffs and Debates

- Economic Returns
- Political Stability
- Shift of Economics and Politics
- Environmental Concerns
- Environmental Benefits
- Lower Energy Costs
- Who Bears the Costs
- Biodiversity
- Climate Change
- Social Uncertainty
- Employment
- Landowner Income
- Deforestation
- Water Quality
- Legal Issues
- Land Management
- Trade-Offs
- Public and Private forestland



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Economic Returns

- Job creation
- Energy price decreases
- Revenues from oil and gas sales
- Exports



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Financial and Economic Tradeoffs

- Jobs
- Economic Impacts
- Energy Security
- Tax Revenues
- Infrastructure Costs
- Population Changes
- Schools



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Politics

- Political stability
- OPEC
- Exports and Imports



Environmental Debates

- Are the new technologies safe?
- How is climate change being impacted?
- Is natural gas a cleaner option or are the risks too great?
- Does oil and gas extraction contribute to deforestation or reduce deforestation?



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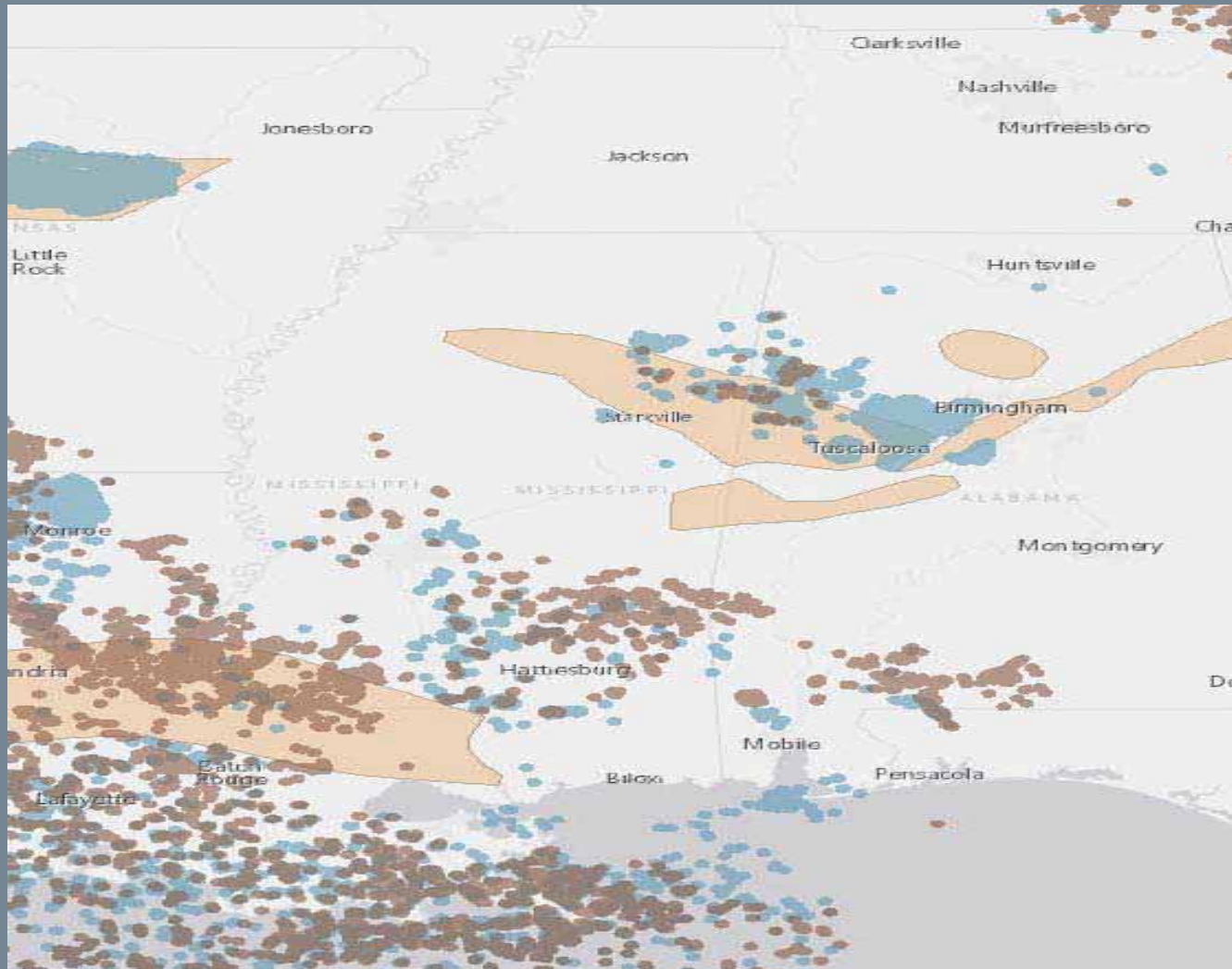
Environmental Debates Continued

