

# **Tight Oil - Possibilities, Challenges, and Policy**

*Economic, Political and Environmental Issues*

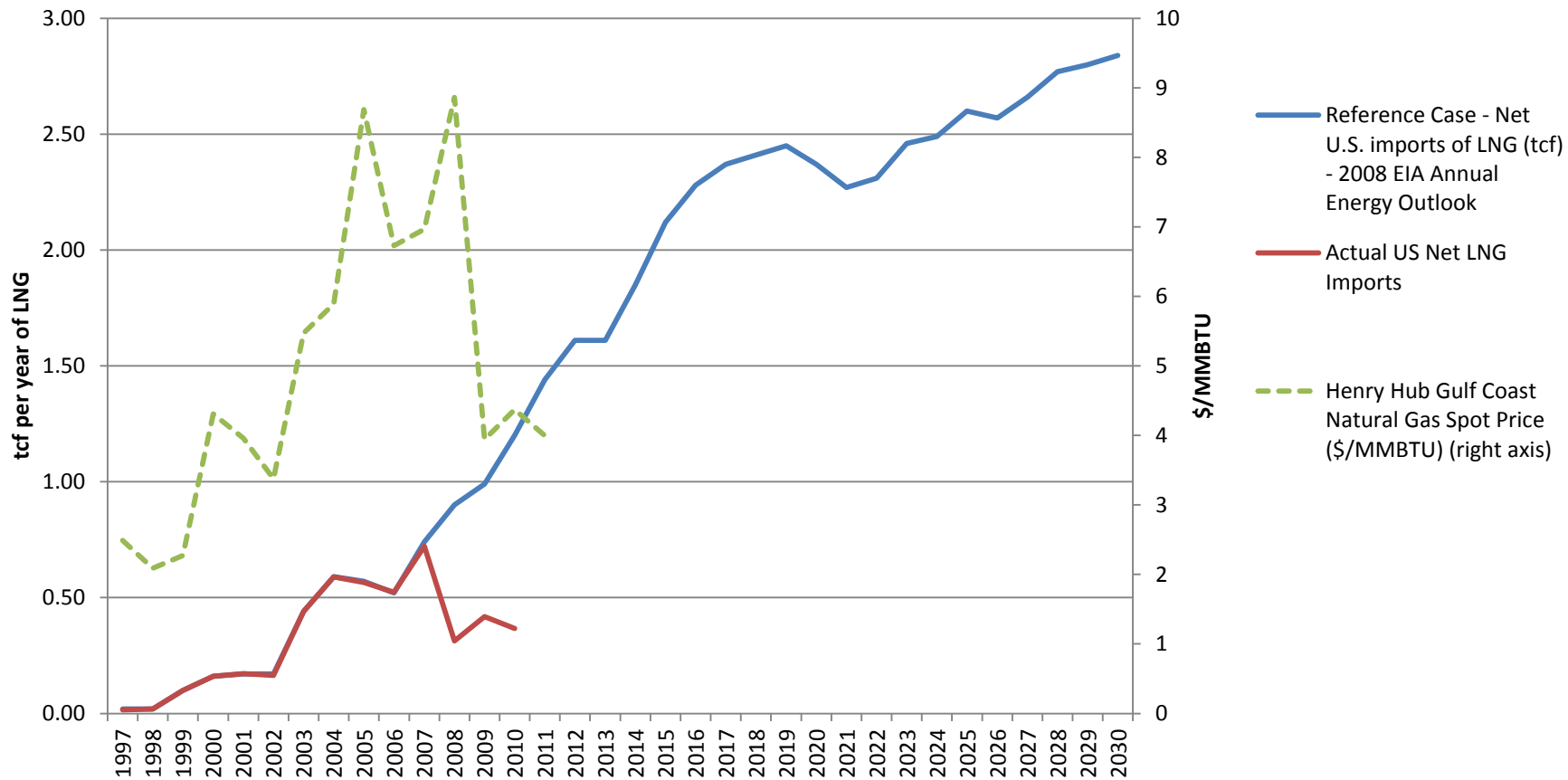
*16th Annual Washington Energy Policy Conference  
Washington, DC*

