How Regulatory and Business Drivers are Reshaping North America's Pipeline Infrastructure

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GeoGathering 2011

GIS for Gathering and Production Lines

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- 30 years of industry experience, primarily with Unocal Corporation and Tesoro Corporation
  - President, Unocal Pipeline Company
  - President, Unocal Natural Gas Pipeline Company
  - Senior Vice President, Tesoro Logistics and Marine
- Current Consulting Activities
  - Midstream/Downstream Acquisitions
  - New Pipelines and Terminals Commercialization
  - Crude Oil Marketing and Trading Optimization
  - Strategic Planning

United States Pipeline Industry

- More than 2.5 million miles of pipelines, operated by over 3000 companies, deliver energy to homes and businesses across America
  - Over 300,000 miles of Natural Gas Transmission Lines
  - Over 170,000 miles of Liquid Pipelines
  - Other gathering and distribution systems
- Major pipeline incidents are down nearly 50% over the past 20 years

Source: Testimony Before the House Committee on Energy and Commerce June 2011

Key Laws and Regulations

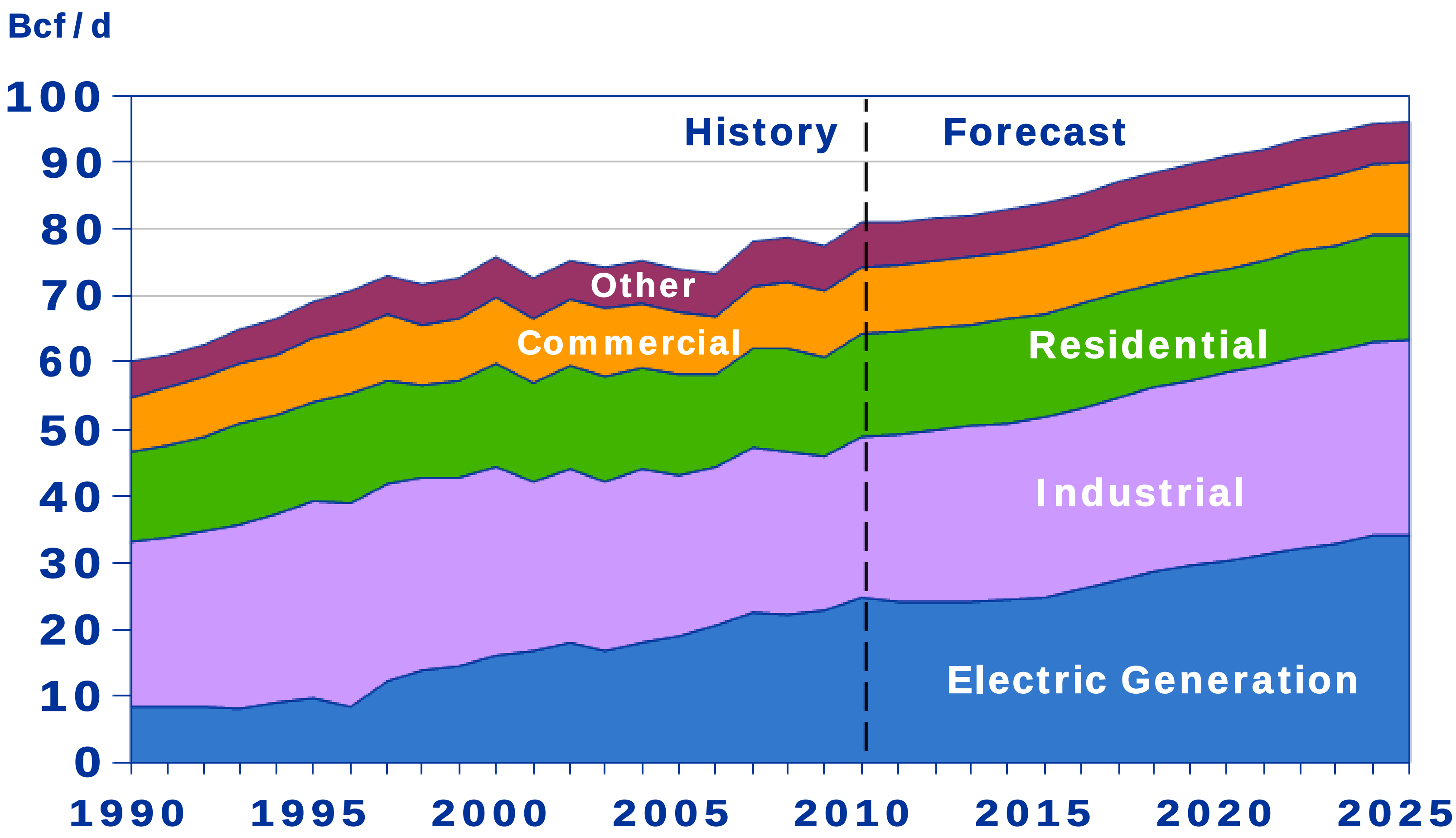
- Natural Gas Safety Act of 1968 and
- Hazardous Liquid Pipeline Safety Act of 1979
- Pipeline Safety Act of 1994
- Pipeline Safety Improvement Act of 2002
- Pipeline Inspection, Protection, Enforcement, and Safety Act of 2006
- The American Energy Initiative: Pipeline Safety 2011

