



Energy Summit 2011

LSU Center For Energy Studies

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ENERGY TRANSFER

A Leader in the Transportation of America's Natural Gas

Unconventional Louisiana: Shales, Sands, Opportunities Transportation & Midstream Infrastructure Development

Greg Brazaitis, VP Government Affairs
gregory.brazaitis@energytransfer.com
832-668-1320

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All references in this presentation to capacity of a pipeline, processing plant or storage facility relate to maximum capacity under normal operating conditions and with respect to pipeline transportation capacity, is subject to multiple factors (including natural gas injections and withdrawals at various delivery points along the pipeline and the utilization of compression) which may reduce the throughput capacity from specified capacity levels.

Definitions

- Midstream: Those assets between the wellhead and the market
 - Measurement, Dehydration, Gas Treating, Gas/Oil Separation, Field Compression, Storage and similar services
- Transportation: Those assets that move the commodity from the wellhead and/or central gathering location to a market or to another pipeline.
 - Generally taken to be act of moving the commodity in the pipeline.
- Infrastructure: Those assets which are designed into the Midstream Transportation systems to gather, measure, treat, separate, and compress or pump the commodity to the market or another pipeline.

2003 National Petroleum Council

Supply

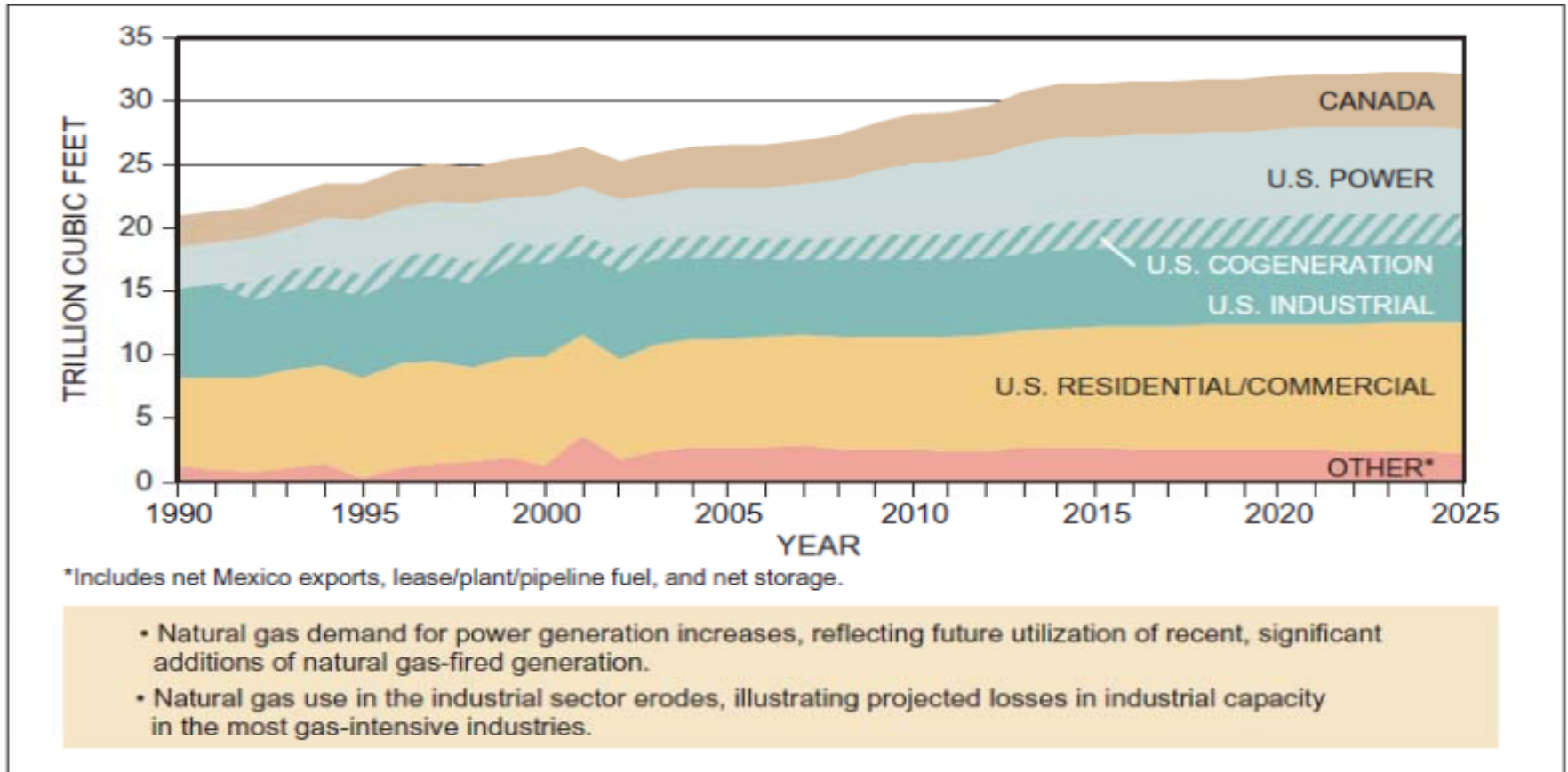
“Traditional North American producing areas will provide 75% of long-term U.S. gas needs, but will be unable to meet projected demand.”