**Lou Pugliaresi, President**

**Energy Policy Research Foundation, Inc. (EPRINC)**

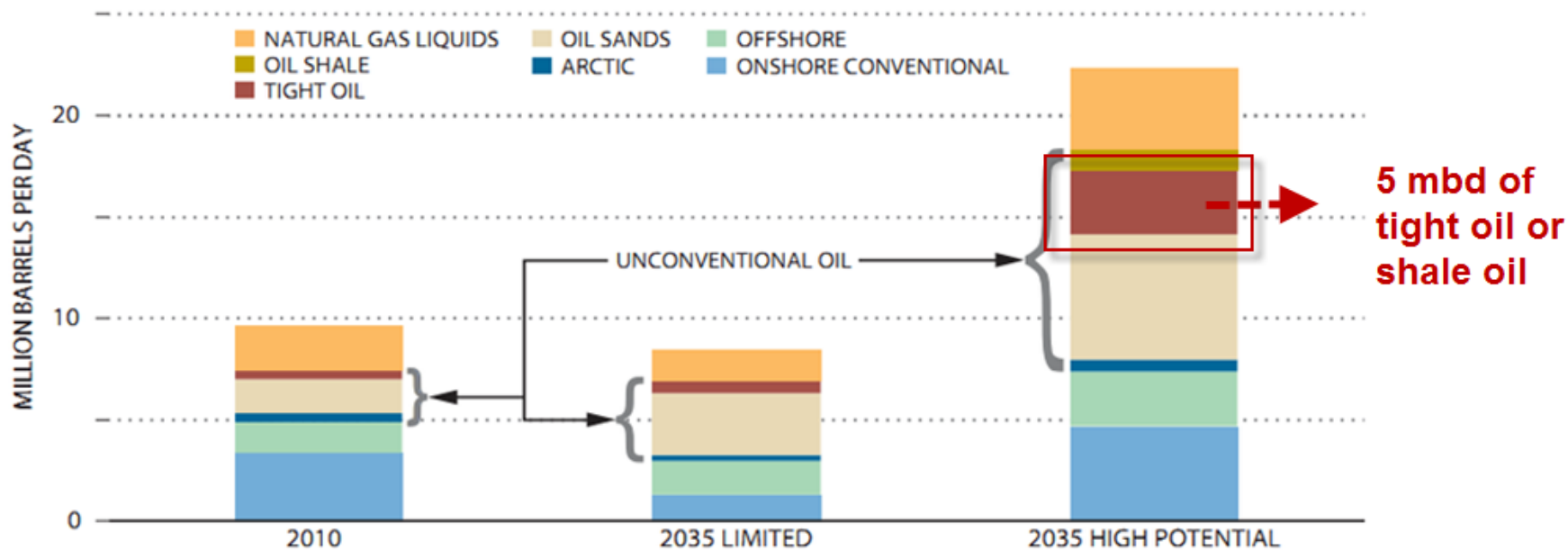
**April 3, 2012**

# Projected Imports of LNG vs. Actual (or why forecasters should have humility)



Source : EIA data and forecasts

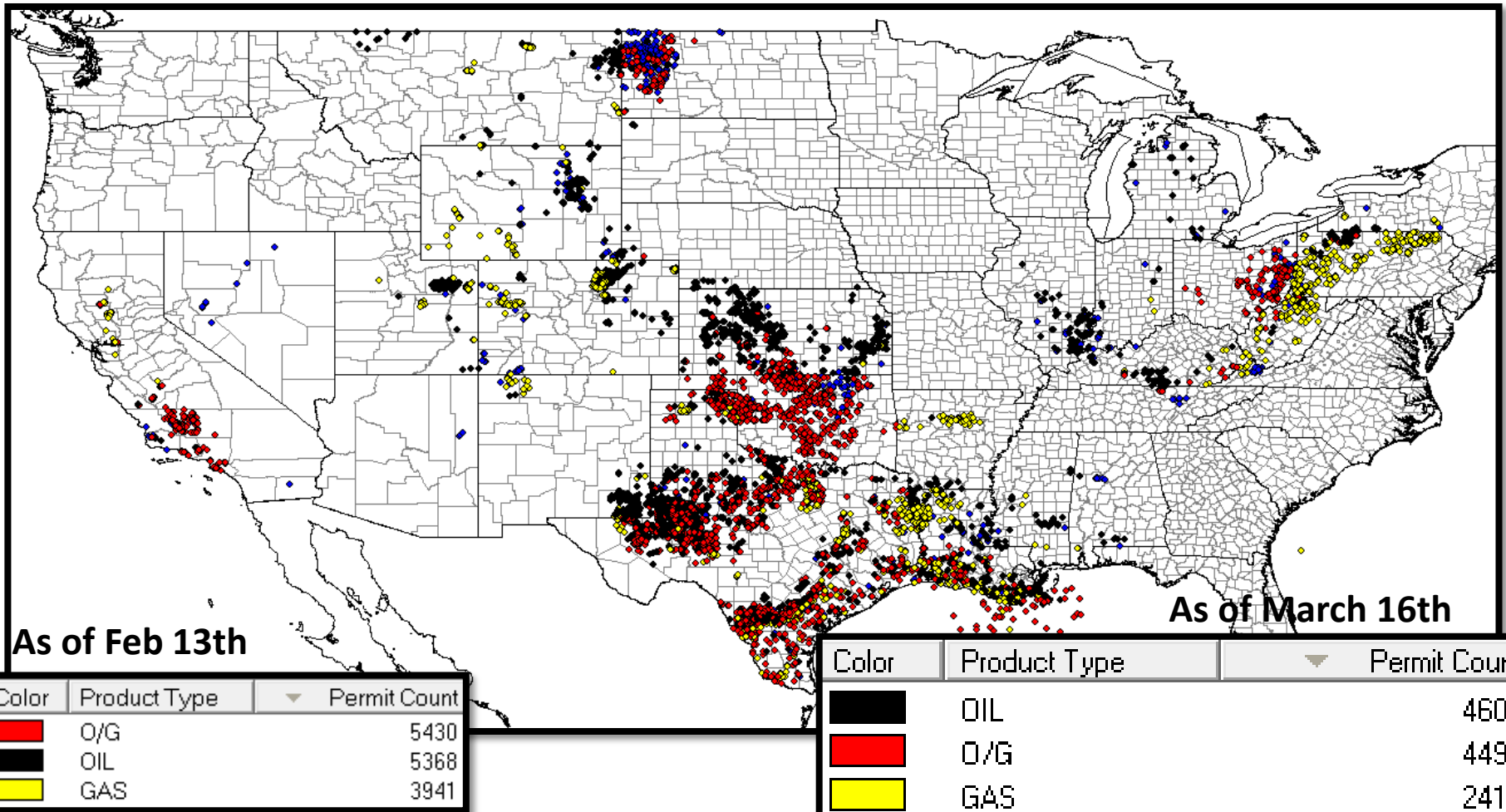
# NPC Findings



Note: The oil supply bars for 2035 represent the range of potential supply from each of the individual supply sources and types considered in this study. The specific factors that may constrain or enable development and production can be different for each supply type, but include such factors as whether access is enabled, infrastructure is developed, appropriate technology research and development is sustained, an appropriate regulatory framework is in place, and environmental performance is maintained.

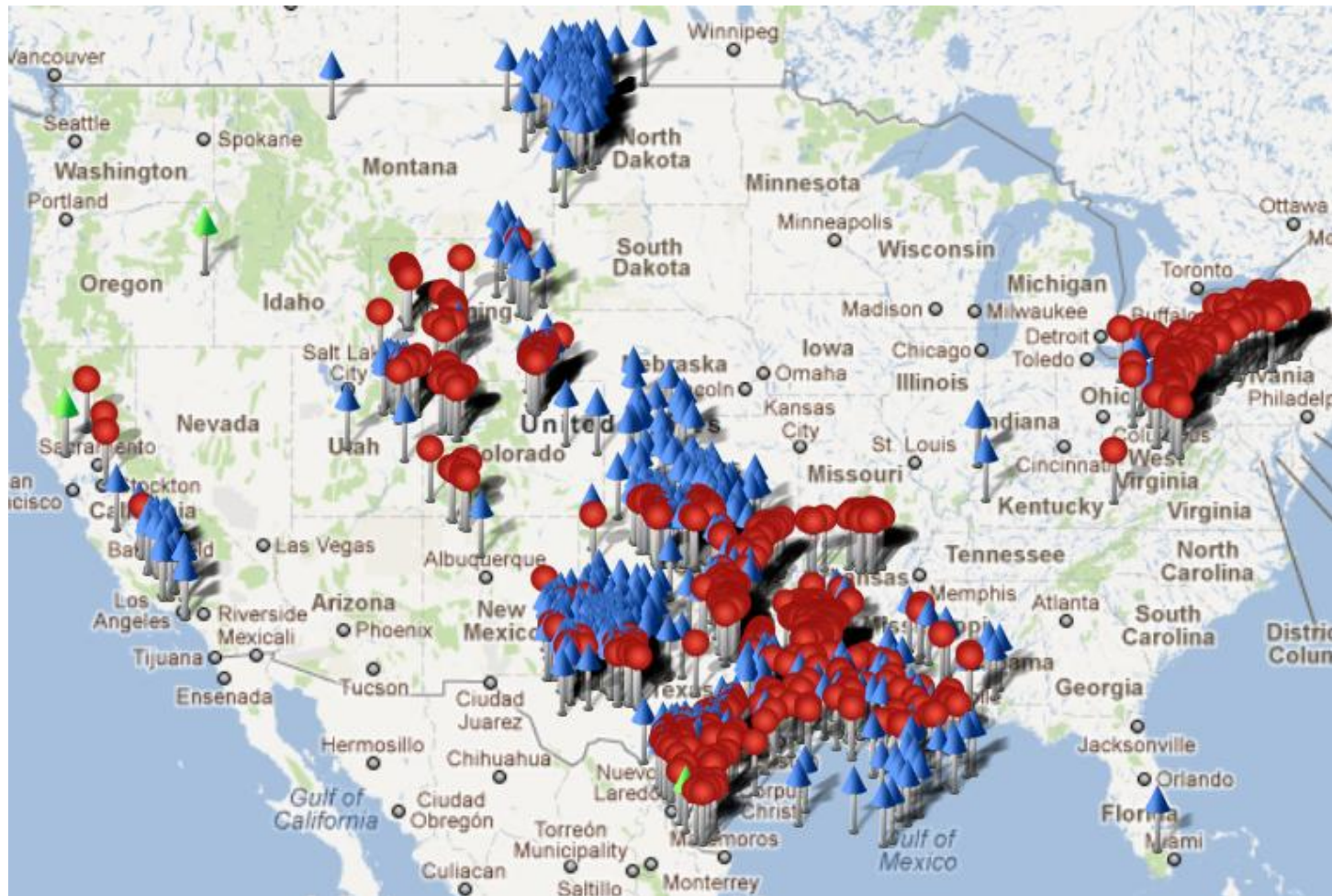
Source: Historical data from Energy Information Administration and National Energy Board of Canada.

