LNG: COMING TO A SHORE NEAR YOU?
The Dominion Integrated Enterprise Serves the World’s 3rd Largest Economy

Manufacturing

- ~6 trillion cubic feet equivalent of proved gas and oil reserves
- Approximately 1.2 billion cubic feet equivalent of daily production
- ~ 28,100 Mw of electric generation

Retail

- 4 million franchise gas and electric delivery customers in 5 states
- Plus 1.2 million unregulated retail energy customers in 9 states

Transportation

- 7,900 miles of natural gas pipeline
- Nearly 1 trillion cubic feet of natural gas storage
- 6,000 miles of electric transmission

Cove Point LNG Facility

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Cove Point LNG Facility
Why LNG?

World Natural Gas Reserves - Jan 1, 2000
Source: International Energy Annual 1999 - EIA
What is LNG?

LNG is natural gas in its liquid form

* LNG is the liquid form of the same natural gas 60 million U.S. consumers use daily to heat and cool their homes; that industry uses; and that is used for electric power generation

* LNG is not new -- it has been safely and securely transported and used for over 40 years

* Natural gas is converted to LNG by cooling to -260° F

* LNG is 1/600th the volume of gas, allowing for more efficient and economic transportation
LNG Characteristics

* Odorless, non-toxic and non-corrosive
* Less dense than water -- evaporates if spilled
* LNG vapors are more difficult to ignite than other common fuels
* LNG is not under pressure for shipping and storage
* LNG spills would not pollute land or water
LNG -- Bringing it to market

* Natural gas is produced in countries that have vast supplies of gas with little demand
* The gas is condensed to a liquid and transported overseas by ship
* When it reaches the receiving terminal, LNG is re-gasified and is distributed via pipeline as ordinary natural gas

Upon reaching the receiving terminal, LNG is turned back into a gas and sent out via pipelines as ordinary natural gas.
LNG -- long, safe history in U.S

There are over 100 LNG peak-shaving, production, transport and storage facilities across the country. Only five of those are receiving terminals.

* Peak-shaving facilities are used for storing surplus gas to meet requirements of peak consumption during winter or summer.
Natural Gas -- key to U.S. energy mix

Average Annual U.S. Energy Use

- PETROLEUM 39%
- NATURAL GAS 23%
- NUCLEAR 8%
- HYDROELECTRIC & RENEWABLES 7%
- COAL 23%

LNG is 2.5% of the Natural Gas Supply

- 90 percent of recently constructed power plants are fueled by natural gas
- Over the past decade, consumption of natural gas grew 25 percent faster than overall energy use

Source: EIA - Annual Energy Outlook 2005

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Natural gas -- meeting the demand challenge
U.S. 1970 - 2025 (billion cubic feet / day)

North American supply cannot keep pace with demand

History
Consumption
Production

GAP
Excludes Alaska Pipeline

Projections

* All domestic gas sources plus additional LNG imports are essential to meet America’s growing natural gas needs

* 1 BCF = enough to supply 4.3 million homes each day

Source: EIA - Annual Energy Outlook 2005
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LNG -- diverse global supplies

New Global LNG Export Capacity Proposed or Under Construction

* LNG supply growing
* Geographically diverse supply sources
* Long-term LNG supply outlook robust

Source: EIA
Growing U.S. LNG imports

(billion cubic feet per day)

Source: EIA - Annual Energy Outlook 2005
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Existing U.S. receiving terminals

More receiving terminals needed to meet growing gas demand

Total U.S. LNG receiving capacity (2005): 2.76 Bcf/d

Lake Charles, Louisiana
Current Expanded
Sendout (Bcf/d) 0.630 1.800
Storage (Bcf) 6.300 9.000

Everett, Massachusetts
Current Expanded
Sendout (Bcf/d) 0.535 0.715
Storage (Bcf) 3.300 3.500

Cove Point, Maryland
Current Expanded
Sendout (Bcf/d) 0.750 1.500
Storage (Bcf) 6.800 7.800

Elba Island, Georgia
Current Expanded
Sendout (Bcf/d) 0.445 0.800
Storage (Bcf) 4.000 7.300