2003 NPC: “Balancing Natural Gas Policy; Fueling the Demands of a Growing Economy”



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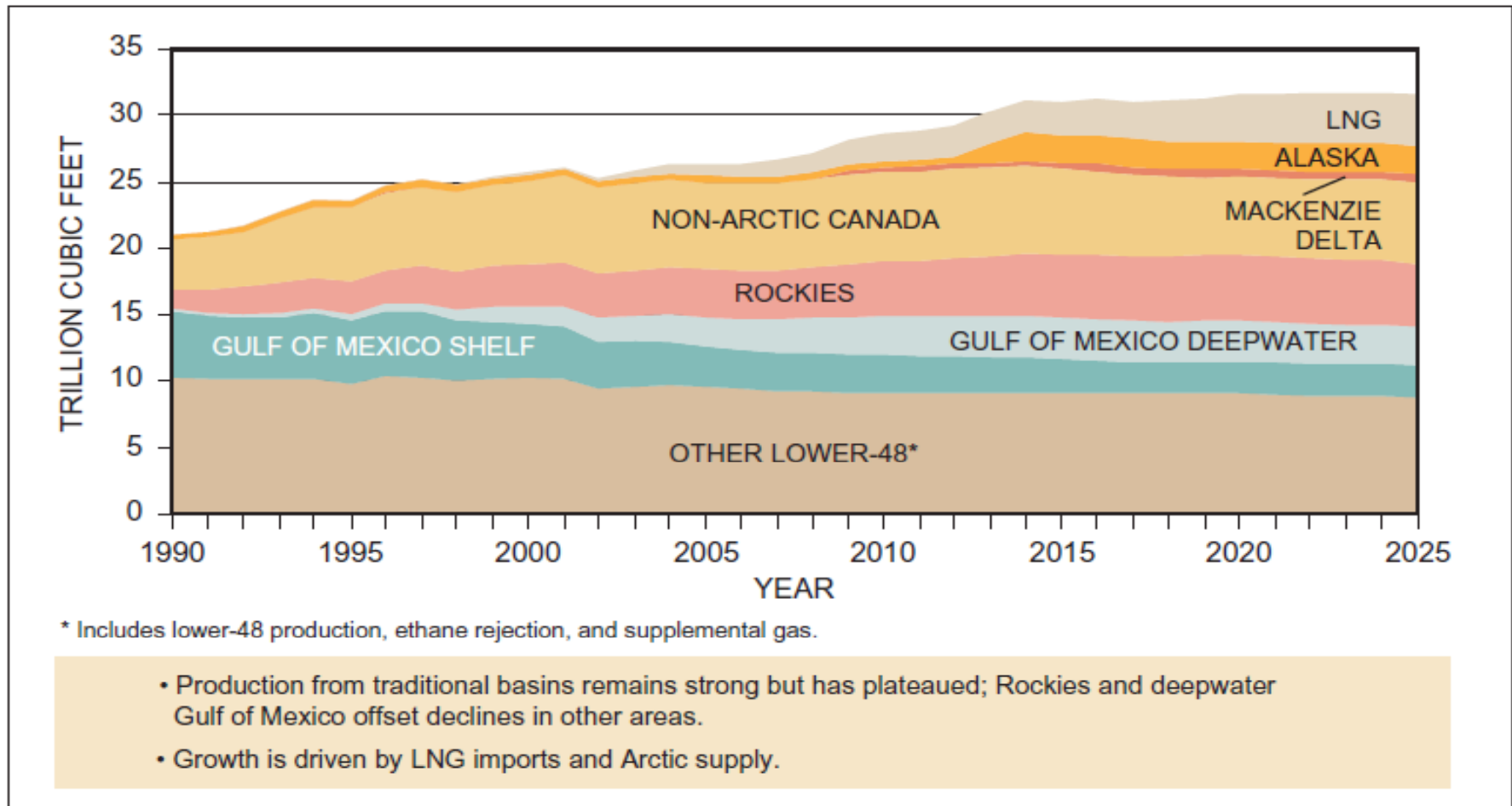
2003 NPC Gas Demand Projection



2003 NPC: "Balancing Natural Gas Policy; Fueling the Demands of a Growing Economy"

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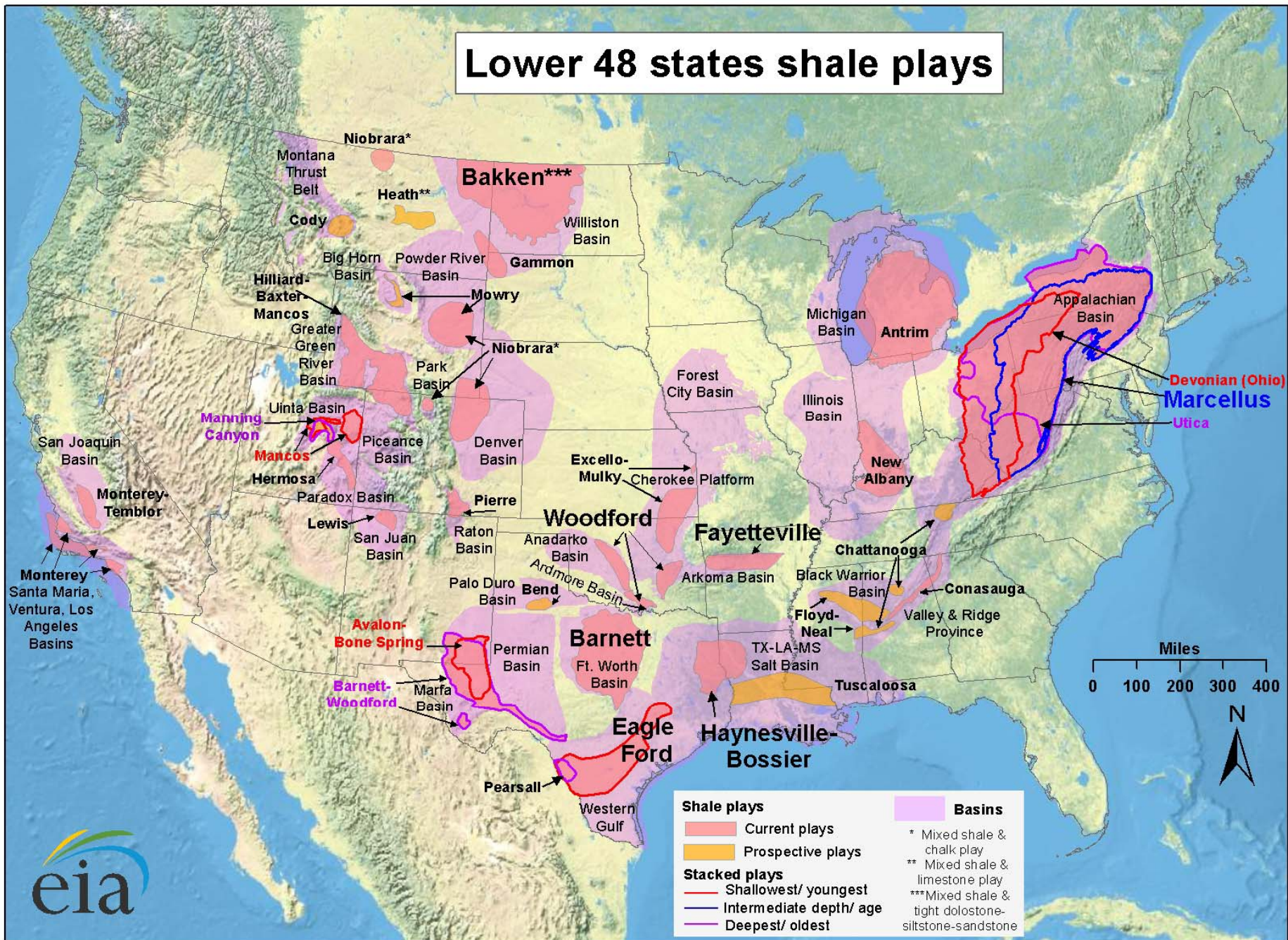
2003 NPC Gas Supply Projection