# Oil and Gas Permits in Past 90 Days



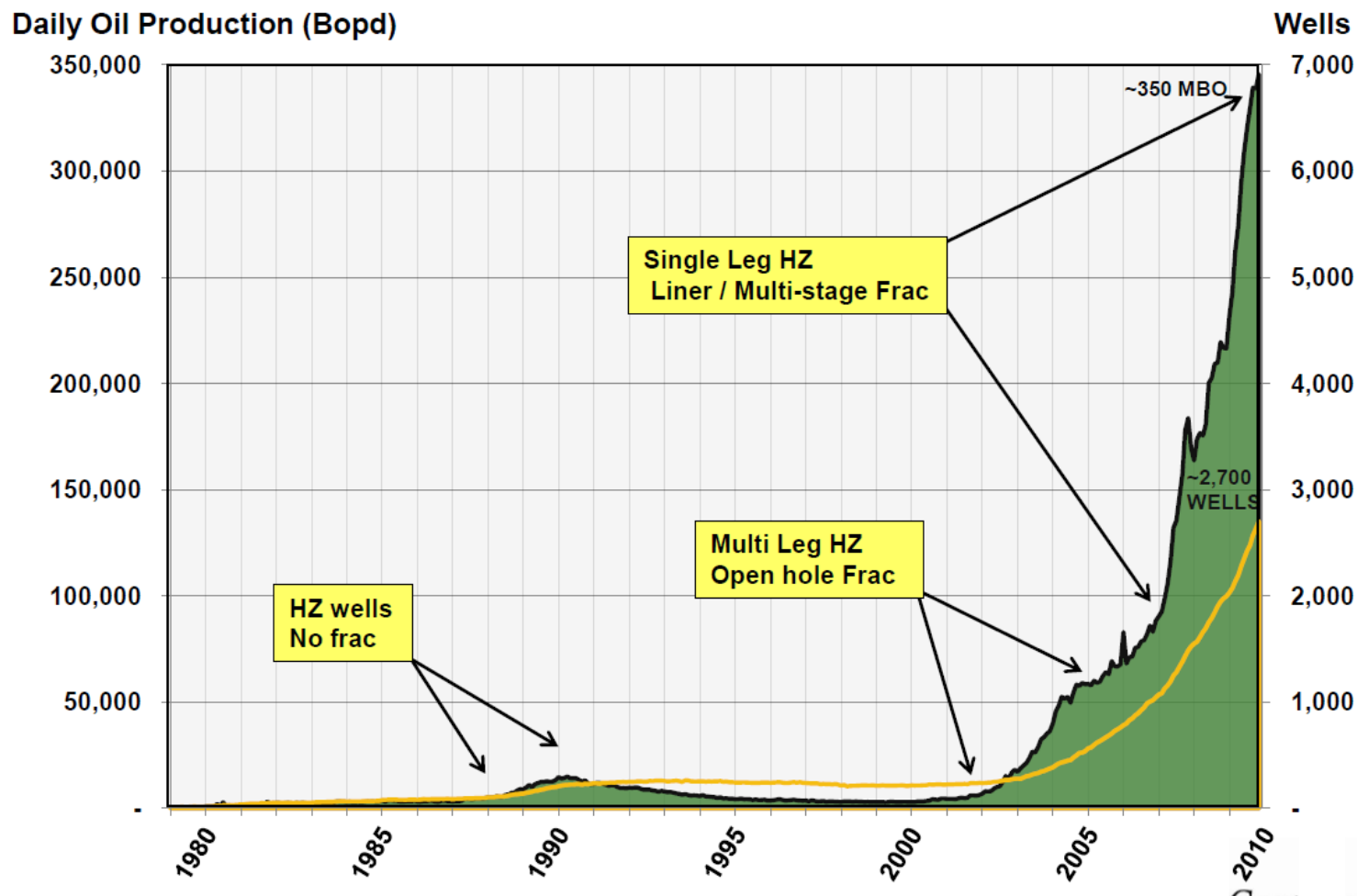
Source: HPDI March 16, 2012

# Rig Count and Permits

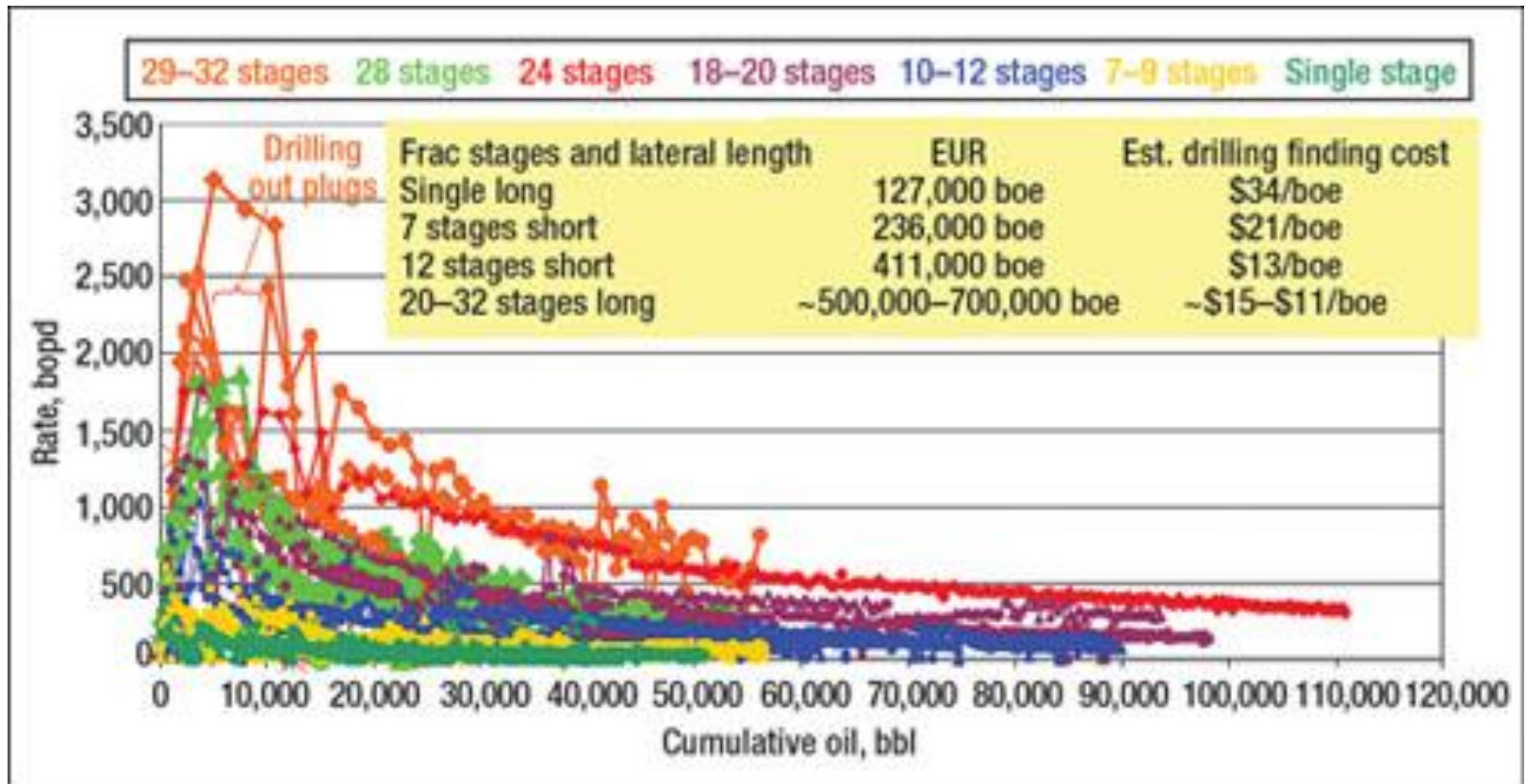


Source: Photo Baker Hughes Interactive Rig Count Jan 25, 2012

# Technology Progression, ND and MT

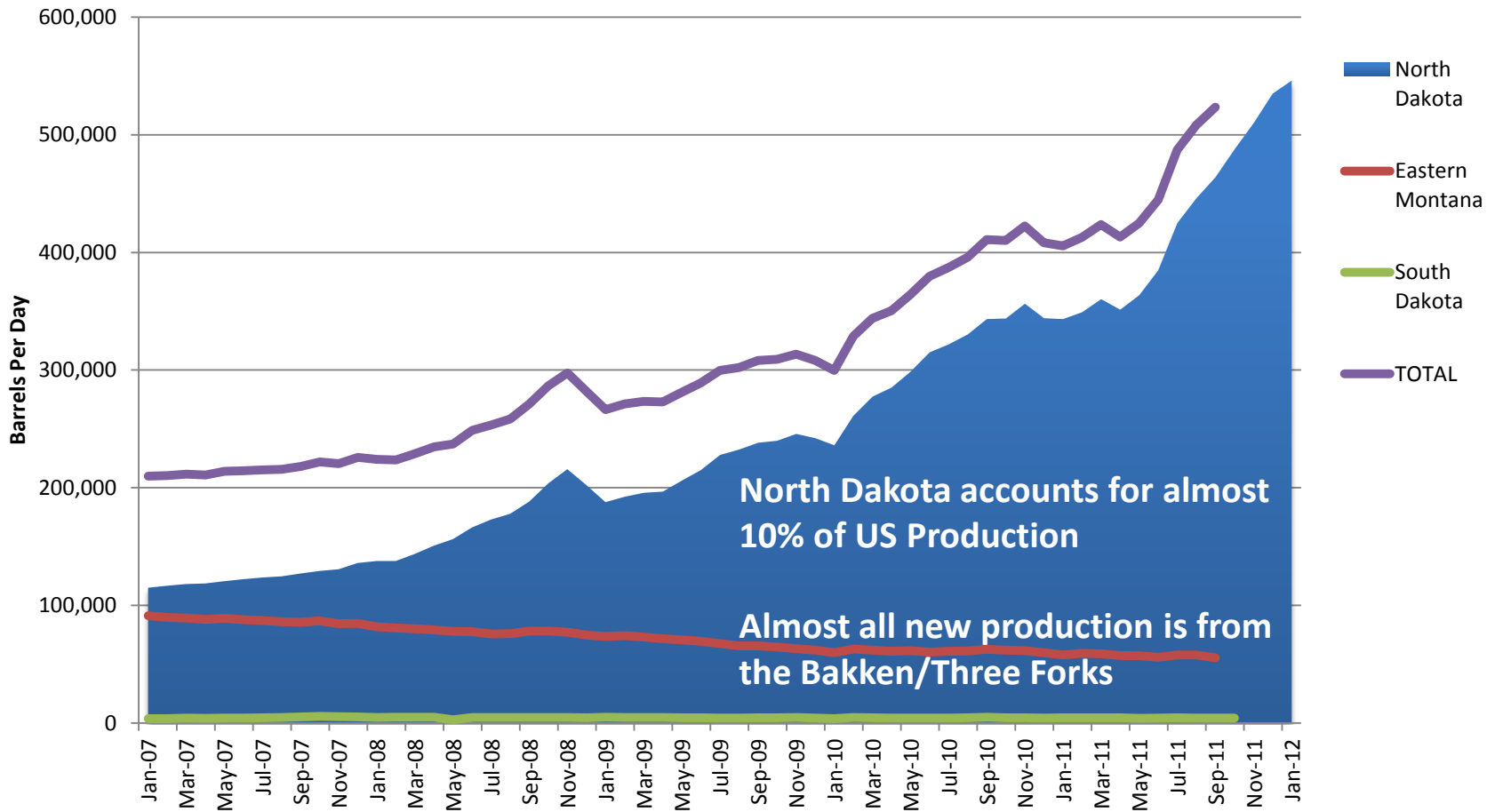


