

Presented by

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AAPA Facilities Engineering Seminar

Jacksonville, Florida

11-13 January 2006

- What is LNG?
- Why do we need it now?
- How are LNG terminals developed?
- Are LNG terminals and ships safe?
- What are the key siting considerations?
- What are the impacts on Port shipping?

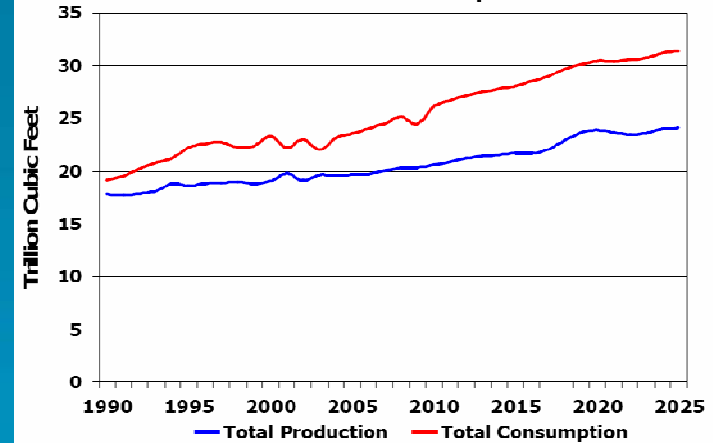


- **LNG – Stands for Liquefied Natural Gas (85+% Methane)**
- **Chilled to -160 degC (-256 degF) prior to shipping**
- **Reduces volume by 600x vs. gaseous form**
- **Shipped in LNGCs of 70,000-200,000+ m³ capacity (Up to 1132 ft LOA, 180 ft beam & 39.5 ft draft)**
- **Receiving Terminals involve unloading, storage, vaporization, compression, & sendout to natural gas pipeline networks.**



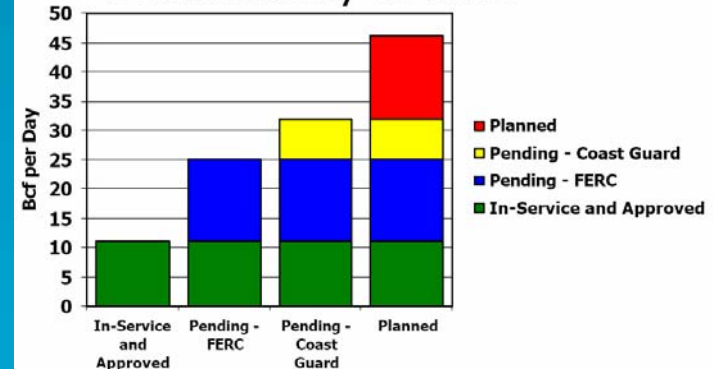
- Natural Gas is the economic/environmental fuel of choice
- 96% of World's Gas reserves are outside the USA
- 25% of the World's Natural Gas is consumed in the USA
- USA consumed 65 BCF/Day in 2005 w/ 4.5 BCF/Day supplied via LNG. Consumption predicted to increase to 80 BCF/Day by 2017 w/ 15 BCF/Day to be supplied by LNG.
- 5+ years required to develop new receiving terminals