Reauthorization of Pipeline Safety Program

Pipeline Infrastructure and Community Protection Act of 2011

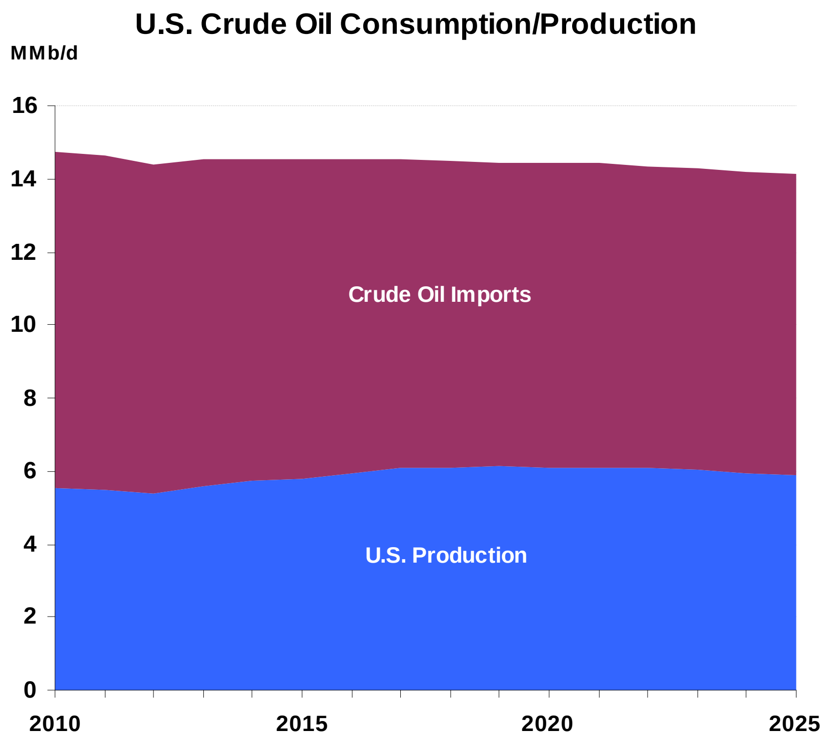
- Increase Civil Penalties
- Expanding Integrity Management Protection
- Pipeline Infrastructure Data Collection Authority
- Require Highly Enhanced Inspection Techniques
- Increase the Number of Pipeline Inspectors at Department of Transportation

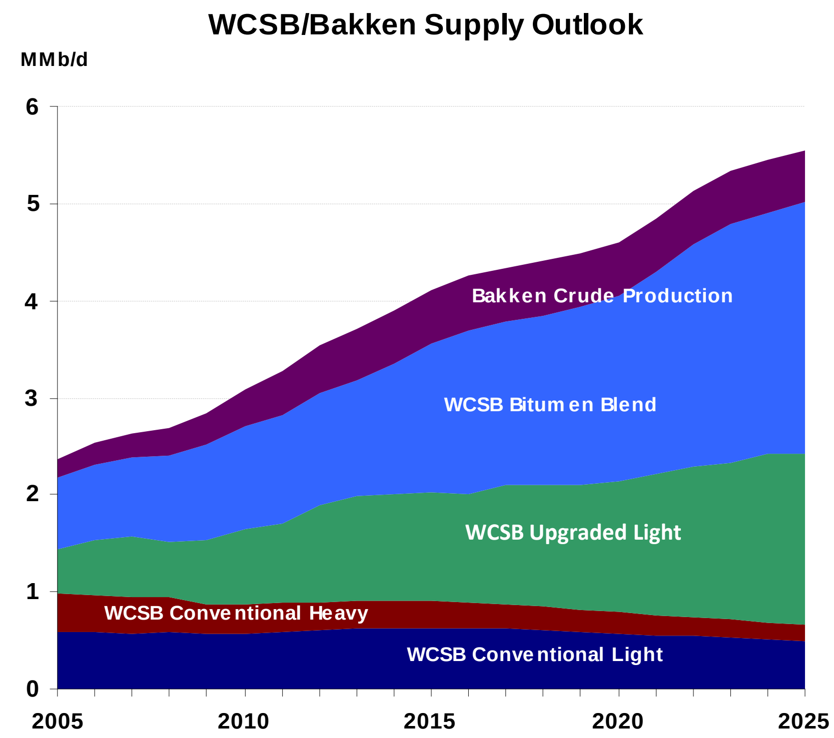
North American Natural Gas Demand



Source: U.S. EIA Annual Energy Outlook 2011 (April 2011)