# Estimated Ultimate Recovery



Source: Brigham Exploration via *World Oil*

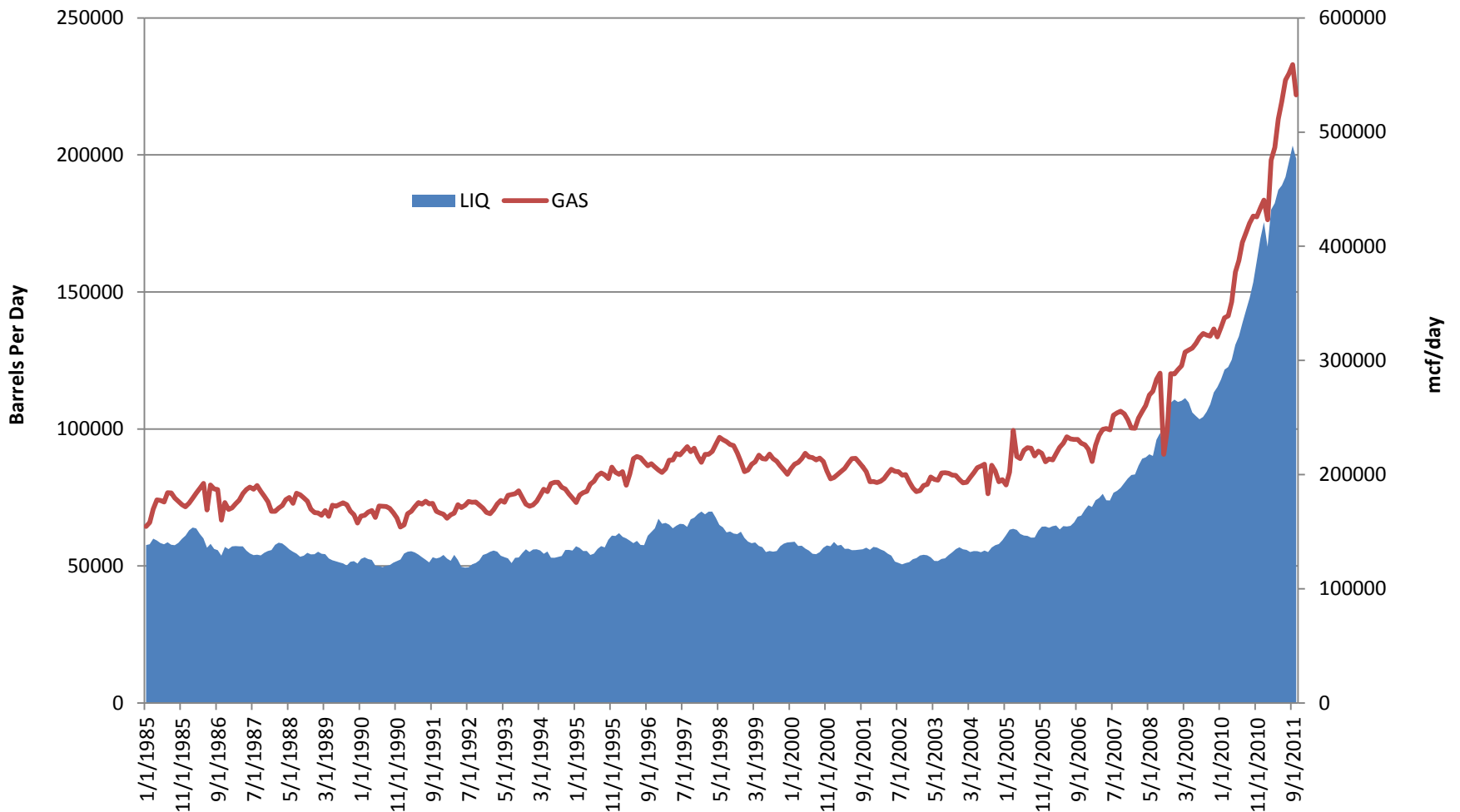
# Williston Basin Production



Source: NDIC

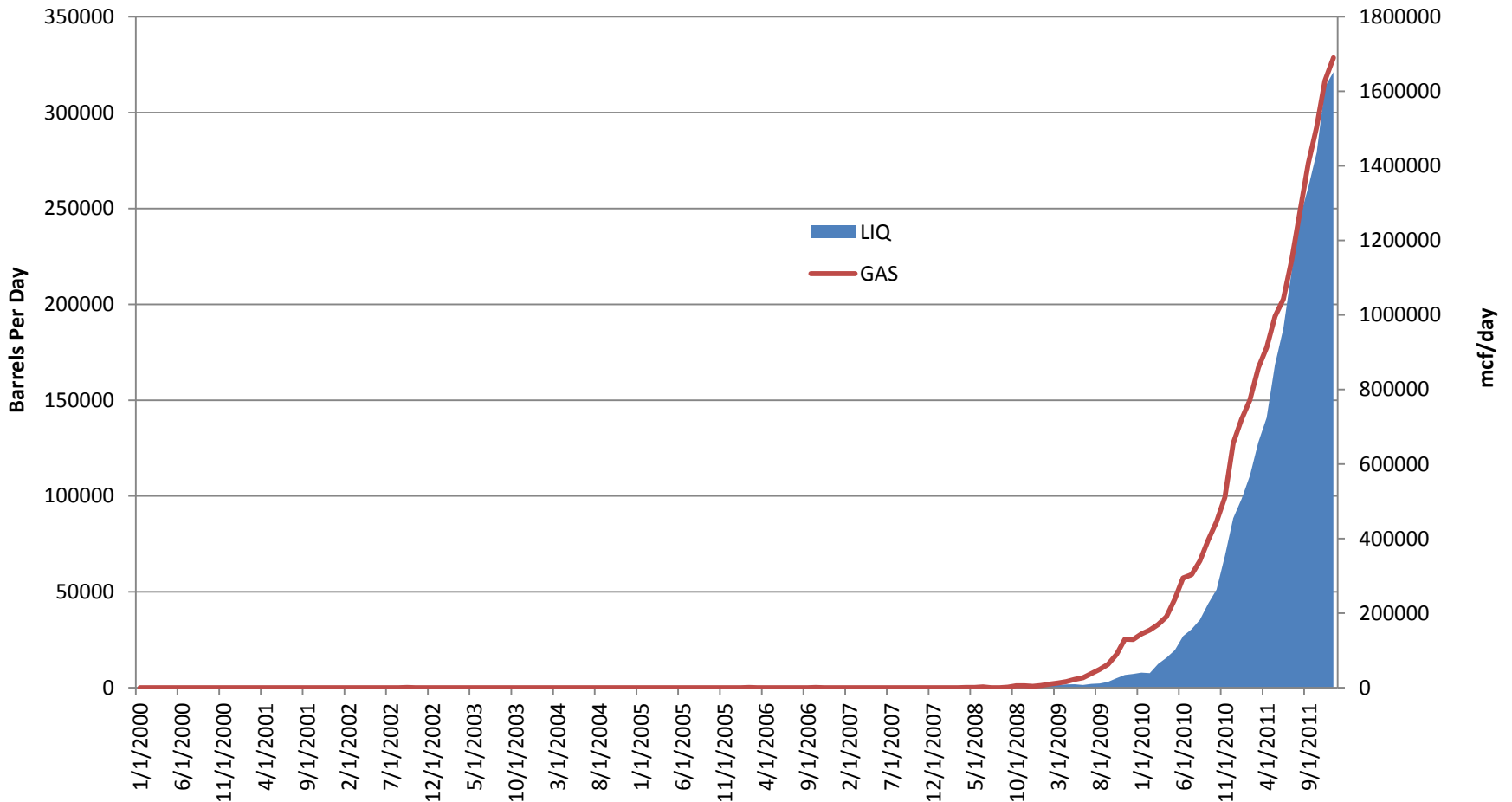


# Trend Area Daily Average Production



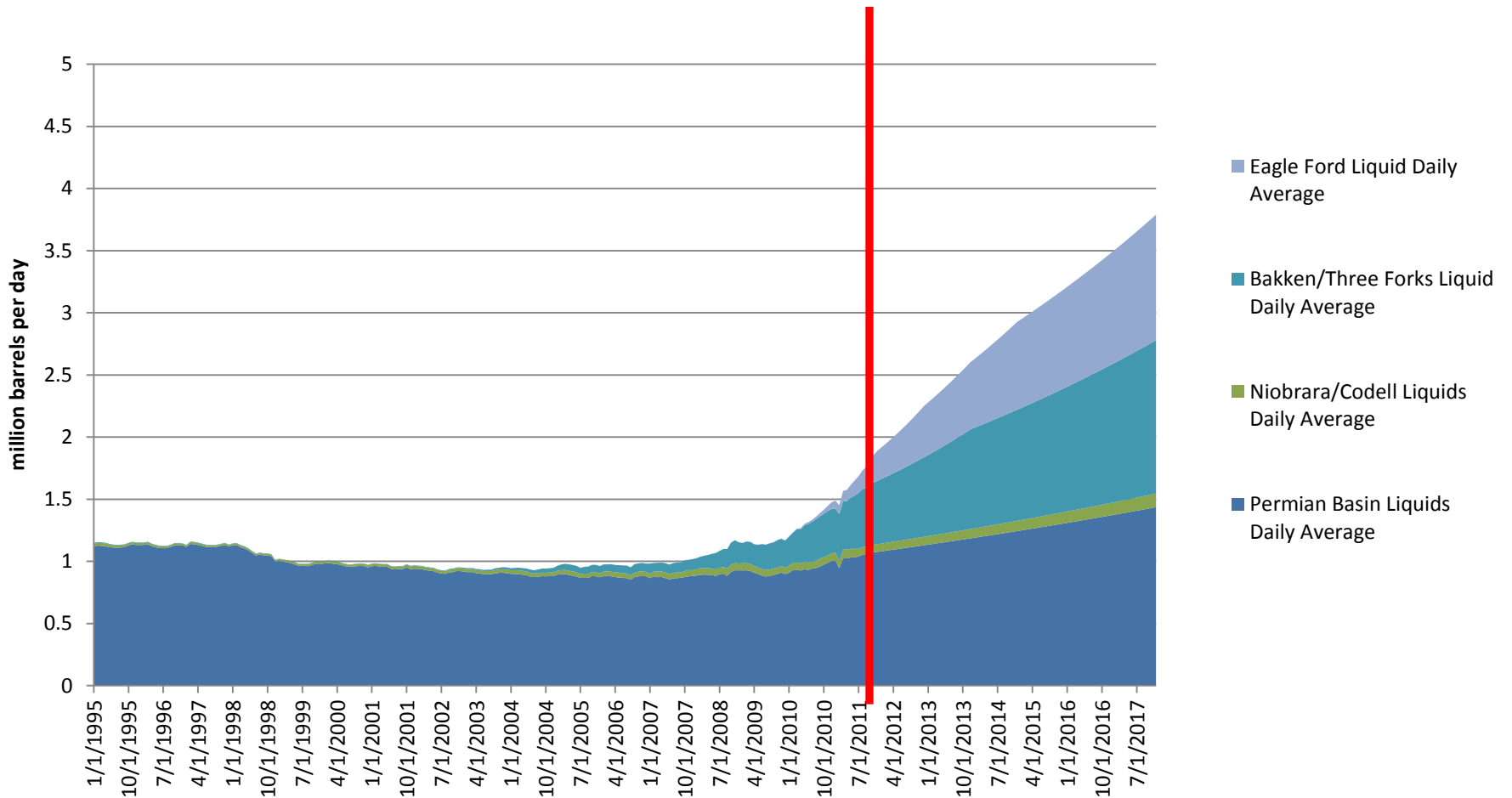
Source: HPDI March 21, 2012