2003 NPC: "Balancing Natural Gas Policy; Fueling the Demands of a Growing Economy"

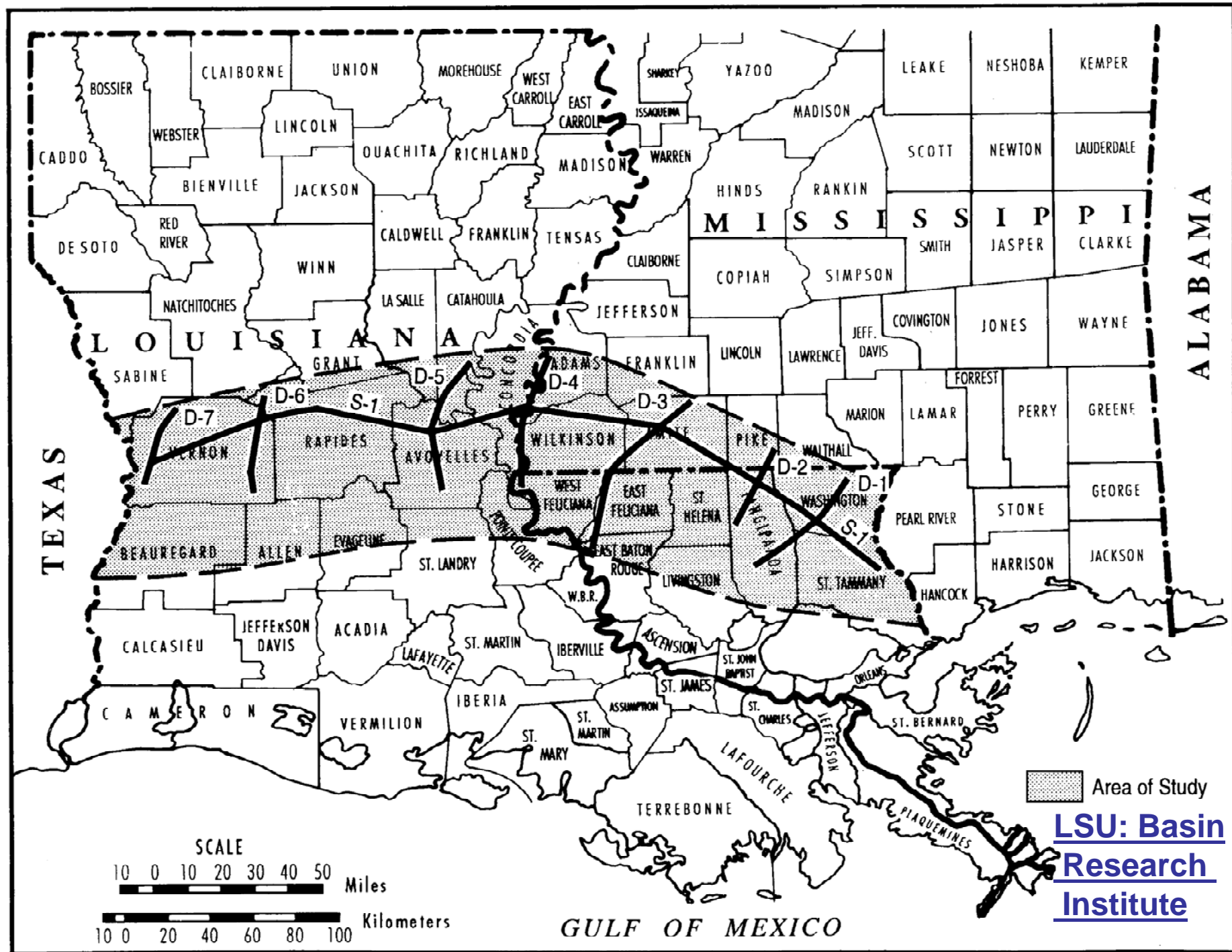
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Lower 48 states shale plays



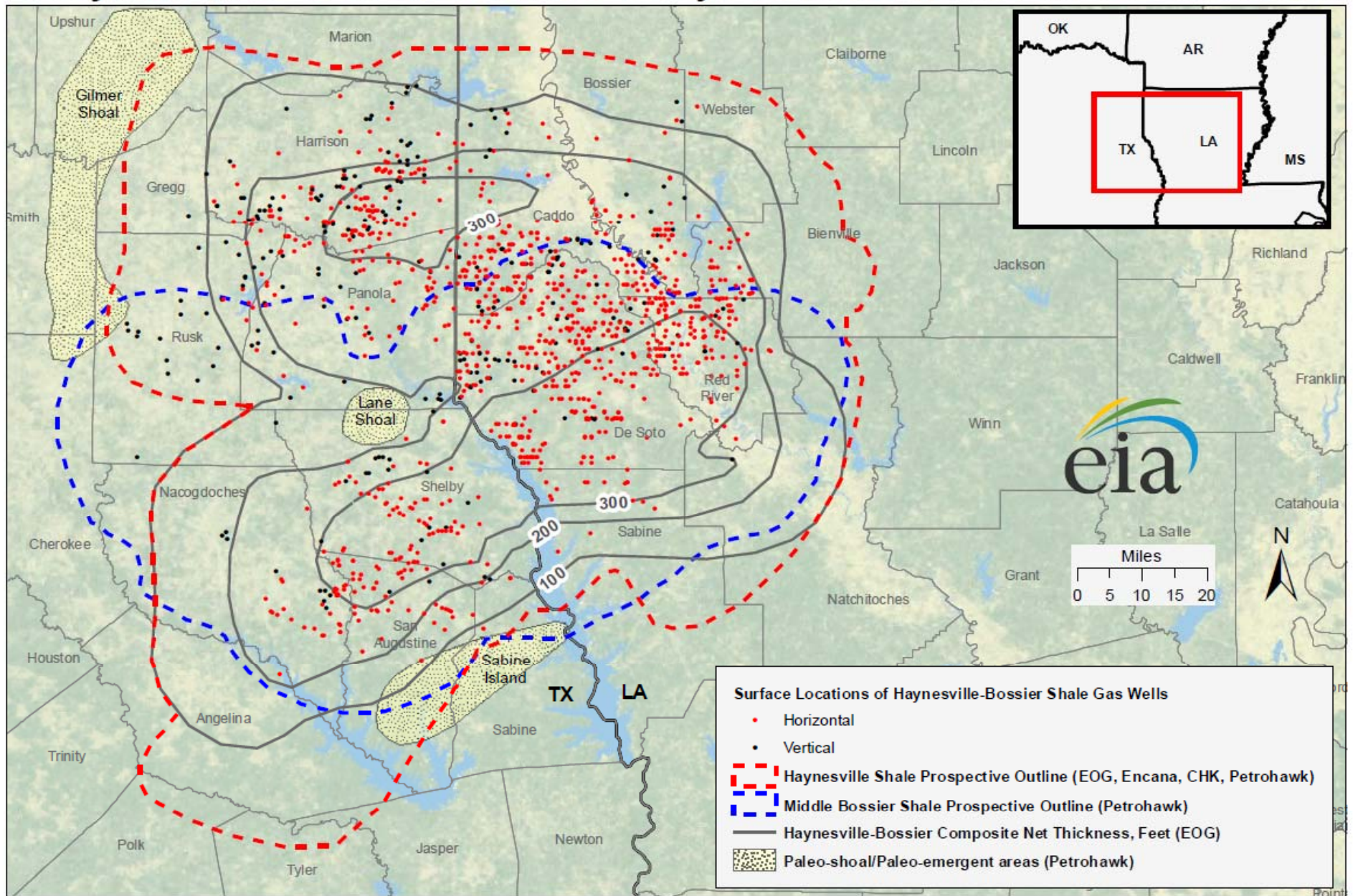
Source: Energy Information Administration based on data from various published studies.
 Updated: May 9, 2011