WC 603, Offshore, La.
Current
Sendout (Bcf/d) 0.400
No storage

Source: DOE
Cove Point LNG Terminal
Fernando Tapias

Typically ships are unloaded in 12-20 hours
Cove Point LNG

- 4 tanks w/ combined capacity of approx. 5 Bcf
- 5th tank being built – will add 2.8 BCF Capacity
- In-service - 2005
- 1 BCF/Day Deliverability
- Shippers
  - BP
  - Shell
  - Statoil
- On-site liquefaction
**North America LNG Terminal Status -- May 2005**

**Construct**
- A. Everett, MA: 1.035 Bcf (Tractebel - DOMAC)
- B. Cove Point, MD: 1.0 Bcf (Dominion - Cove Point LNG)
- C. Elba Island, GA: 0.68 Bcf (El Paso - Southern LNG)
- D. Lake Charles, LA: 1.0 Bcf (Southern Union - Trunkline LNG)
- E. Gulf of Mexico: 0.5 Bcf (Gulf Gateway Energy Bridge, Excelerate Energy)

**Expansions Approved by FERC**
- 1. Lake Charles, LA: 1.1 Bcf (Southern Union - Trunkline LNG)
- 7. Elba Island, GA: 0.54 Bcf (El Paso - Southern LNG)

**Pipelines from Bahamas approved by FERC**
- 3. Bahamas: 0.84 Bcf, (AES Ocean Express)*
- 4. Bahamas: 0.83 Bcf, (Calypso Tractebel)*

**New LNG Terminals approved by FERC**
- 2. Hackberry, LA: 1.5 Bcf, (Sempra Energy)
- 5. Freeport, TX: 1.5 Bcf, (Cheniere/Freeport LNG Dev.)
- 6. Sabine, LA: 2.6 Bcf (Cheniere LNG)
- 8. Corpus Christi, TX: 2.6 Bcf (Cheniere LNG)

**New Offshore LNG Terminals Approved by MARAD/Coast Guard**
- 8. Port Pelican: 1.6 Bcf, (Chevron Texaco)
- 10. Louisiana Offshore: 1.0 Bcf (Gulf Landing Shell)

**Application filed with FERC #16 - 31 22**

**Application file with MARAD/Coast Guard #32-38**

**Canadian Approved**
- 12. Point Tupper, NS: 1.0 Bcf/d (Bear Head LNG - Anadarko)**

**Mexican Approved**
- 14. Baja California, MX: 1.0 Bcf, (Sempra & Shell)**
- 15. Baja California - Offshore: 1.4 Bcf, (Chevron Texaco)**

* US pipeline approved; LNG terminal pending in Bahamas
** These projects have been approved by the Mexican and Canadian authorities

Source: DOE/FERC - May 17, 2005

Market will determine how many will be built, but 7-9 new receiving terminals are expected by 2025 (NPC)

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Siting LNG terminals

Requirements

- Federal, state and local support
- Adequate market
- Deepwater accessibility & harbor facility
- Existing pipeline network

Issues

- Public perception
- Safety & security
- Investment costs
- Long lead times (5-7 years)
- Permitting
  - NEPA, CWA, CAA, CZMA, dredging
LNG project permitting

Rigorous 12-18 month process
- FERC lead for onshore terminals
- USCG lead for offshore terminals

NEPA Environmental Impact Statement drives project
- Collaboration with state and federal agencies
- Multiple opportunities for public input and community meetings

13 resource reports required for terminal; 12 more for associated pipelines
- Engineering design
- Impacts on fish, wildlife, vegetation
- Air and water quality and water usage
- Terminal and ship safety and security
- Impact on cultural resources; socioeconomic effects

Wheel shows 18 primary agencies for a terminal project in Texas with pipeline extending into Louisiana
EPACT of 2005

* Clarifies FERC Exclusive Siting Authority
* Requires Pre-filing Process
* FERC as Lead Agency - Set Schedule
* FERC to Hold Three LNG Forums
* FERC MOU With Secretary of Defense
* New State Role in Safety Inspections
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