# Eagle Ford Production



Source: HPDI March 21, 2012

# Unconventionals Production and Forecast (Crude oil, no NGLs)



Source: HDPI data, EPRINC estimates

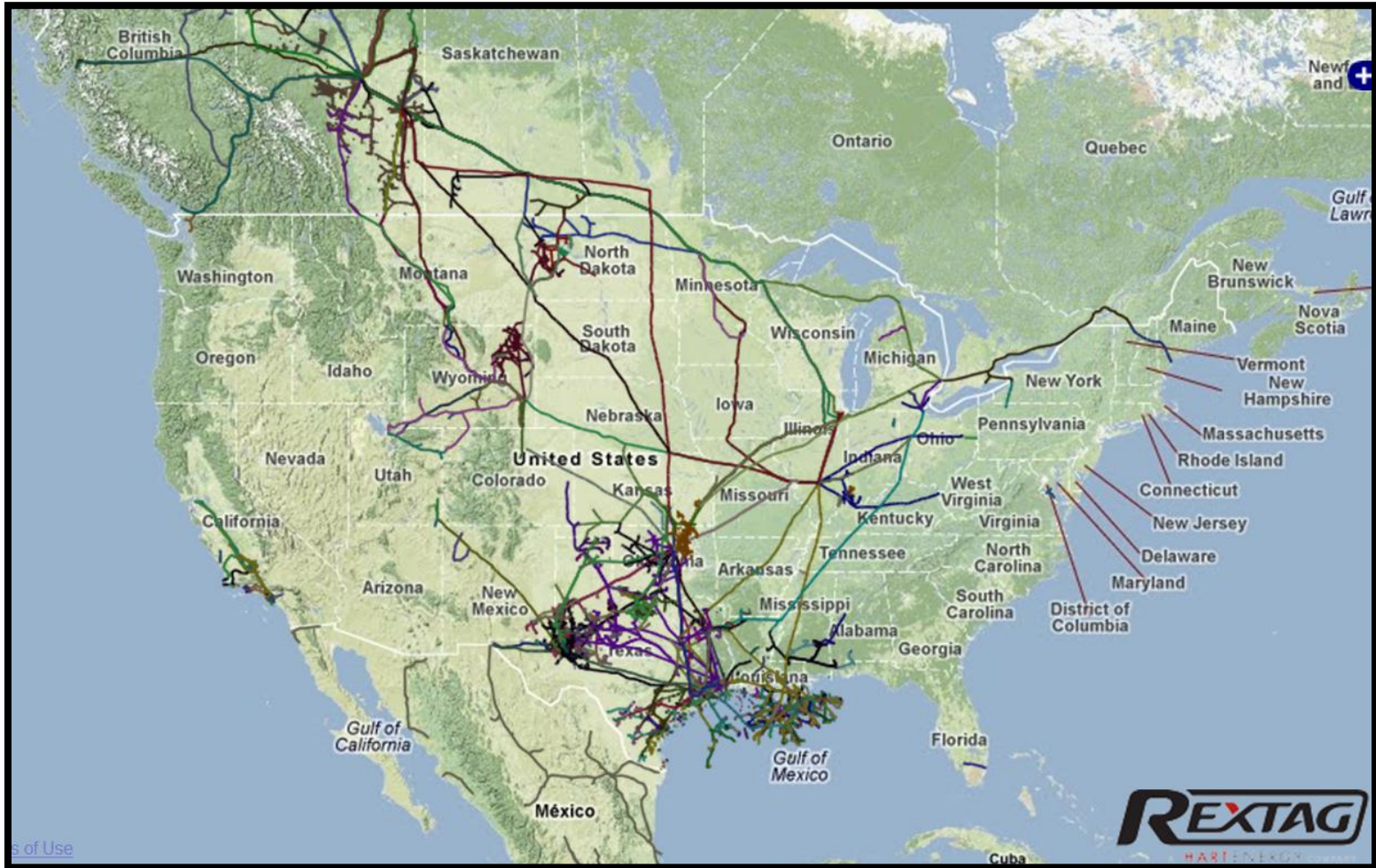
# Resources for the Future on the Keystone XL Pipeline\*

*...from a national perspective, whether the pipeline is approved or not is relatively unimportant. Instead, we should focus on reducing our contribution to the global carbon footprint and improving the efficiency of our carbon-based fuel use.*

**Putting Politics Aside: The Consequences of the Keystone XL Rejection**  
RFF Feature, By [Joel Darmstadter](#) and [Alan J. Krupnick](#), January 24, 2012