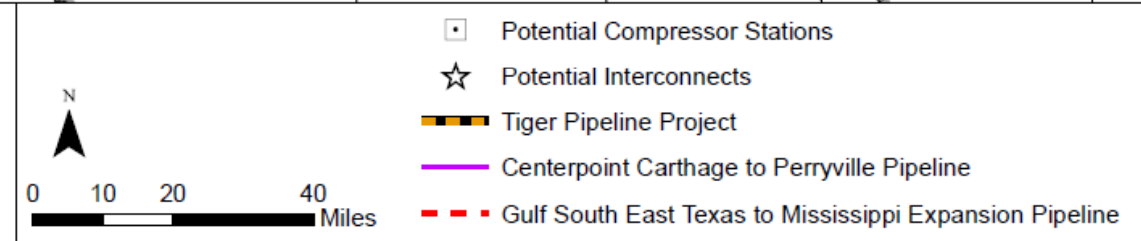
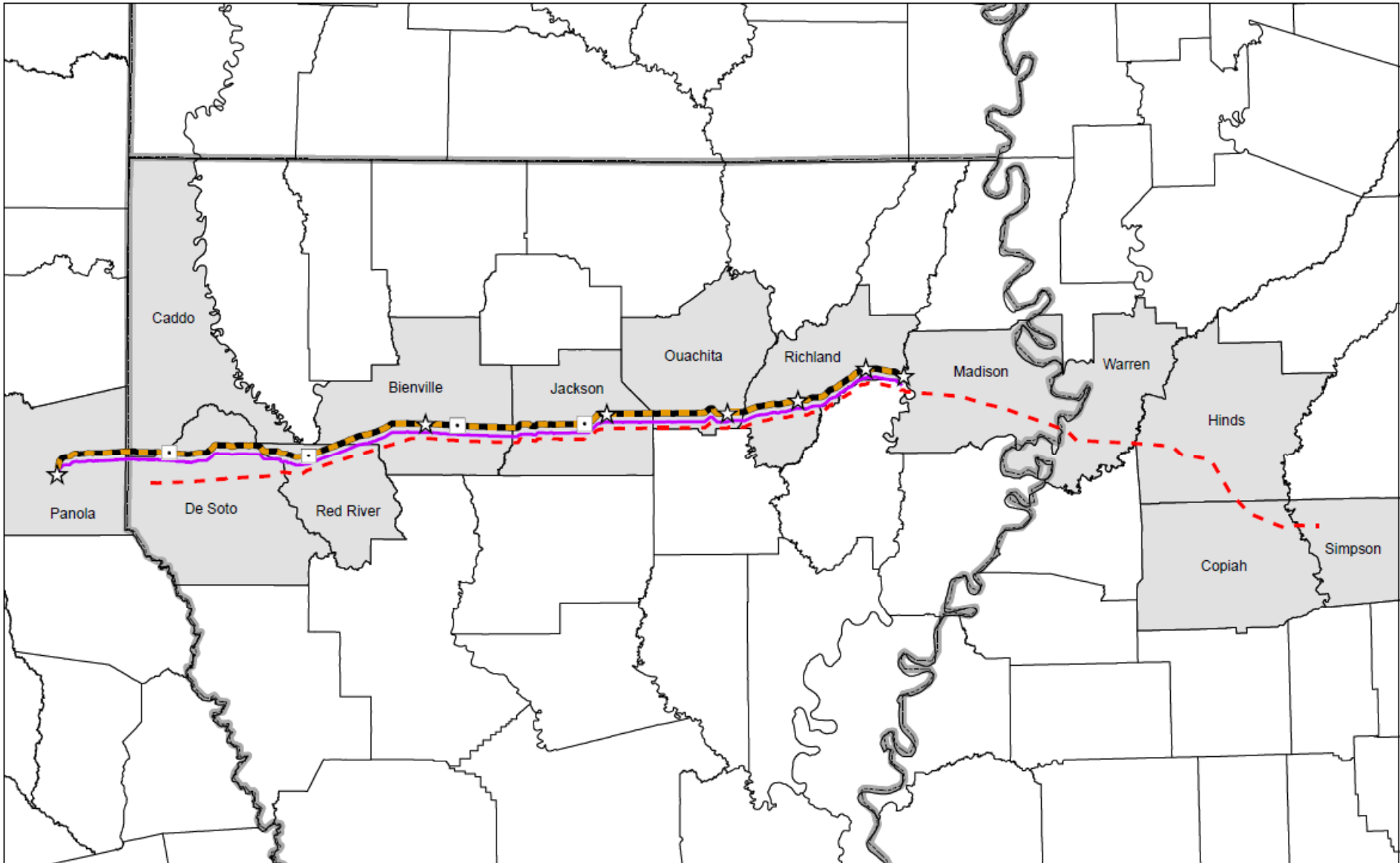


