Hart Energy’s
Commercializing Methane Hydrates Conference

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North American Gas Supply Outlook

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Gas Overview

- Northern Gas Delays
- Gas for Oil Sands
- Unconventional Growth (CBM, Tight Gas, Shale Gas)
- Industrial Demand Erosion
- Ontario Coal Conversion
- Growth in Gas-fired Power
- Growth of LNG Imports
- Gulf Offshore In Decline
- Gulf Onshore
- Rockies Growing
- Western Canada In Decline
- Mackenzie Delta
- Alaska
- East Coast
- LNG
- Shelf Offshore
- Deepwater
Alaska Gas Project

- Both candidates for governor will open project to competition
  - not limited to BP, ExxonMobil, and ConocoPhillips
- project delays
- Canadian Pipeline Regulatory process still outstanding
- Initial Pipeline Capacity
  - 4.5 Bcf/d
  - 1 Bcf/d expansion
- In-service – Nov. 2016?
Mackenzie Gas Project

- Current Cost Estimate $7+ billion
  - New estimates Fall 2006
  - Expected to be $10+ billion
- Initial Volume – 0.8 to 1 Bcf/d
  - Pipeline Capacity – 1.9 Bcf/d
- Joint Review Panel meetings
  - Delayed – end of Q1 2007
- In-service – Nov. 2012?
2006 North American Gas Market Share

- Alberta: 5%
- Rest of Canada: 3%
- Ontario: 4%
- Gas for Oil Sands: 18%
- 2006 Total 70.0 Bcf/d

Source: Ziff Energy

- Industrial (30%)
- Electric Generation (26%)
- Residential (22%)
- Commercial (14%)
- Pipeline (8%)
2006 North American LNG Imports

**LNG Import Players**

- **Everett (29%)** 490 MMcf/d
- **Cove Point (23%)** 380 MMcf/d
- **Elba Island (24%)** 410 MMcf/d
- **Lake Charles (24%)** 400 MMcf/d

**Supply Country Share, %**

<table>
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<th>Country</th>
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2005 LNG Shipping to North America

- **Everett**
  - 5 Different Ships
  - 68 Deliveries
  - 2.5 Bcf/ship
  - 1 Ship every 5 Days

- **Cove Point**
  - 22 Different Ships
  - 85 Deliveries
  - 2.6 Bcf/ship
  - 1 Ship every 4 Days

- **Elba Island**
  - 10 Different Ships
  - 50 Deliveries
  - 2.6 Bcf/ship
  - 1 Ship every 7 Days

- **Lake Charles**
  - 19 Different Ships
  - 40 Deliveries
  - 2.6 Bcf/ship
  - 1 Ship every 9 Days

- **Gulf Gateway**
  - 2 Different Ships
  - 2 Deliveries
  - 2.6 Bcf/ship
  - 1 Ship every 182 Days

- **16 Ships Limited Deliveries to a Single LNG Terminal**
- **15 Ships Had Deliveries to Two LNG Terminals**
- **4 Ships Had Deliveries to Three LNG Terminals**
The Rockies Express Pipeline is a natural gas pipeline that connects the Rocky Mountains to the Gulf Coast. It is operated by Kinder Morgan, Sempra, and ConocoPhillips, with an initial capacity of 1.8 Bcf/d and a total capacity of 1.5 Bcf/d.

**Key Features:**
- **Phase 1:** January 2008, 1.8 Bcf/d at US$4,400 MM, 1,650 miles, 42" pipe, Heat Content 950 – 1,150.
- **Phase 2:** January 2009, 1.5 Bcf/d at US$500 MM, 330 miles, 42" pipe.
- **Phase 3:** June 2009, 1.3 Bcf/d at US$540 MM.
- **Phase 4:** Oakford Extension, January 2010, 1.5 Bcf/d.

**Top 5 Firm Shippers:**
- EnCana – 500 MMcf/d
- ConocoPhillips – 400 MMcf/d
- BP Energy – 300 MMcf/d
- Sempra Energy – 200 MMcf/d
- Ultra Resources – 200 MMcf/d

**Zones and Costs:**
- **Zone 1:** US$0.24/Mcf
- **Zone 2:** US$0.54/Mcf
- **Zone 3:** US$0.72/Mcf* (Ziff Energy estimate)

**Additional Information:**
- Questar Overthrust: 625 MMcf/d leased, option for 1.5 Bcf/d.

* Ziff Energy estimate

**Location:**
- **Opal, Wamsutter, Meeker, Cheyenne, Lebanon, Clarington**
- **Pepl**

**Regions:**
- Zone 1: US$0.24/Mcf
- Zone 2: US$0.54/Mcf
- Zone 3: US$0.72/Mcf*
2007-2014 Gas Price Influences

Upward Price Drivers

- Mid-Continent Declines
- Government Policies Favour Gas
- Residential/Commercial Demand Growth
- Oil Sands Gas Demand Growth
- GOM Offshore Declines
- Western Canada Supply Declines
- Growth in Gas-Fired Generation

Downward Price Drivers

- Mackenzie Supply Connected
- Other US Basins Supply Growth
- Industrial Demand Erosion
- Rockies Supply Growth
- Increasing LNG

Demand Drivers

Supply Drivers

Henry Hub US$/MMBtu
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