

# EGNB GSRMC Distribution Rate Hedging



*May 16<sup>th</sup>, 2007*

# EGNB

## Risk Management Objective



### Risk Management Objective

- To maximize current period distribution revenue by reducing the probability of commodity pricing occurrences that require EGNB to discount their Distribution Rates in order to maintain competitiveness relative to competing fuels

# EGNB

## Distribution Rate Background



- EGNB's Distribution Rates are its primary revenue generating mechanism and also the foundation for budget revenue levels
- The Distribution Rates are calculated using a market-based approach, where the rates are derived from the the following three components:
  - Retail oil prices (Nymex WTI as a proxy), target savings level (%) and the EUG price
- Distribution Rates do not provide a fixed return on a rate base, rather they strike a balance between generating revenue, and allowing customers to find the delivered price of gas attractive in comparison to competing fuels

# EGNB

## Distribution Rate Risk Exposure



### Market Price Risk Exposure

- EGNB's Distribution Rates are at risk to the compression of the price spread between natural gas and crude oil prices ("price spread")

Relative Effect of Unhedged Gas & Crude Price Movements on EGNB's Distribution

Rates	Crude Oil Price				
Natural Gas Price	- -	-	0	+	+ +
+ +	-4	-3	-2	-1	0
+	-3	-2	-1	0	0
0	-2	-1	0	0	0
-	-1	0	0	0	0
- -	0	0	0	0	0

*Assuming (0,0) = Maximum Distribution Rates*

- The matrix above shows that at the time of the rate hearings, EGNB is exposed solely to downside risk, representing an asymmetrical risk profile
- Therefore hedging both natural gas and crude oil will provide protection for the Distribution Rates against a significant narrowing of the price spread

# EGNB

## Protecting Distribution Revenue



### Optimal Hedge Structure

- The asymmetrical risk profile presented by the Distribution Rates is difficult to hedge

*Optimal hedge structure should:*

- increase the likelihood of maximum Distribution Rates when the price spread narrows
- maintain maximum Distribution Rates when the price spread widens

**∴ Optimal Hedge Structure = Crude Put Option + Gas Call Option**

### Pros of Optimal Hedge

- Options exhibit an asymmetrical payoff profile suitable for hedging the Distribution Rate risk exposure as opposed to plain vanilla swaps
- The use of options ensures no hedge losses accrue to the EUG price when crude prices rise and/or gas prices fall (i.e. positive market moves for Distribution Rates)

# EGNB

## Protecting Distribution Revenue



### Cons of Optimal Hedge

- Hedge premiums are costly and will impact the EUG price which may potentially reduce Distribution Rates
- Large moves in the crude oil and natural gas price curves may be required to recoup premium costs
- The cost of the hedge may end up being greater than any actual market move
  - Not the most efficient way to protect against small market moves
- EGNB must assess whether the tradeoff between the hedge cost and distribution revenue protection is appropriate
  - The following analysis compares the historical distribution revenue calculated under various scenarios to budget distribution revenue in order to assess the benefits of the optimal hedge structure

# EGNB

## Distribution Revenue Analysis



### Distribution Revenue Analysis Outline

- 3 cases as outlined below:
  1. Budget distribution revenue vs. Realized distribution revenue
  2. Budget distribution revenue vs. Unhedged distribution revenue
  3. Budget distribution revenue vs. Hedged (1 yr) distribution revenue
    - Each case was run for 2005 and 2006 separately
- Hedge Structure
  - 75% of forecast natural gas demand hedged with a natural gas call option for upcoming year
    - assuming 50/50 split between Tetco M3 and Transco Z6
  - Equivalent crude oil, adjusted for target savings, hedged for matching period with crude oil put option

# EGNB

## Distribution Revenue Analysis



### 1. Budget vs. Realized

Year	Budget Demand (GJ)	Budget Distribution Revenue (C\$)	Maximum Distribution Revenue (C\$)	Realized Distribution Revenue (C\$)*
2005	1.33 MM GJ	\$10.1 MM	\$10.1 MM	\$7.0 MM
2006	1.36 MM GJ	\$12.0 MM	\$18.6 MM	\$12.3 MM

\* Realized distribution revenue accounts for existing hedges, volume variance from budget and EGNB business decisions

- The hurricanes in the second half of 2005 led to elevated natural gas prices resulting in lost distribution revenue as rate riders were applied
- Natural gas hedge losses in 2006 contributed to increases in the EUG price, therefore compressing the price spread and reducing distribution revenue below maximum revenue levels, but not below budget