Area of Study
LSU: Basin
Research
Institute

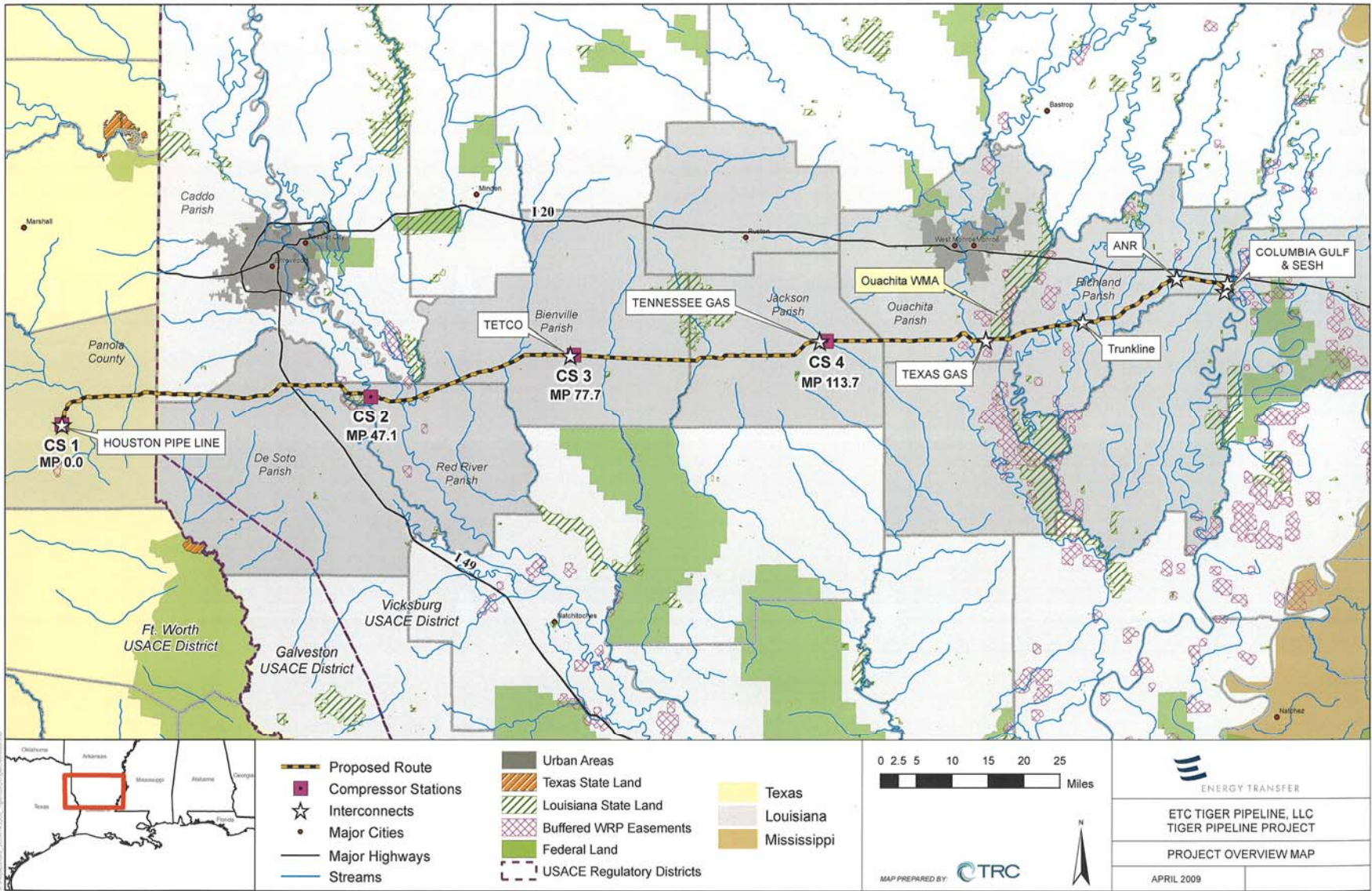
Haynesville-Bossier Shale Play, Texas-Louisiana Salt Basin



Source: Energy Information Administration based on data from HPDI, TX Railroad Commission, LA Dept. of Natural Resources, Operators.
 Updated May 26, 2011