Historic and Projected US Gas Production and Consumption



Source: EIA AFO 2004

Maximum LNG Deliverability Growth

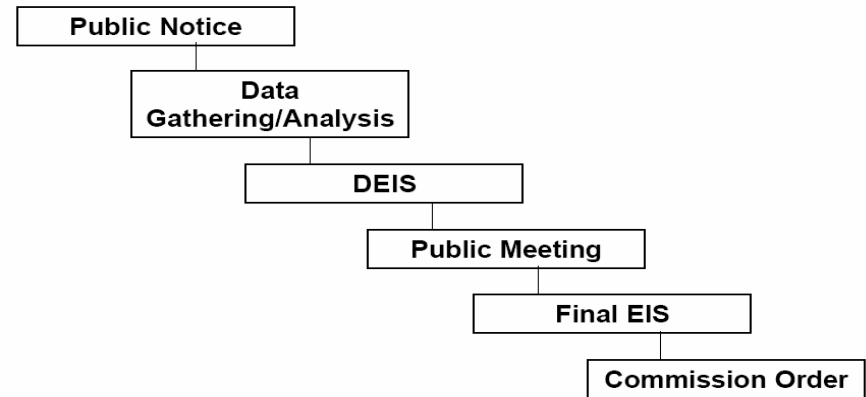


- The LNG industry has had an exemplary safety record over the past 30 years.
- Very few incidents involving fatalities, and all were attributed to prior inadequate storage tank designs and liquefaction plants.
- LNG terminals and ships are designed, constructed and operated to higher standards than the petroleum industry.
- Ignition of unconfined vapor/liquid releases difficult due to limited flammability range (5-15%).
- Various studies indicate low probability of inner containment being breached by terrorist action or ship collision.

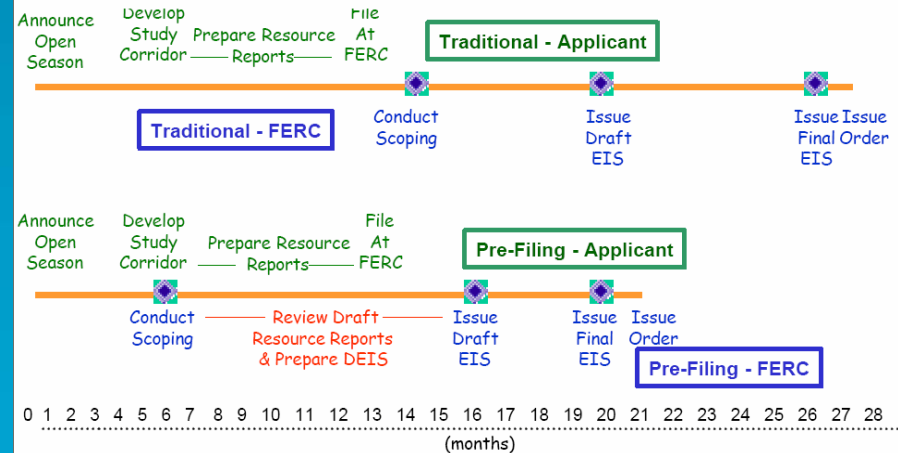


- Project developer can range from entrepreneurs, natural gas utilities, to oil & gas major companies
- Developer defines the throughput capacity considering LNG supply sources, market analysis, financing companies, etc. Developer & their consultants identify & evaluate prospective site(s).
- Developer begins permitting process with FERC, USCG, and other agencies. FERC led process takes 21+ mo.
- Nominal 3 year period for detailed engineering, procurement and construction (storage tanks are the critical path item).

FERC Review Process



Traditional vs. Pre-Filing Process



What are the key siting considerations?

- Level of community acceptance
- Degree of environmental sensitivity
- Site large enough and remote such that there is a 1000' radius from storage tank to property line.
- Site nearby natural gas pipeline network.
- Site access to 40-45' water depth.
- Ability to position berth at sufficient spacing from existing navigation channel (to minimize risk from passing vessels).



What are the impacts on port shipping?

- **USCG sets moving exclusion zones; typically 2 miles forward, 1 mile aft, 1500 ft each side**
- **2 way channel traffic not allowed during LNGC transit**
- **Additional pilotage demand**
- **Special-purpose, high powered tugs provided for escorting and berthing**
- **Some ports may implement bridge closures and other special security measures**



LNG Terminals are needed to meet national and regional energy demand.

Expect close scrutiny by the community and other stakeholders during project development.

LNG Terminals and Shipping can be safely and successfully managed and operated.

The background of the slide is a blue-tinted image of the Earth from space, showing the curvature of the planet and a bright sun flare in the upper left quadrant. The text is overlaid on this background.

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