

SYLLABUS – SHALE GAS & LNG

(Fall 2013 – Revised Aug. 4, 2013)

Course: Shale Gas & LNG – Fall 2013

Time: 4:00p-6:00p M

Location: Room 215 TUII

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COURSE OVERVIEW

This course explores the myriad of legal, policy and environmental issues pertaining to global natural gas markets with a particular focus on global shale gas development and the development of LNG import and export projects around the world, including recent developments in US LNG export projects.

The first half of the semester will explore the growing role that natural gas will play around the world in the context of global shale gas development. By most accounts, shale gas development in the United States has been a “game changer” that could be replicated around the world so long as the right regulatory and environmental frameworks are put in place. This course will explore the existing regulatory and environmental frameworks for shale gas, especially those in the United States, as well as frameworks being developed around the world with the objective of exploring the substantive law of shale gas development as well as developing the analytical and practical skills necessary to the practice of law.

The second half of the semester will explore the growing role that LNG is expected to play as the “glue” linking global gas markets. The course will explore the opportunities and challenges for various LNG import and export projects around the world in the current contextual reality wherein energy law and policy are increasingly intersecting with environmental law and geopolitics.

COURSE REQUIREMENTS

Book Requirements: Susan L. Sakmar, *Energy for the 21st Century: Opportunities and Challenges for Liquefied Natural Gas (LNG)*, Edward Elgar Pub., (Spring 2013).

The book is available at **cost (\$80)** to students from Robin Huff, Exec. Secretary, UHLC Multi-Purpose Suite 201 TU2, rrhuff@Central.UH.edu (713-743-2128).

The book is also available on Amazon <http://www.amazon.com/dp/1849804214> and the publisher at http://www.e-elgar.co.uk/bookentry_main.lasso?id=14131

Amazon direct link:

<http://www.amazon.com/dp/1849804214>

Topics to be covered in the course include:

- History and evolution of the shale gas industry – what is shale gas?
- Overview of the major U.S. shale gas plays, including the Barnett, Marcellus, Haynesville, Eagle Ford, and others.
- Overview of the technology used to extract shale gas, including hydraulic fracturing and horizontal drilling.
- Recent trends in the U.S. shale gas industry, including the current focus on liquids-rich shale plays that offer higher-valued liquids, such as oil and NGLs and how shale gas is creating opportunities for other industries such as the petrochemical industry
- Identify the key environmental issues related to hydraulic fracturing and shale gas development as well as the regulatory responses to these issues.
- Identify the key water-management issues related to hydraulic fracturing, including water acquisition, use, reuse, and disposal.
- Analysis of the key regulatory frameworks for U.S. shale gas development including focused discussion on key shale producing states such as Texas, Pennsylvania and other states.

Overview of Global Shale Gas Development

While North America has thus far been the undisputed leader in terms of shale gas development, a recent study released by the U.S. Energy Information Administration (EIA), “World Shale Gas Resources: An Initial Assessment of 14 Regions Outside the United States,” indicates that the “international shale gas resource base is vast.” Thus, the potential exists for shale gas to be a global energy game changer. However, the development of global shale gas is not likely to go as quickly as the experience in North America, and the countries that have the right frameworks in place as well as the passion to develop their shale gas resources will be the most successful. The course will cover the following topics:

- What is the potential for shale gas development globally?
- Overview of the Global Shale Gas Initiative (GSGI) led by the United States
- Which countries have potential shale gas resources? What are the major assessments that have been done?
- Which countries are actively pursuing shale gas development and which countries have the most potential?
- What is the potential for shale gas development in Europe? Is Poland leading the way? What other European countries are developing their shale gas resources?
- Analysis of the key regulatory frameworks that are emerging for global shale gas development, including focus on Poland, Canada, and Australia as well as others.

2. THE ROLE OF LNG IN GLOBAL GAS MARKETS (Second half of semester)

The second half of the semester will explore the growing role that LNG is expected to play as the “glue” linking global gas markets. The course will explore the opportunities and

challenges for various LNG import and export projects around the world in the current contextual reality wherein energy law and policy are increasingly intersecting with environmental law and geopolitics. Topics covered include:

- The entire LNG value chain, including a discussion of the liquefaction process, LNG shipping, and the regasification process.
- The evolution of LNG markets including the history of LNG and an overview of the three major LNG markets.
- A description and overview of key LNG supply projects around the world.
- The primary markets driving LNG demand around the world.
- LNG contracts and trade including whether the increased globalization of LNG markets will lead to LNG trading as a global commodity.
- The numerous safety and environmental issues that have been raised in the context of constructing LNG projects as well as the environmental sustainability of LNG as a fuel for the future.
- An overview of current LNG mega-projects around the world.
- The potential impact of shale gas on global gas markets including the prospects for North American LNG exports.
- An overview of some of the main emerging issues in the LNG industry including whether North America will become a major LNG exporter, the potential impact of the Panama Canal expansion project on LNG trade, the growing role of floating LNG (FLNG) technology, the potential influence of the Gas Exporting Countries Forum (GECF) to act as a “Gas OPEC”, and the emergence of LNG as a shipping and vehicle fuel to aid in emission reduction efforts around the world.