- How is biodiversity impacted?
- What are appropriate international management policies?
- Who is responsible if damages occur?
- Who is responsible for restoration after the extraction process is completed.



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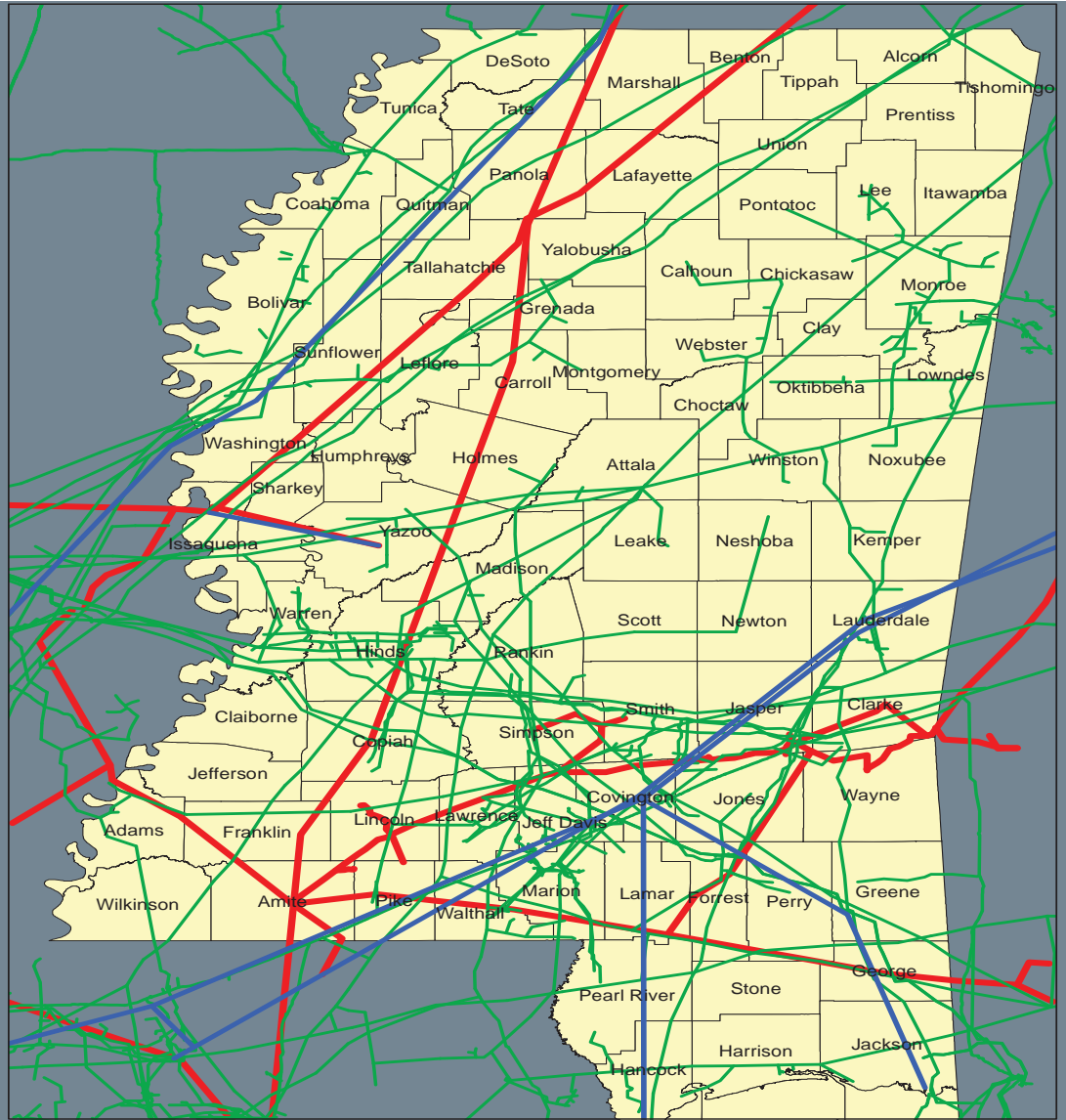
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Map of Crude Oil, Natural Gas, and Petroleum Product Pipelines

