

Ziff Energy – LNG Analysis



Services Agreement

This Agreement sets out the terms and conditions under which Her Majesty in Right of Newfoundland and Labrador as represented by the Minister of Natural Resources ("Minister") retains Ziff Energy Group ("ZEG") to perform the services set out hereunder (the "Services").

1. Services

ZEG shall provide the following Services:

A. Preparation of a Report

On March 3, 2012, Minister met with ZEG as part of the North American Gas Strategies retainer service where the consultant led a discussion using a power point presentation deck on the technical and economic viability of landing gas in the form of LNG and domestic gas production to generate electricity at the Holyrood Thermal Generating plant. The purpose of these consulting services is to follow up from that presentation with a short report with the permission to post, summarizing the findings resulting from the presentation, and ensuing discussion. The following Table of Contents provides the basis for the report:

- Overview of Natural Gas as an Island Supply Option
- Summary
- Introduction
- Holyrood Project
- World LNG Market
- Costs
- LNG Regas Costs
- North American Gas Price Influences
- Present to 2020
- Up to 2035
- Landed Cost of LNG
- Domestic Gas Option
- Long Term Energy Prices

B. Feedback on Dr. Bruneau's Presentation

On Wednesday, March 21, 2012 at 7:30 pm Newfoundland Time, Dr. Stephen Bruneau will be presenting at the Harris Centre. His topic is:

"Grand Banks Natural Gas- A Source of Electricity for the Island of Newfoundland"

and the session will be podcast live. The Harris Centre website is <http://www.mun.ca/harriscentre/>. ZEG will monitor the live podcast and the associated discussion on Twitter at #nlenergy and prepare a summary report of the findings.

Ziff Energy – Grand Banks Natural Gas Analysis

1. Services

ZEG shall provide the following Services:

Preparation of a Report

On March 3, 2012, Minister met with ZEG to discuss the technical and economic viability of landing gas in the form of LNG to be used to generate electricity at the Holyrood Thermal Generating plant. On April 13, 2012, ZEG delivered a 10 page report titled “*Newfoundland and Labrador Natural Gas Viability and Analysis*” which concluded that LNG landed on the east coast of the island would be prohibitively priced over the long term. The purpose of these consulting services is to follow up with another report titled “*Grand Banks Natural Gas as an Island Electric Generation Option*” examining the availability of offshore domestic gas and its viability to produce electricity at Holyrood. The below Table of Contents provides the basis for the report:

| | |
|---|---|
| EXECUTIVE SUMMARY | 1 |
| Introduction | 1 |
| GRAND BANKS AS AN OIL PRODUCING REGION | 1 |
| Types of Natural Gas | 1 |
| Associated Gas | 1 |
| Free Gas | 1 |
| Composition of Gas | 2 |
| Enhanced Oil Recovery | 2 |
| Physical Availability Versus Commercial Availability | 3 |
| Project Versus Basin Gas Development | 3 |
| Gas Availability During Oil Production | 3 |
| FACTORS AFFECTING OIL AND GAS INVESTMENT DECISIONS | 4 |
| Cash Flow Economics | 4 |
| Portfolio Decision Making | 4 |
| Price versus Costs | 5 |
| Principles of Avoided Costs | 5 |
| Shareholder Expectations | 5 |
| REGULATORY PROCESS IN NEWFOUNDLAND AND LABRADOR | 6 |
| Jointly Administered by Federal Government and Province | 6 |
| CNLOPB as an Independent Regulator | 6 |
| Rights Issuance | 6 |
| EL’s, SDL’s, and PL’s | 6 |
| Role of the Regulator | 7 |
| Stability of Regulatory Regime | 7 |
| ROLE AND RIGHTS OF THE OPERATOR | 8 |
| Have Rights under the Accord | 8 |

| | |
|---|----|
| Exploration, Development, and Production | 8 |
| HOLYROOD THERMAL GENERATING PLANT | 9 |
| Current Situation | 9 |
| Requirements to Fuel with Natural Gas | 9 |
| Reliability Requirements for Utility | 10 |
| Converting Gas to Electricity | 10 |
| Load Profile | 11 |
| Gas Requirements | 12 |
| Dual Fuel Requirements | 12 |
| ESTIMATED COSTS TO LAND GAS ON THE ISLAND | 13 |
| CapEx | 13 |
| Offshore Infrastructure Requirements | 13 |
| O&M Costs | 13 |
| Pipeline (Tariffs) | 14 |
| Other Considerations | 15 |
| Life of Facilities | 15 |
| Single Phase versus Multiphase Pipelines | 15 |
| Liquids Considerations | 15 |
| APPENDIX A: OVERVIEW OF ZIFF ENERGY | 16 |
| Gas Consulting Services | 16 |
| Ziff Energy's Gas Team | 17 |

Ziff Energy Natural Gas Studies Update



Services Agreement

This Agreement sets out the terms and conditions under which Her Majesty in Right of Newfoundland and Labrador as represented by the Minister of Natural Resources ("Minister") retains Ziff Energy Group ("ZEG") to perform the services set out hereunder (the "Services").

1. Background

The Government of Newfoundland and Labrador has a subscription to Ziff Energy's North American Gas Strategy Retainer Service. This offering is designed to provide timely and strategic information on the business and competitive environment of the North American natural gas industry. As part of this retainer, Ziff Energy provides reports, custom visits and advisory services.

2. The Services

A. Preparation of a Report

The purpose of this review is to finalize the reports, "Newfoundland and Labrador LNG Viability and Analysis" and "Grand Banks Natural Gas as an Island Electric Generation Option". In conducting the review, ZEG will give consideration to feedback and discussions held with the department.

B. Other Services

Such other analysis as may be required on direction of the Government of Newfoundland and Labrador, including developing responses to questions regarding Newfoundland and Labrador LNG Viability and Assessment, and Grand Banks Natural Gas As An Island Electric Generation Option reports.

Ziff Energy will invoice the Government of Newfoundland and Labrador at Ziff Energy Hourly Professional Rates (Schedule A) on a monthly basis.