

**A Study of Alternative Wharfage Rates  
For a Prospective LNG Project on La Quinta Channel**

**For**

**Port of Corpus Christi Authority**

By

Milton L. Holloway, Ph.D.  
Resource Economics, Inc.  
701 Brazos Street  
Suite 500  
Austin, Texas 78701  
(512) 794-8511

**July 2003**

## Table of Contents

	<u>Page</u>
Introduction	1
Recent Developments in the LNG Market	1
Natural Gas Market Conditions Relevant to the Demand for New LNG Terminals in the U.S.	3
Importance of Local Market Conditions	7
Wharfage Rates and Fees for LNG at Other U.S. LNG Ports	8
Review of the FERC Records from Recent LNG Terminal Applications Concerning Effects of LNG Incremental Congestion Effects	11
Analysis of Alternative Wharfage Rates	12
Alternative Approaches to Derivation of a Wharfage Rate	13
LNG Competitive Position in the U.S. Fuel Market: Gas on Oil Competition	13
LNG Competitive Position in the U.S. Fuel Market: Gas on Gas Competition	16
Comparison of Corpus Christi with Hackberry	17
Comparison of Corpus Christi with Freeport	20
Comparison of Corpus Christi with Sabine Pass	22
Competition with Alternative Ports: Potential Congestion Effects	23
Congestion Impacts on Other PCCA Shippers	23
Incremental Costs of Accommodating LNG Tankers	26
Opportunity Cost for the Project	27
Conclusions	28

## Tables and Charts

	<u>Page</u>
Table 1. U.S Natural Gas Market and LNG Outlook	5
Table 2. Price of U.S. Liquefied Natural Gas Imports From Trinidad (\$/Mcf)	6
Table 3. Spot Market Prices for U.S. Natural Gas at Three Markets	6
Table 4. U.S. LNG Import Terminals: Existing and Prospective	8
Table 5. Volume Based Rate Equivalent to Current Crude Oil Wharfage: No Minimum	14
Table 6. Volume Based Rate Equivalent to Current Crude Oil Wharfage: \$1.0 Million per Year Minimum	15
Table 7. Volume Based Rate Equivalent to Hackberry Agreement with Dynegy: \$410,625 Minimum	18
Table 8. Volume Based Wharfage Rate at PCCA That Would Result in the Same Gas Price Effect as That at Hackberry: Including Effects of Travel Cost and Economies of Scale	20
Table 9. Volume Based Wharfage Rate at PCCA That Would Result in the Same Gas Price Effect as Freeport with a Zero Wharfage Rate: Including Effects of Travel Cost and Economies of Scale	21
Table 10. Volume Based Wharfage Rate at PCCA That Would Result in the Same Gas Price as Freeport with a Zero Wharfage Rate: Including Effects of Travel Cost and Economies of Scale	22
Table 11. Forecast of Major Product Shipments Through Corpus Christi Ship Channel (1000's of Short Tons)	25
Table 12. Economic Impacts of Large Tanker Delays: LNG Tanker Effect	26
Table 13. Volume Based Rate Based on Potential Petroleum Products Opportunity Cost: No Minimum	27
Table 14. Economic Limits for Wharfage Rate on LNG at PCCA	30

**Tables and Charts (conti.)**

	<b><u>Page</u></b>
Figure 1. U.S. Natural Gas Market Growth and Price Moderation After Passage of the Natural Gas Policy Act of 1978	4
Map of PCCA Ship Channel	31