### 2. Budget vs. Unhedged Distribution Revenue

Year	Budget Distribution Revenue (C\$)	Maximum Distribution Revenue (C\$)	Unhedged Distribution Revenue (C\$)
2005	\$10.1 MM	\$10.1 MM	\$8.1 MM
2006	\$12.0 MM	\$18.6 MM	\$16.6 MM

- In 2005, the unhedged scenario would have resulted in a loss of \$2.0 MM to both budget and maximum distribution revenue levels
  - Natural gas prices increased significantly in the last quarter due to hurricanes. Elevated natural gas prices compressed the price spread, resulting in lower than expected distribution revenue
- In 2006, the crude oil prices rose faster than natural gas prices, widening the price spread.
  - Distribution revenue would have been greater than budget levels, but less than maximum distribution revenue

### 3. Budget vs. Hedged (1 yr) Distribution Revenue

Year	Budget Distribution Revenue (C\$)	Maximum Distribution Revenue (C\$)	Hedged Distribution Revenue (C\$)	Hedge Structure
2005	\$10.1 MM	\$10.1 MM	\$8.4 MM	Maximum distribution rates hedged Total Premium Cost = C\$ 2.3 MM ~22% of budget distribution revenues
2006	\$12.0 MM	\$18.6 MM	\$16.3 MM	Maximum distribution rates hedged Total Premium Cost = C\$ 2.6 MM ~ 22% of budget distribution revenues

- In 2005, with hedges in place, the realized distribution revenue was less than both the budget and maximum revenue levels due to hedging costs
- In 2006, as crude prices rose faster than natural gas prices, the price spread strengthened increasing the likelihood of maximum distribution rates throughout the year
  - The resulting distribution revenue was greater than budget, but roughly \$2.3 MM less than maximum distribution revenue due to the cost of the hedge

# EGNB

## Distribution Revenue Analysis



### Distribution Revenue Analysis Summary

Year	Budget Distribution Revenue (C\$)	Maximum Distribution Revenue (C\$)	Realized Distribution Revenue (C\$)*	Unhedged Distribution Revenue (C\$)	Hedged Distribution Revenue (C\$)
2005	\$10.1 MM	\$10.1 MM	\$7.0 MM	\$8.1 MM	\$8.4 MM
2006	\$12.0 MM	\$18.6 MM	\$12.3 MM	\$16.6 MM	\$16.3 MM

\* Realized distribution revenue accounts for existing hedges, volume variance from budget and EGNB business decisions

- By remaining unhedged in both 2005 and 2006, EGNB would have increased its realized distribution revenue for each year respectively
- If EGNB had hedged at maximum distribution rate levels, distribution revenue would have been greater than realized
- Though maximum distribution rates were hedged for each year, maximum revenue could not be achieved as changes in the natural gas and crude prices were not significant enough to recover the option premiums

# EGNB

## Distribution Revenue Analysis



### Distribution Revenue Analysis Conclusions

- The hedge structure performs as expected such that distribution revenue is protected from adverse movements in price spread
- However, this protection comes at a cost which directly impacts realized distribution revenues
  - Hedge costs historically would have represented 20% of budgeted distribution revenue levels
- Therefore, when assessing whether to hedge the distribution revenue, EGNB must estimate the tradeoff between cost versus protection
  - Assuming 2005 as a worst case scenario, the hedge structure provided a 10% uplift in revenue over realized distribution revenue, and only a 3% uplift over the unhedged scenario

### Distribution Revenue Analysis: Points of Concern

- True value of hedge structure is dependent on absolute market level moves, therefore impact can be variable
  - Significant loss of distribution revenue can be protected, however small losses in distribution revenue will still occur
- The cost of the hedge may end up being greater than any actual market move
- Crude oil hedges may not receive hedge accounting treatment
  - More research required
- EGNB will need to justify to the Regulator the benefit of crude oil hedging for the natural gas end-user (EUG customers)
  - Hedge gains/losses must be allowed to be incorporated into the EUG price
- Hedge program in practice would prove more complicated than example shown in presentation
  - Hedge Timing – timing the market to hedge when maximum rates achieved
  - Hedge Period – due to rolling 12 month average ideally need to hedge 2 years to protect 1 year of distribution revenue

# EGNB

## Recommendation



### Recommendation:

- EGNB should seek input from Board of Directors with respect to overall risk management philosophy
  - Assess degree of willingness to use hedging as a form of insurance for budget distribution levels

### Next Steps:

- Move forward as required based on feedback from EGNB and its Board of Directors
- Draft amendments for the EGNB Risk Policy and Hedge Program Guidelines as required
- Confirm hedge accounting treatment