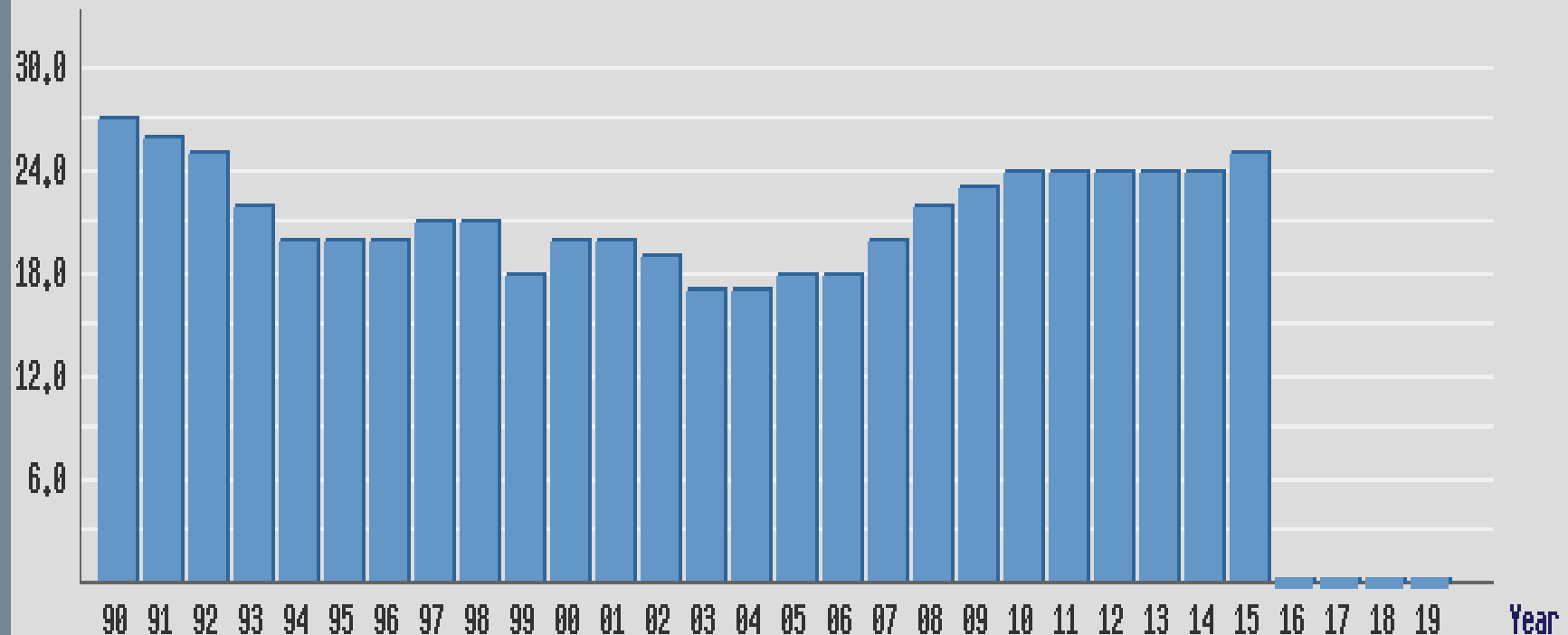


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Oil Production Beginning with 1990