ETC Tiger Pipeline LLC
Tiger Pipeline Project





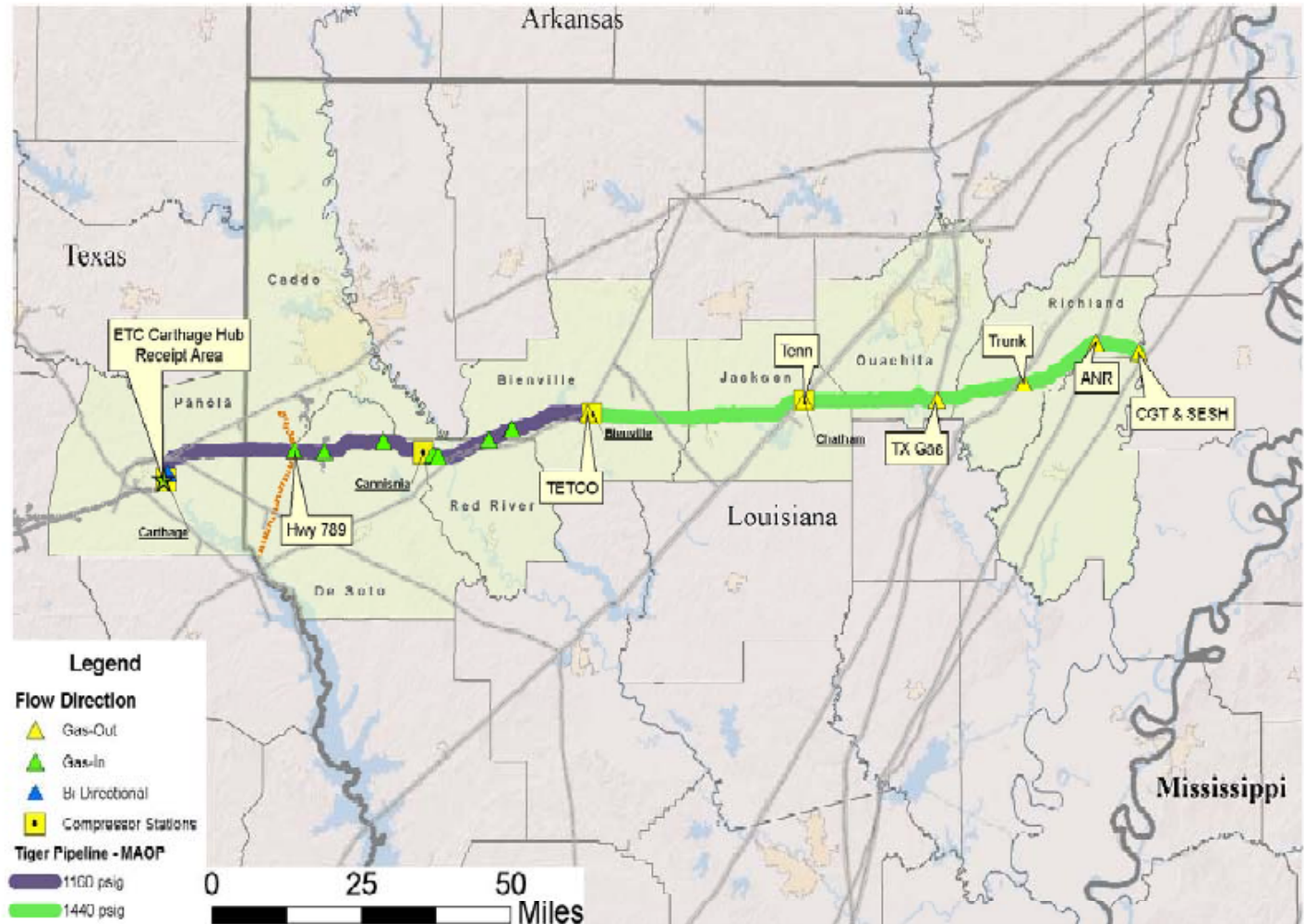
ETC Tiger Pipeline LLC



Tiger Pipeline



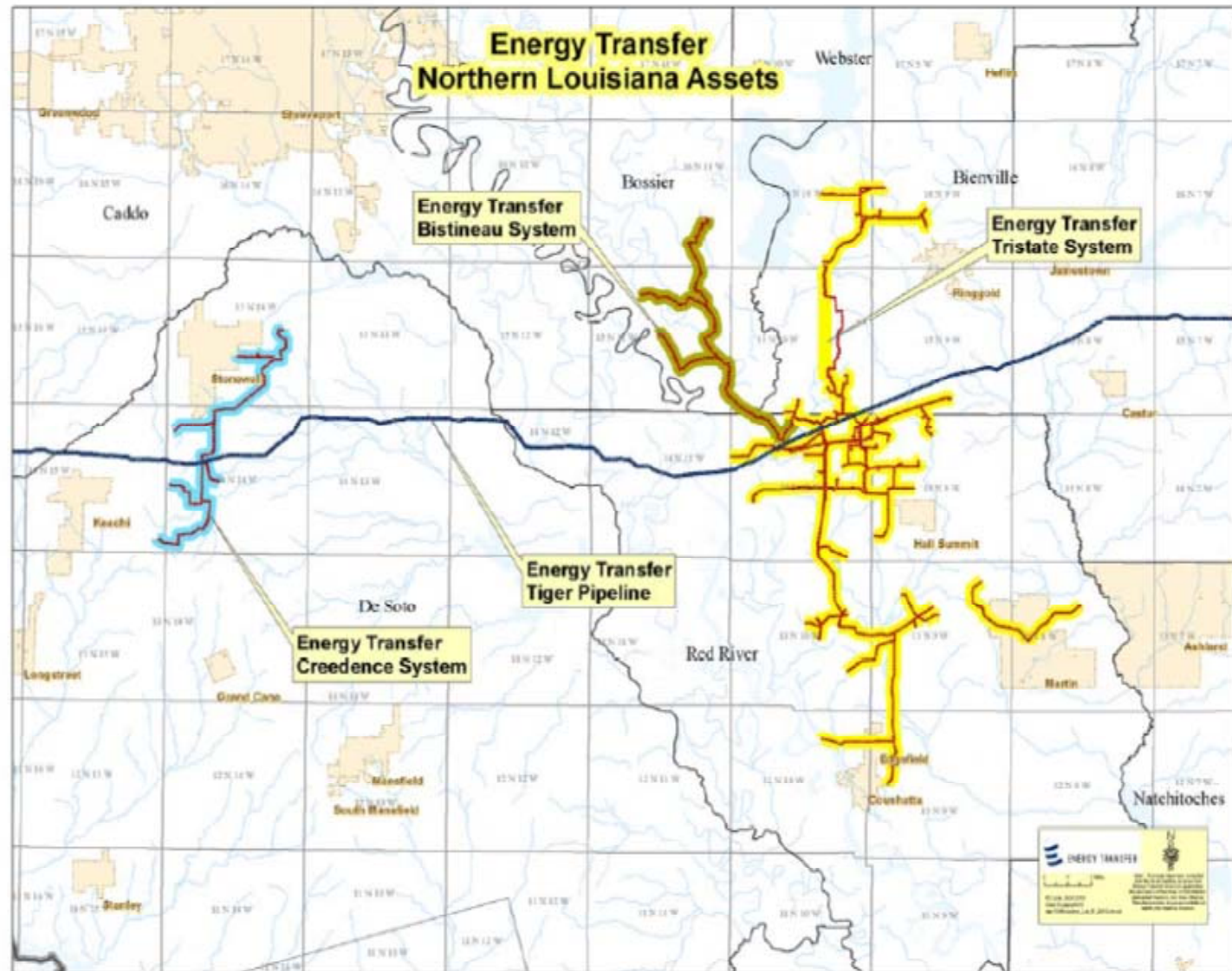
- 100% owned and operated by ETP
- 175 mile, 42-inch interstate pipeline
- 2.4 Bcf/d of capacity sold under 10-15 year agreements (includes 0.4 Bcf/d sold under planned expansion)
- Project costs are approximately \$1.0 billion on initial design plus additional \$190-200 million for expansion
- Initial capacity in service December 2010
- Expansion capacity anticipated in service 2H 2011



Northern Louisiana Intrastate Assets



- Northern Louisiana assets are currently gathering and transporting approximately 350 MMcf/d and projected to average more than 450 MMcf/d in 2011; will have multiple interconnects with Tiger Pipeline
- Bistineau and Tristate Systems combined have capacity of over 400 MMcf/d and have approximately 122,000 dedicated acres
- Credeence System has a current design capacity of 270 MMcf/d with approximately 35,000 dedicated acres