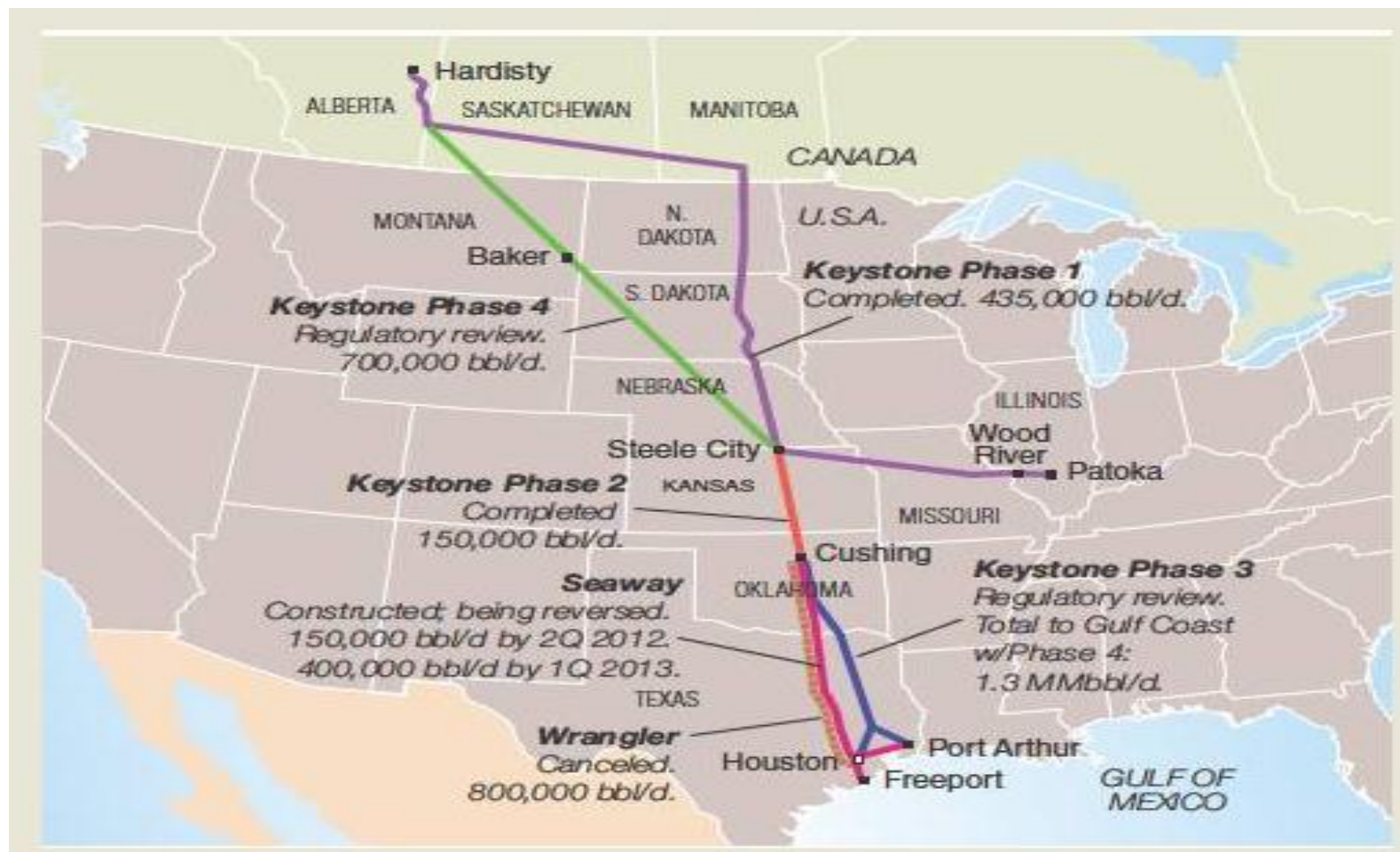
**\* Did they miss something?**

# North American Crude Oil Pipelines

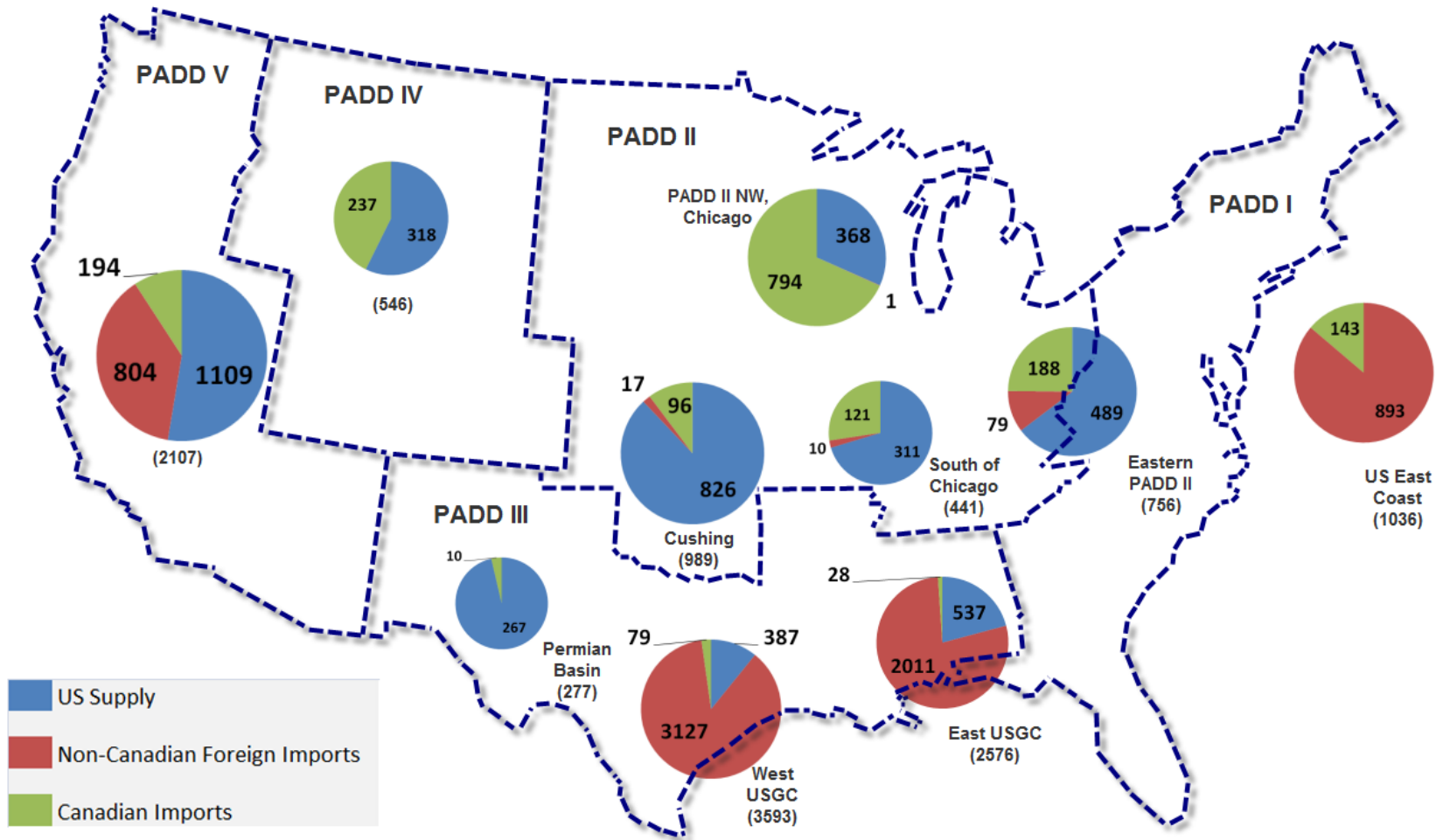


Source: GeoWeb Portal Rextag Hart Energy Mapping Service Feb 13 2012

# North American Pipes



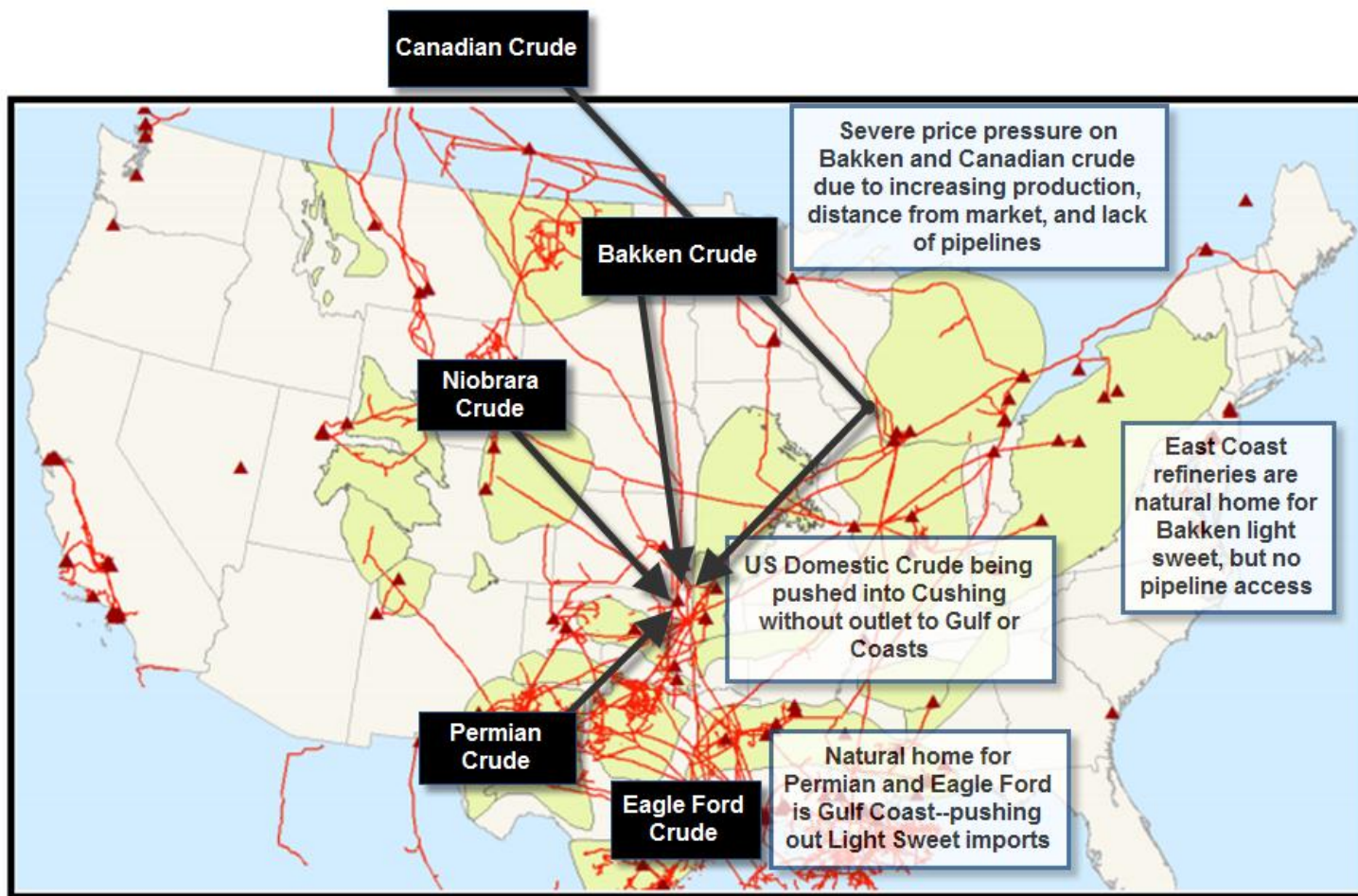
# Canadian Imports and Potential Markets



Source: EPRINC rendition from Enbridge. Enbridge; Enbridge used EIA and NEB Data and Enbridge Estimates (with some averages)

Crude Disposition by Region 2010 (MB/D)

# Choke Points

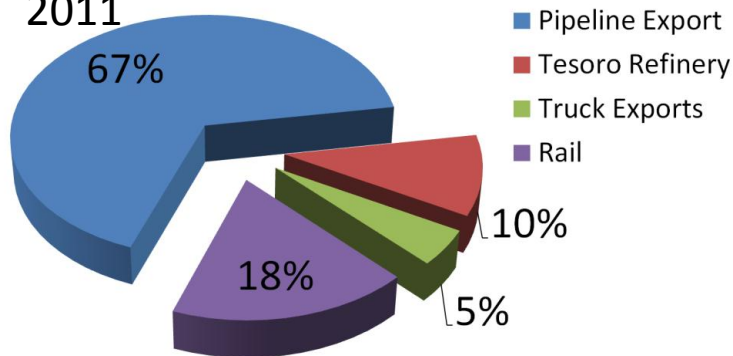


Source: Savage, Presentation Bakken Product Markets and Take-Away Denver Jan 31-Feb 1 2012 *with EPRINC Additions*

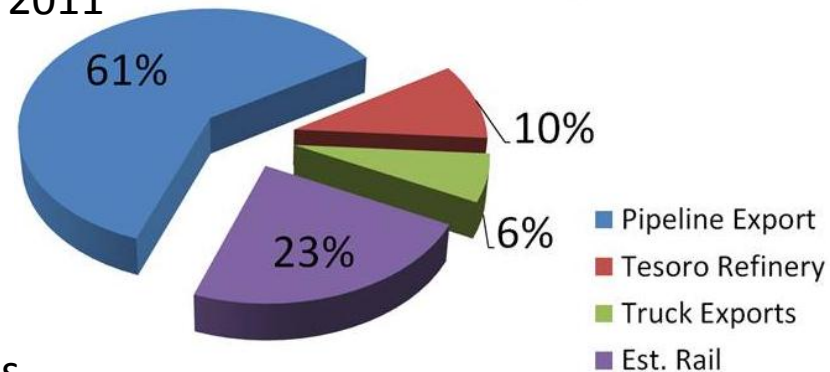


# North Dakota Crude Oil Transport

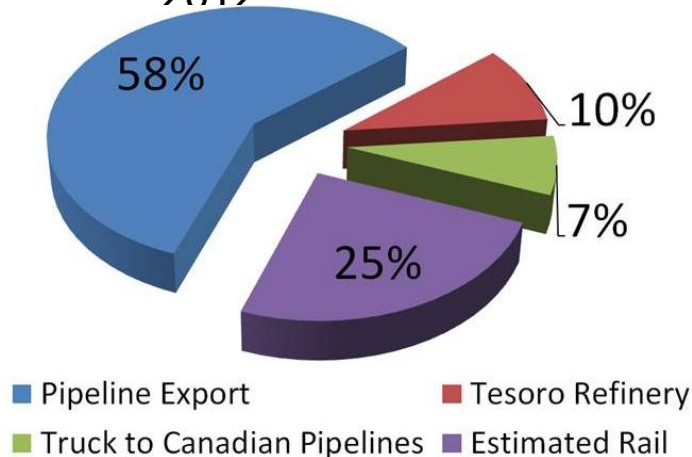
October Estimates, 2011



December Estimates, 2011



January Estimates, 2012



Source: North Dakota Pipeline Authority

# Bakken Prices at Clearbrook

Bloomberg Bakken (Clearbrook MN) Crude Oil Spot Price



Source: Bloomberg, Mar 16, 2012

# Final Observations

Major new pipeline infrastructure will deliver sustained and large scale benefits. Keystone decision has created uncertainty on whether those benefits will be realized.

U.S. is now poised for major economic renaissance from the both oil sands and unconventional natural gas and liquids. Net present value of \$1 to \$2 trillion if appropriate policies put into place.

Paradigm shift and large scale economic benefits are possible, but not without new approach to government regulations (and permitting) of both midstream and downstream facilities --- refinery expansions and modifications, natural gas processing, petrochemicals, LNG.

U.S. now poised to be a major export platform for value added oil and gas processing.

Major expansion of domestic manufacturing --transformation of national economy now in the cards.