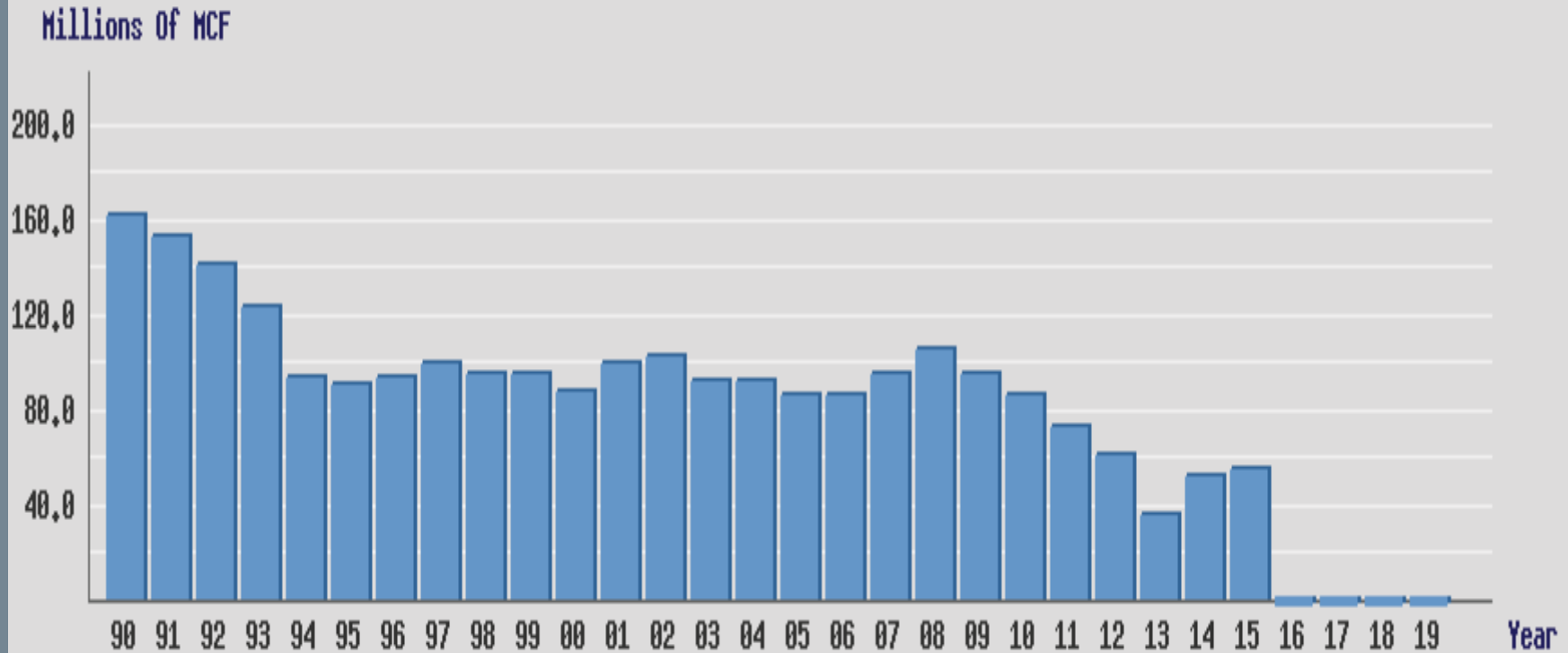
Millions Of Barrels



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Gas Production Beginning with 1990