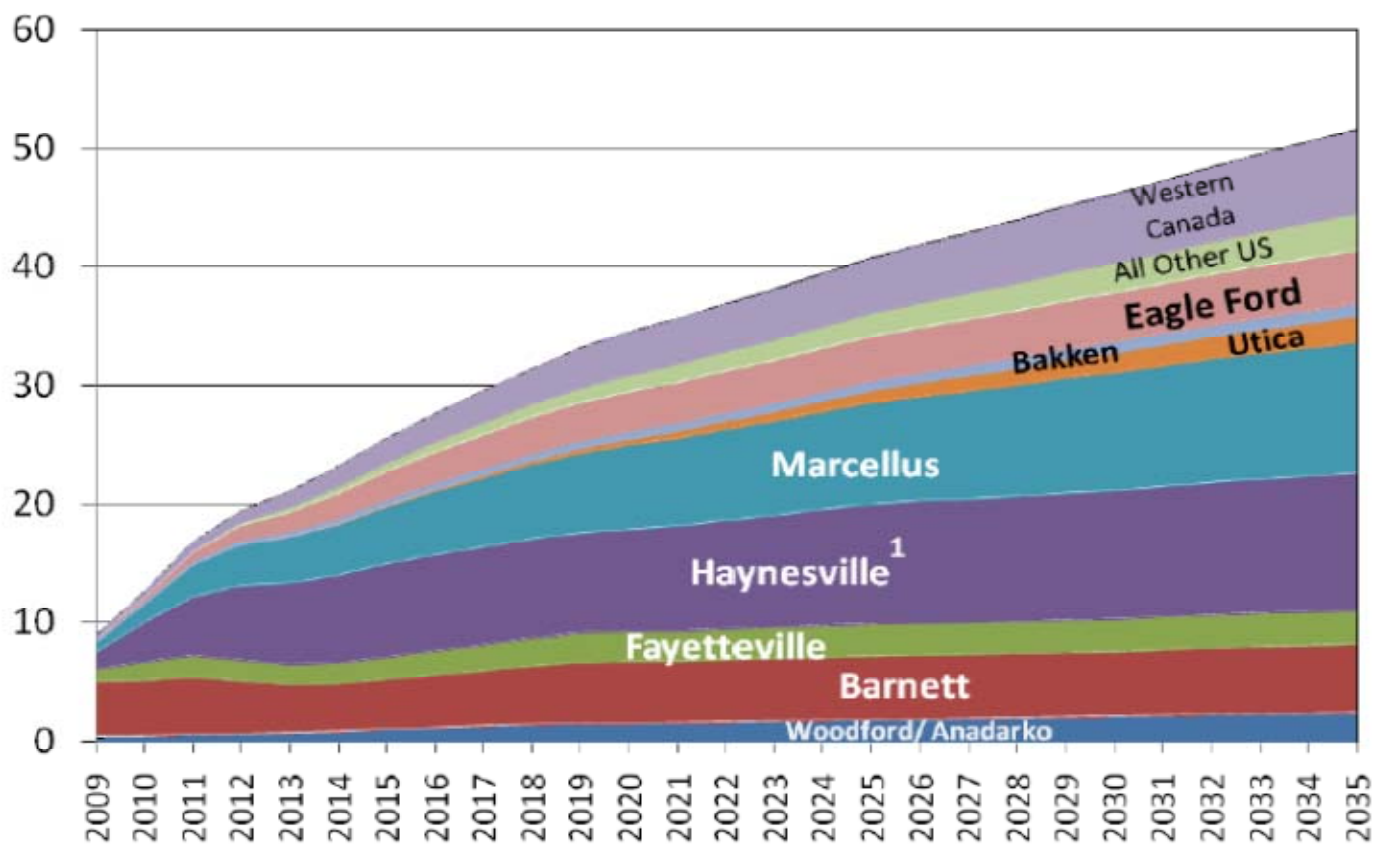
10/28/2010

Why Are Pipelines Needed?

- New Sources of Natural Gas are in New Locations:
 - Existing infrastructure is inadequate or in the wrong location..
 - A percentage of new markets will be in new locations.
 - A typical shale pipeline moves over 1 Billion Cubic Feet/Day.
 - 1 BCF/D ~ 3,000 High Pressure Tube Trucks.
 - 1 BCF/D ~ Four 1000 MW Power Plants @ 60% load factor.
 - Existing gas fields eventually deplete.

Why Are Pipelines Needed?

U.S. and Canadian Shale Gas Production (Average Annual Bcfd)



¹ Haynesville values shown here include production from other shales in the vicinity, e.g., the Bossier Shale.

Substantive New Assets Are Already Built; More Are Planned

- Many New Pipelines Supporting Shale Gas Have Already Been Built:
 - Many are of Large Diameter.
 - Capacities: 1 to 2 Billion Cubic Feet per day are “common”.
 - Many are fully subscribed.
 - Investment Range: \$1 Billion per pipeline.
- Many New Pipelines for Natural Gas Liquids Transport Need To Be Built:
 - The Tuscaloosa Shale is an Oil Play with Associated NGL’s.
 - NGL’s: Ethane, Propane, Butanes, Natural Gasoline
 - Petrochemical, Heating Fuels, Motor Gasoline, Octane Control uses.
 - National Supply of NGL’s is 80% from crude
 - Gas derived NGL priced at crude parity.
- Fractionators, Storage, Purity Pipelines required.

Infrastructure Estimates

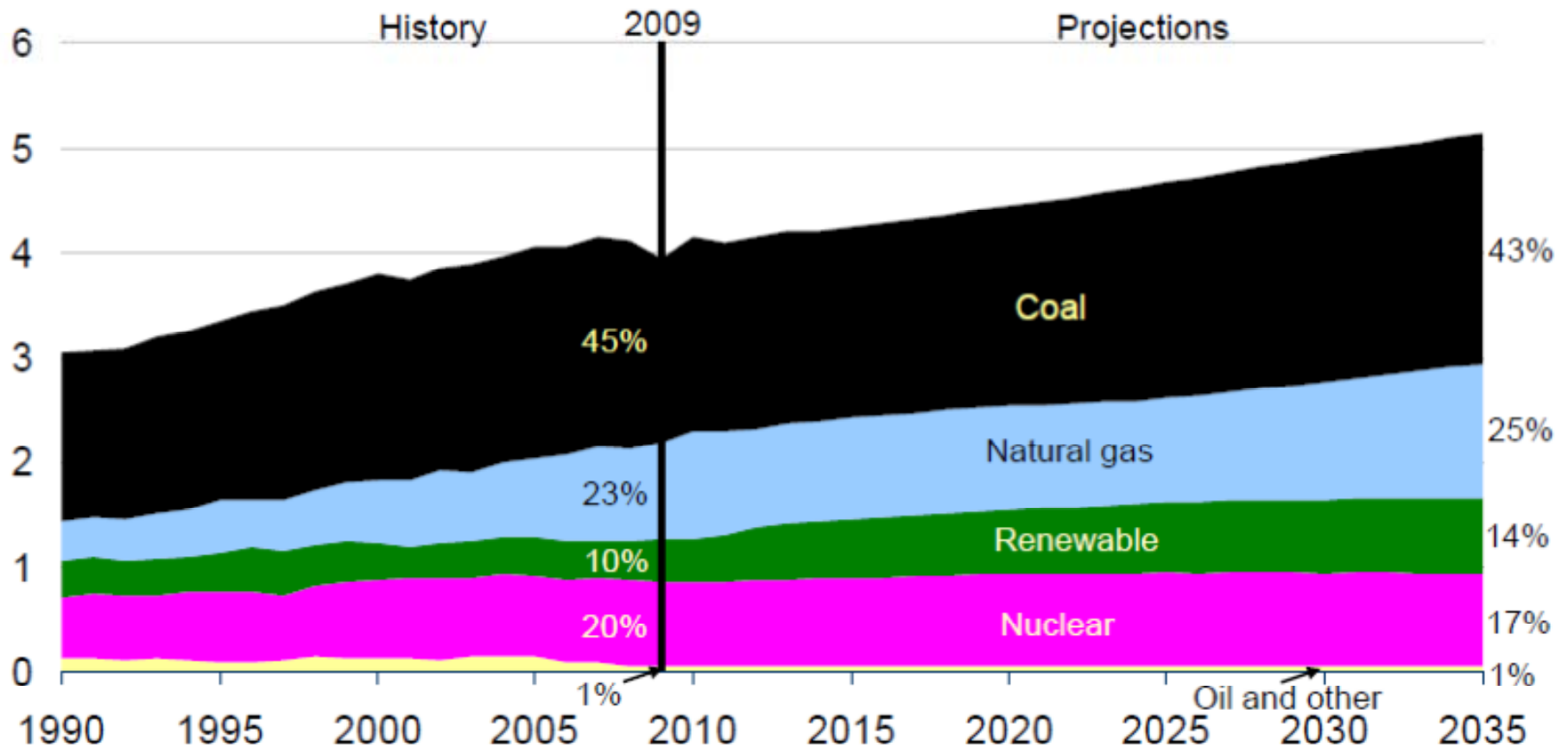
- How Much More New Natural Gas Capacity Is Needed?
 - INGAA Foundation: 43 Billion Cubic Feet per day by 2035.
 - By 2035 about \$89 Billion for Transmission Pipelines.
 - By 2035 about \$46 Billion for NGL and Oil assets needed
 - Midwest: 36%, Southwest 31%, 33% Other US Regions.
- Other New Markets Require Additional Investment.
 - NGV Fueling Stations.
- Are These Investments Realistically Achievable?
 - Example: My company invested \$1+ Billion capital in shale assets for last several years; 2012 Budget Estimate ~ \$1.9 Billion.