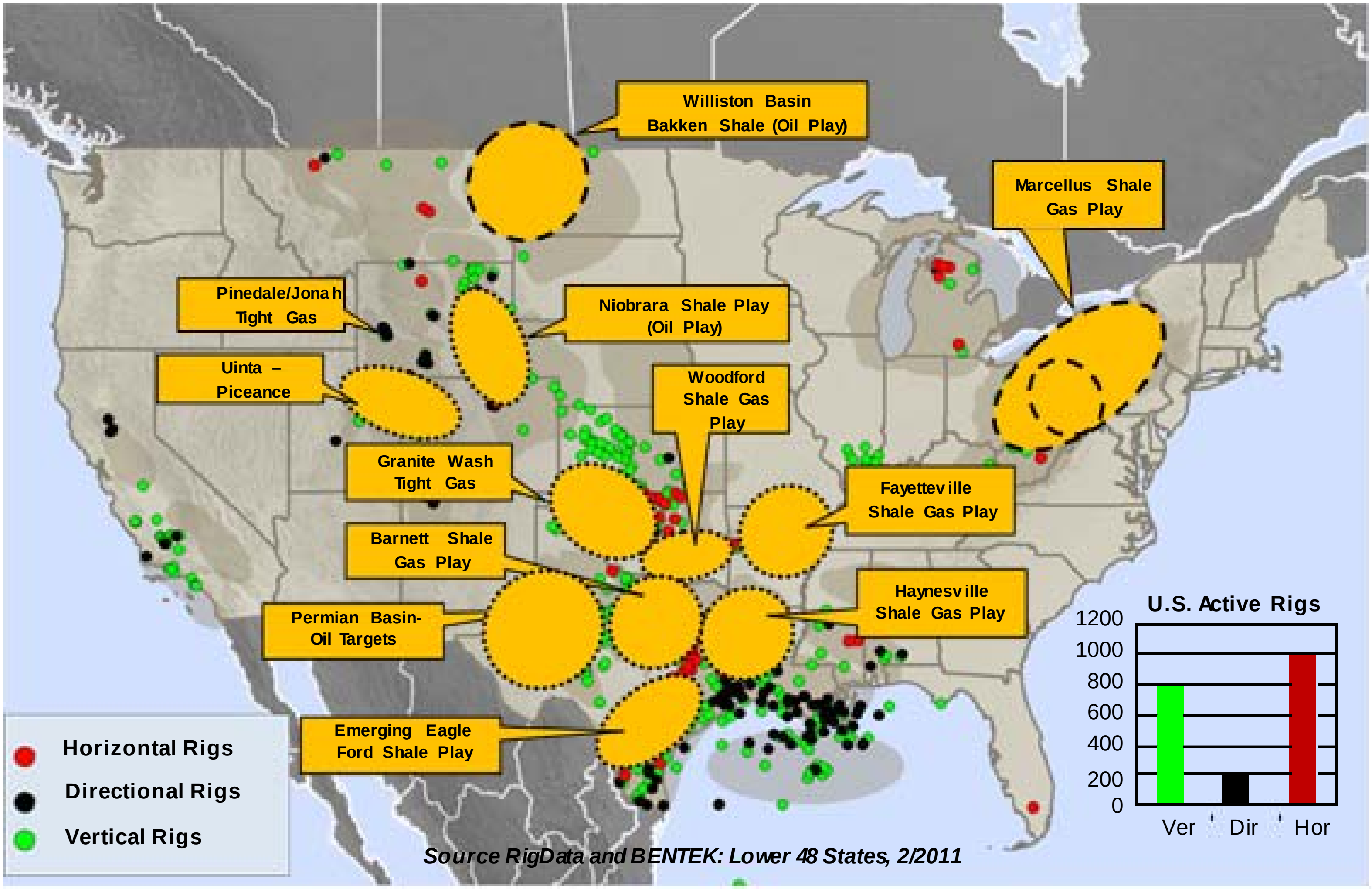
U.S. Crude Oil Demand and Supply Outlook





Sources: U.S. EIA Annual Energy Outlook 2011 (April 2011) and
CAPP 2010-2025 Canadian Crude Oil Forecast and Market Outlook (June 2011)

Active Rigs by Play



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Pipeline Infrastructure Development in North America, 2011 through 2020

- 16,400 miles of new gas transmission mainline (29 Bcf/d new capacity, over 90% driven by increases in shale gas)
- 6,600 miles of new gas laterals
- 165,000 miles of new gas gathering lines
- 800 miles per year new oil pipelines (3 MMb/d new capacity)
- 10,600 miles of new NGL pipelines (1 MMb/d new capacity)
- Over $130 billion required over the next 10 years

Source: ICF International “North American Midstream Infrastructure Through 2035 – A Secure Energy Future” Prepared for the INGAA Foundation June 2011

Thank You