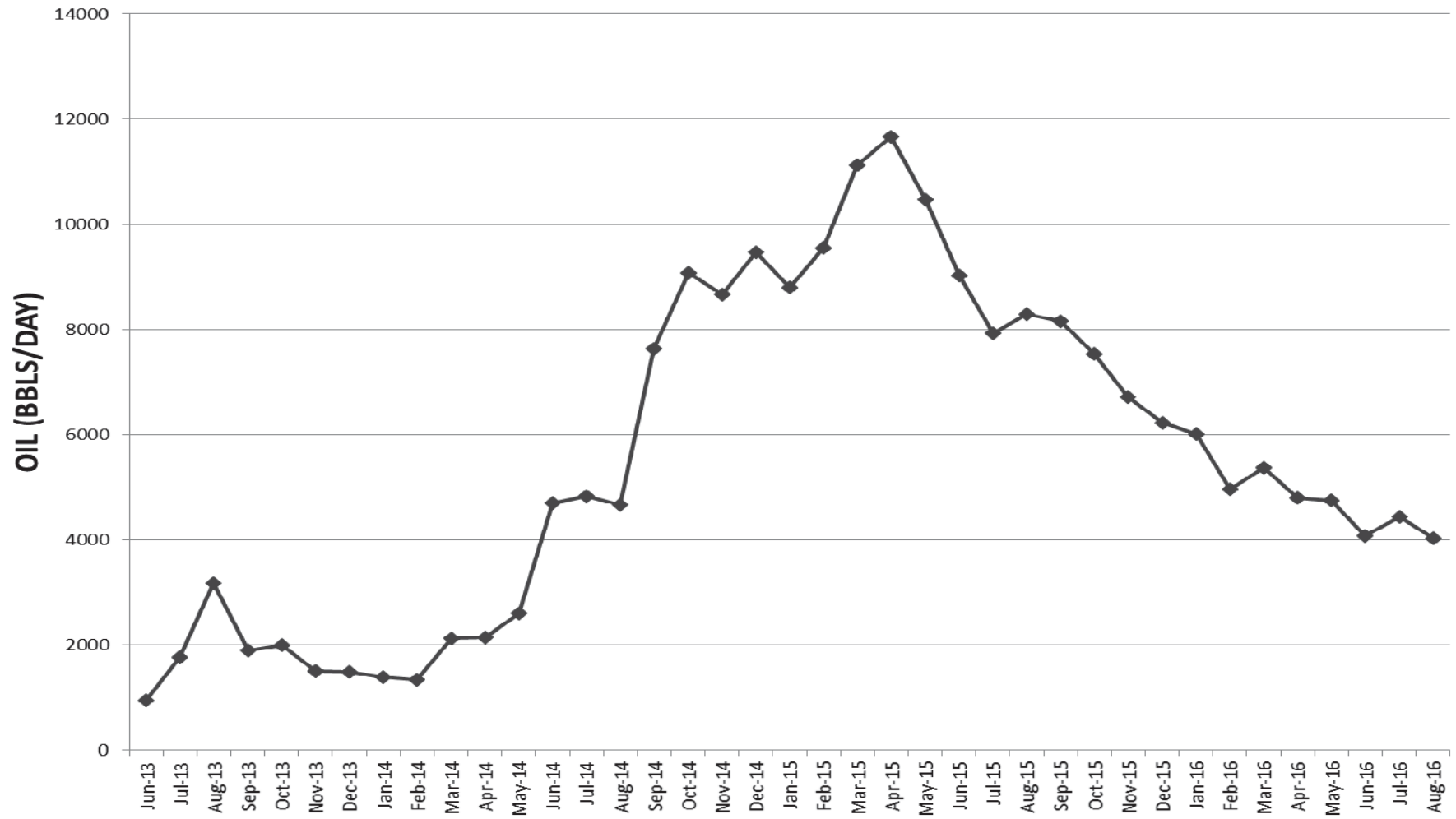


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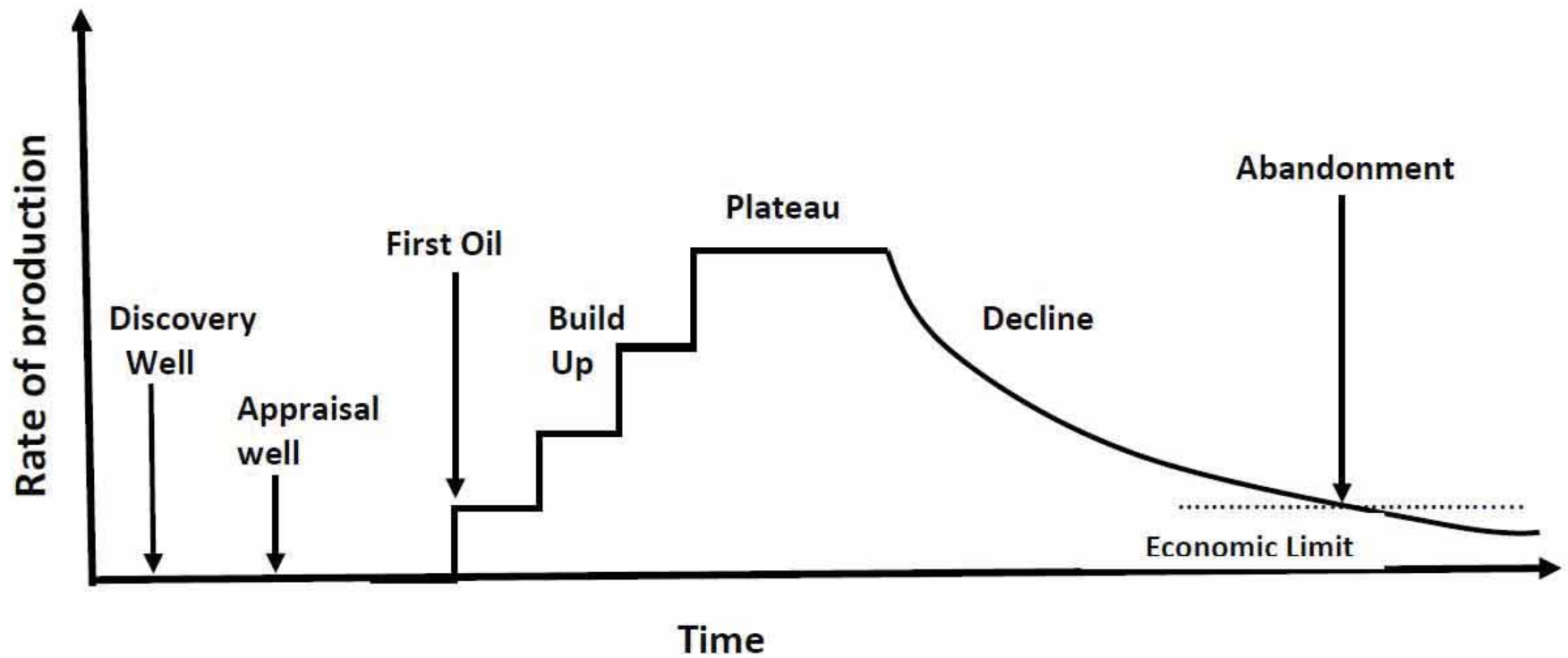
8/1/16 - Date of Last Report

AVERAGE DAILY TMS PRODUCTION



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Why is it Risky to Drill?

- Consumer demand
- Supply of crude oil and natural gas
- Weather conditions and changing weather patterns
- Availability, proximity, and capacity of transportation facilities
- International and domestic economic and political conditions



Why is it difficult to drill?

- Price/availability/demand for competing and alternative energy sources
- Nature and extent of governmental regulations and taxation
- Level and effect of trading in commodity futures markets, including commodity price speculators
- Effect of energy conservation measures



Risk to Developers: Cost and timing of drilling, completion, and operation of wells

- Unexpected drilling conditions
- Title Problems
- Pressure or irregularities in formations
- Equipment failures or accidents



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Legal - Important Steps

- Do you own land?
- Do you own your mineral rights?
- Are the mineral rights severed?
- Find your deed
- Visit Chancery Clerk's Office
- Hire Attorney – Title Opinion



MINERAL ESTATE VS. SURFACE ESTATE

- A severed mineral interest is an interest in real estate
- Considered a valuable property right