COURSE SCHEDULE AND ASSIGNMENTS

Part 1A Course Overview, Global Gas Markets, and Shale Gas Overview

Week 1

August 26 Read: TAB 1: Energy for the 21st Century: Opportunities and Challenges for Liquefied Natural Gas (LNG) (Chapters 1 & 3)
Read: Atlantis Case Study
Current Event: Discuss and turn in 1st current event.
Assignment 1: Discuss and turn in 1st research assignment.

Week 2

September 2 **LABOR DAY HOLIDAY**

Week 3

September 9 Read: TAB 2: Modern Shale Gas Development in the United States: A Primer
Current Event: Discuss and turn in 2nd current event.
Assignment 2: Discuss and turn in 2nd assignment.

Week 4

September 16 Read: TAB 3: America’s New Energy Future: The Unconventional

Oil and Gas Revolution and the US Economy, Volume 1 - National Economic Contributions
Current Event: Discuss and turn in 3rd current event.
Assignment 3: Discuss and turn in 3rd assignment.

Part 1B

Shale Gas - Regulatory Frameworks and Environmental Issues

Week 5

September 23

Read: GAO Reports and EPA Hydraulic Fracturing Study (on-line)
Current Event: Discuss and turn in 4th current event.
Assignment 4: Discuss and turn in 4th assignment.

Week 6

September 30

Read: GAO Report and EPA Hydraulic Fracturing Study and
TAB 4: Secretary of Energy Advisory Board Shale Gas
Production Subcommittee 90-Day Report, August 18, 2011
Secretary of Energy Advisory Board Shale Gas Production
Subcommittee Second Ninety-Day Report, November 18, 2011
Current Event: Discuss and turn in 5th current event.
Assignment 5: Discuss and turn in 5th assignment

Week 7

October 7

NO CLASS or Substitute? Potential Gas Committee Meeting - CA

Read: TAB 5: The Global Shale Gas Initiative: Will the United States Be the Role Model for the Development of Shale Gas Around the World? and World Shale Gas Resources: An Initial Assessment of 14 Regions Outside the United States.
Current Event: Discuss and turn in 6th current event.
Assignment 6: Discuss and turn in 6th assignment

Week 8

October 14

World Energy Congress Korea?

Reading: TBD
Current Event: Discuss and turn in 7th current event.
Assignment 7: Discuss and turn in 7th assignment.

PROPOSED PAPER TOPICS DUE TODAY!

Week 9

October 21

Read: TAB 6: Analysis of Litigation Involving Shale and Hydraulic Fracturing

Current Event: Discuss and turn in 8th current event.
Assignment 8: Discuss and turn in 8th assignment.
Guest Lecturer?

Part 2

THE ROLE OF LNG IN GLOBAL GAS MARKETS

Week 10

October 28

Read: LNG Book Chapter 2 (LNG Value Chain)
Current Event: Discuss and turn in 9th current event.
Assignment 9: Discuss and turn in 9th assignment.

Guest Lecturer: Paul Sullivan, Director Global LNG and FLNG,
Worley Parsons (TBD)

Week 11

November 4

Read: LNG Book Chapter 6 (Contracts & Trading)
Current Event: Discuss and turn in 10th current event.
Assignment 10: Discuss and turn in 10th assignment.

Guest Lecturer: Gigi John, Counsel, Andrews Kurth (TBD)

Week 12

November 11

Read: LNG Book Chapters 3 & 5 (LNG Demand)
Current Event: Discuss and turn in 11th current event.
Assignment 11: Discuss and turn in 11th assignment.

Week 13

November 18

Read: LNG Book Chapter 4 & 8 (LNG Supply)
Current Event: Discuss and turn in 12th current event.
Assignment 12: Discuss and turn in 12th assignment.

Week 14

November 25

Read: LNG Book Chapter 12
Current Event: Discuss and turn in 13TH current event.
Assignment 13: Discuss and turn in 13TH assignment.

Thanksgiving Break - Wed. 11/27-Sat. 11/30.

Week 15

December 2 Last Class – Paper Topics Review

December 10-19 **FINALS** There is **NO** final for this class.

December 16 **PAPERS DUE BY 5:00 p.m.**

A hard copy of your paper must be turned in by 5:00 p.m. on December 16, 2013. In addition, an electronic copy of your paper must be emailed or submitted electronically to me.