Why Are Pipelines Needed? Natural Gas Fired Power Generation Case

- Natural Gas Demand Is Increasing:
 - ***Electricity demand for natural gas increases 37% by 2035.***
 - Electricity capacity increases by 2035 are 62% from natural gas.
 - Renewables grow in use by 2035, but hydrocarbon fuels still power 78% US Power Needs.

The projected electricity mix gradually shifts to lower-carbon options, with generation from natural gas rising 37% and renewables rising 73%

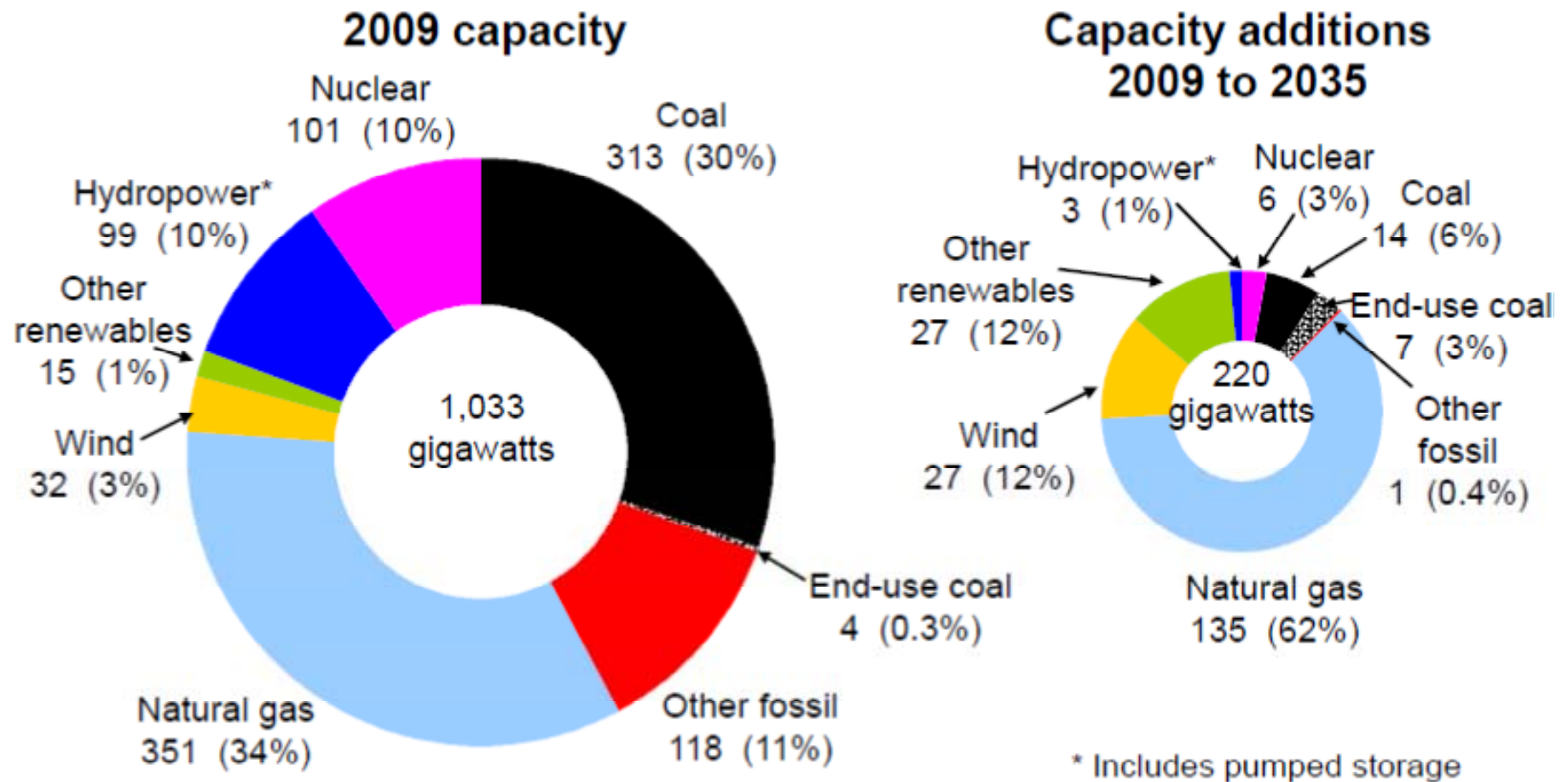
electricity net generation
trillion kilowatthours per year



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Natural gas, wind and other renewables account for the vast majority of capacity additions from 2009 to 2035



Current Oil Pipeline Project Drivers

- High Commodity Prices Paid In World Markets.
- Stranded, Or Market Starved, Supplies.
 - Crude Sold At Negative Basis to World Prices.
- Economic Distribution Locations With Capacity and Good Market Access.
 - Supply Points: Canadian Oil Sands: Cushing, Kansas, some Shales.
 - Distribution Points: Gulf Coast Refineries and Deep Water Ports.
 - After Infrastructure Pay Out, Positive Netback Over Stranded Price.
- Infrastructure Differences Crude vs. Natural Gas?
 - Crude requires centralized refining, Natural Gas does not.
 - 65% of U.S. Natural Gas is burned directly from transportation pipeline.
 - Crude oil products have numerous modes of distribution.

What Is Being Done About Pipeline Safety?

- Industry And Government Leaders Are Seeking Operational And Legislative Solutions.
 - Congressional Senate and House Bills take a new look at Pipeline Safety.
 - PHMSA: pipeline control room management regs.
 - PHMSA: Advanced Notice of Proposed Rulemaking.
 - Pipeline integrity testing, one-call requirements, new air emission requirements, and similar programs are enhancing pipeline safety.
 - Many pipeline accidents are caused by excavators; “One Call” is the solution.
 - Evaluation of aged pipeline infrastructure.



What Is Being Done About Pipeline Safety?

- Much Of The Existing Infrastructure Is Old, How Can It Be Safe?
 - PHMSA “Distribution Integrity Management Rule” made effective August 2011.
 - Materials no longer used: cast iron, copper, bare steel, certain types of welded pipe.
 - Pipe materials and construction techniques today must meet rigid standards.
 - 49 CFR 190 – 198; ASME; ASTM
 - Modern pipelines: coated, x-rayed, pressure tested.
 - Modern control rooms are “leak detection” capable.



Questions?



11/09/2010 11:34

Sources

U.S. Energy Administration

Annual Energy Outlook Reference Case

December 16, 2010

Richard Newell, Administrator

http://www.eia.gov/neic/speeches/newell_12162010.pdf

The INGAA Foundation, Inc.; ICF International

North American Midstream Infrastructure Through 2035

June 28, 2011

<http://www.ingaa.org/FILE.aspx?id=14900>

Contacts @ ICF: Kevin R. Petak; kpetak@icfi.com

David Fritsch; dfritsch@icfi.com

E. Harry Vidas; evidas@icfi.com