- Mineral rights include oil, gas and other hydrocarbons (not sand, clay and gravel)
- Dominance of mineral interest



THE RIGHT TO EXPLORE VARIES

- For oil:
 - Shallow oil (Surface – 12,000') – 40 acre unit
 - Deep oil (below 12,000') – 80 up to 160 acre unit
 - Horizon Wells – 1920 +/- acre unit
- For Gas:
 - Shallow gas (surface – 12,000') – 320 acre unit
 - Deep gas (below 12,000') – 640 acre unit
- For CO₂:
 - Units vary in size – 640 to 1280+ acres



Environmental Considerations and Risks

- Wastewater Management and Disposal of flowback water and produced water
- Oil/Gas Processing and Delivery – collection, purification, and compression for delivery by pipeline or by truck, rail, or barge
- Water contamination, spills, well blowouts, natural habitat loss
- Increased demands on emergency responders fires, on-site accidents, traffic accidents
- Influx of temporary workers



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Regulation

- Mississippi Department of Environmental Quality – Office of Pollution Control and Office of Land and Water Resources
- Regulate
 - Withdrawals of water from ground and surface water
 - Storm water runoff
 - Discharge and/ or treatment of water
 - Respond to spills
 - Air pollution



Determine Ownership

- Find your deed
 - Fee simple
 - Surface rights only
- Visit tax assessor's office
- Hire attorney – Title Opinion



Why a Title Opinion?

- Confirm Ownership
- Define the property with description
- Provide a list of problems with ownership



The Gas Lease

- Remember, you are giving something up in exchange for something in return
- Negotiate (worth an experienced attorney)
 - Terms: Primary & secondary
 - Right of first refusal
- Make sure you have the money before you spend it!



The Gas Lease

Make sure you know:

1. exactly what you are leasing your land for
2. how long the lease will last and how much you will receive for the rental payment and royalties
3. how the land will be reclaimed
4. how the process will impact you and your property



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Types of Income

- Bonus payment
- Rental payment
- Delay rental payment
- Royalty payments
- Shut in royalty payment
- Pipeline
- Well-siting fee



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Types of Expenses

- Property damage
- Liability to third parties
- Land-use considerations
 - Water (especially wells requiring hydro-fracturing)
 - Timber
 - Wildlife
 - Soil
 - Sensitive places
 - Wood waste debris



Land-use Considerations

- Plan ahead!
- Incorporate drilling into your forest management plan & know where your most valuable resources are located (e.g., sensitive & unique areas)
- Work with gas co. to minimize damages by using existing roads, landings, etc.
- Lease should require your approval for well site, road, pipeline location, post drilling cleanup and land restoration



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Land-use Considerations

- Negotiate compensation schedule for timber cut and lost future revenue – always seek FMV (foresters do this!)
 - Negotiation
 - Bidding
- Clearly mark trees to be removed or saved



Tax Considerations

- Ordinary income
- Estate planning
 - Rights to royalty streams
 - Surface estate
- Determine if you can reduce your tax burden



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Professionals

- Attorney
- Accountant
- Financial planner
- Forester



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Questions for Professionals

- How long have you been in practice?
- How much experience do you have working on natural gas issues?
- What are your qualifications? Tell me about your professional credentials, certifications, and how you stay updated or remain current in your field.
- Will you provide a written contract that outlines the service agreement and fees?
- How long will the work take?
- Will any of your work be delegated to others and if so, how much?
- How do you charge or get paid

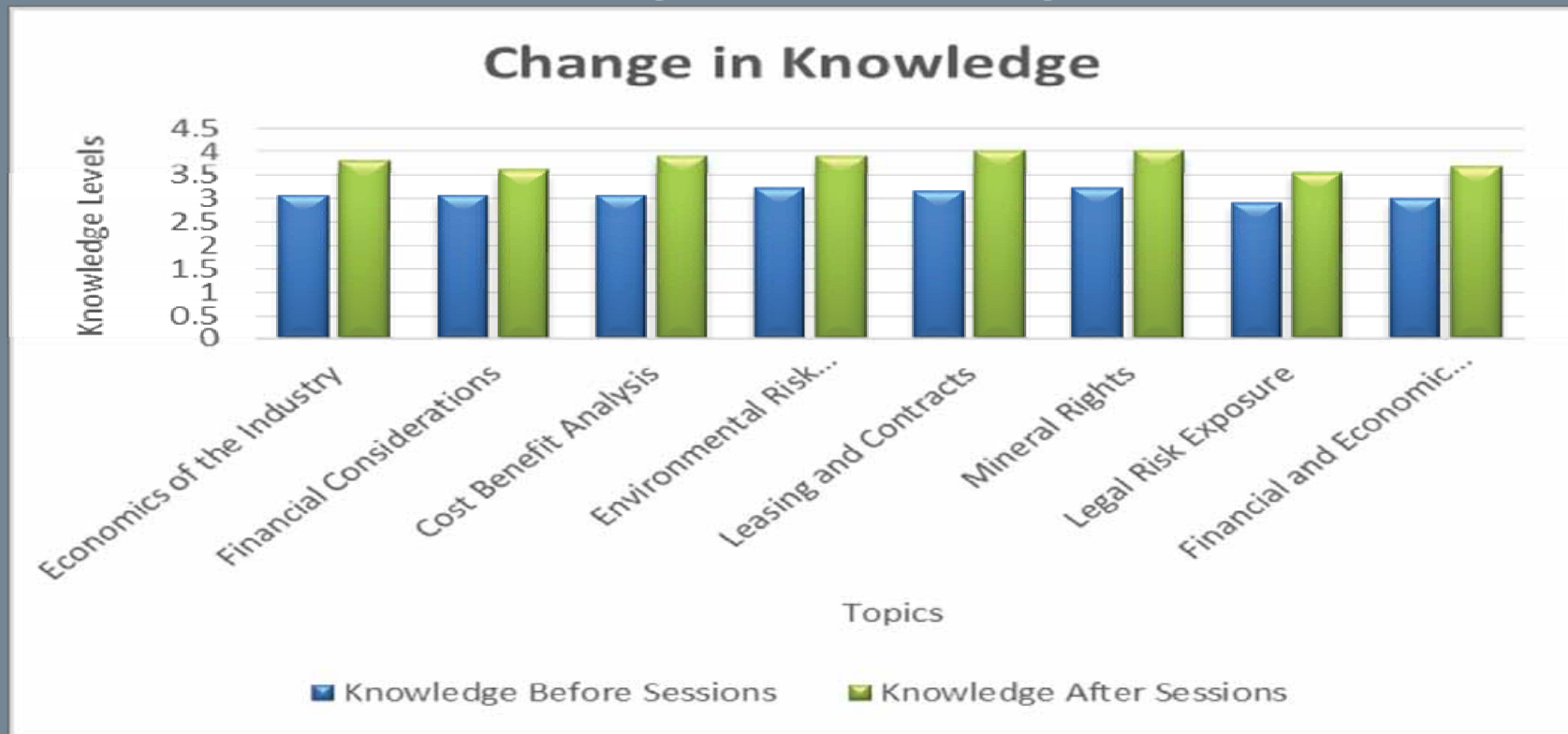


Summary Landowner Best Practices

1. Know what your position is with regard to mineral rights
2. Hire professionals to help with decision making
3. Conduct an assessment of the land use tradeoffs when deciding whether or not to lease land for oil and gas development.



Before and After Educational Programming



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Success and Accomplishments

- Increase in knowledge – Participants knowledge of subject matter improved on average by 25% at each session
- Certified to provide continuing education
- Participants noted that they intended to use the information
- Over 65% of emergency managers indicated that education sessions eliminated their concerns about oil and gas extraction process
- Requests for additional programming
 - MS Water Operators
 - MS Emergency Managers
 - Mississippi Women for Agriculture
 - Oktibbeha County Agriculture Association
- Attendance from multiple states
- Information requests from multiple states and governmental agencies



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Resources for More Information

- MSU-Extension
- U. S. Department of Energy
- Mississippi Oil and Gas Board
- Mississippi Department of Environmental Quality
- Environmentally Friendly Drilling Systems - <http://efdvirtualsite.org>
- Environmental Protection Agency- <http://water.epa.gov/drink/contaminants/index.cfm>
- Fracfocus - <http://fracfocus.org/>



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Quotes

- Elected Officials

- “The public needs to be aware of both the positive and the negative effects because they see the negative right away, but it takes time to see the positive.” – Elected Official
- “Public awareness campaigns are needed... most of the public is not informed unless it directly impacts them.” - Elected Official

- Program Attendees

- “We need a regional approach.” - Program Attendee
- “I’d like to see the development of work force resources within the local community.” - Program Attendee

- County Agents

- “We need someone to explain exactly what fracking is and what do we need to watch out for.” County Agent

- Forest Landowners

- “We need to know more about the highest standards and the best practices for protecting the environment.” - Landowner
- “Is there really a risk?” – Landowner
- “I feel better about the fracking technology now” – Landowner



Team

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 - Mississippi Department of Environmental Quality



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