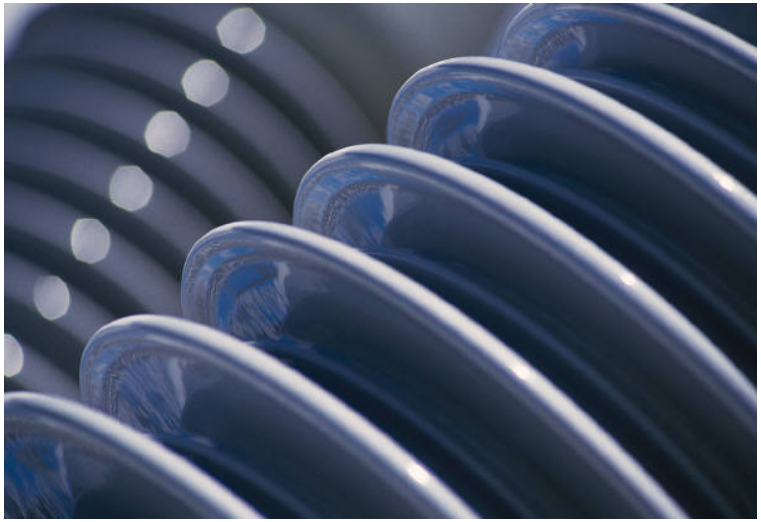

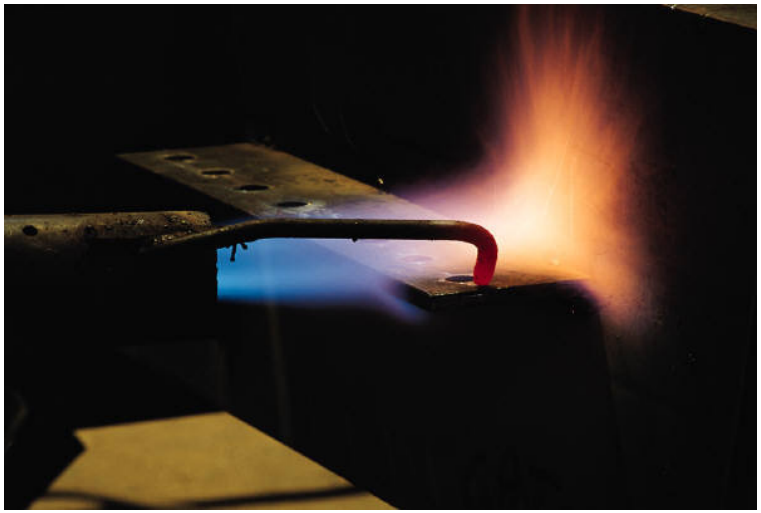

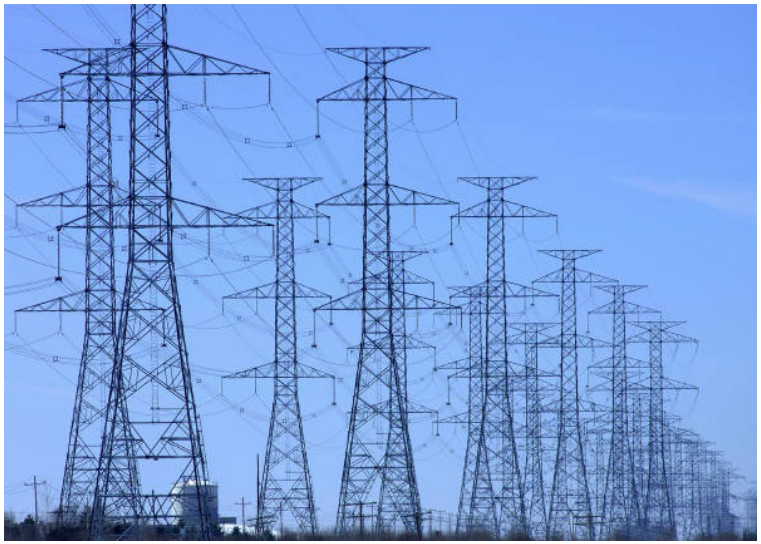

ENERGY HEDGING and PRICE RISK MANAGEMENT: Practical End-User Strategies

GasFair PowerFair

April 22, 2008

John Voss, P. Eng.
Managing Director
Aegent Energy Advisors Inc.

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Aegent helps energy-sensitive buyers to…

- reduce the cost
- manage the risk
- resolve the complexity

of their gas and power procurement

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Talking points

- Who is hedging their energy costs? Why?
- How to determine the most appropriate risk management strategy
- When should energy buyers hedge?
- How to save money in a hedging program
- How do you know the program is working?

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Who is hedging?

Natural gas

- "hedging" is commonplace
- fixed prices, financial swaps, basis
- liquid forward market, many counterparties, good price discovery

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Natural gas

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- fixed prices, financial swaps, basis
- liquid forward market, many counterparties, good price discovery

Electricity

- few participants
- mostly smaller, retail buyers

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Why are they hedging?

Hedging

- “Any technique designed to reduce or eliminate financial risk.”

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Why are they hedging?

Hedging

- “Any technique designed to reduce or eliminate financial risk.”

Financial risk

- “The risk that a firm may not be able to meet its financial obligations.”

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Why are they hedging?

Natural gas hedging

- For energy-intensive organizations with tight operating margins, gas price volatility can materially affect earnings
- Eg. there is ~10% chance that gas prices for 2009 will rise by 14% over the next month

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Why are they hedging?

Natural gas “hedging” is prevalent

- “I will lock-in at the bottom of the market”
  - Many have a price-minimization objective, not a risk management objective

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Why are they hedging?

Natural gas “hedging” is prevalent

- “I will lock-in at the bottom of the market”
  - Many have a price-minimization objective, not a risk management objective
- Evidence: gas buying is commonly a responsibility of purchasing in the organization

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Why are they NOT hedging?

Electricity

- 75% or more of price volatility is eliminated by the Global Adjustment and the OPG rebate
- A typical school board has 5 times as much gas price risk as electricity price risk
- No buyers means no hedging market

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Why hedge?

- Hedge to control risk, to achieve predictable outcomes

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Why hedge?

- Hedge to control risk, to achieve predictable outcomes
- The risk you can afford to take depends on:
  - The probability of being right
  - The consequences of being wrong

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Why hedge?

- Hedge to control risk, to achieve predictable outcomes
- The risk you can afford to take depends on:
  - The probability of being right
  - The consequences of being wrong
- Each organization has a different tolerance for risk, depending on its objectives, its strategies and the constraints it operates under

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How to determine a hedging strategy

- Form follows function
- What is your objective?
  - What risks are you trying to avoid/manage?
  - What outcomes are you trying to make more predictable?
- What risk management approach will get you there?
- Risk management costs money
  - Do only as much as you have to

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When to hedge?

- Hedging is a response to risk
  - Hedge when risk levels are reaching intolerable levels

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When to hedge?

- Hedging is a response to risk
  - Hedge when risk levels are reaching intolerable levels
- Hedging is not a response to price
  - Do not hedge because of price levels

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When to hedge?

Emotions impair decision-making

- "Psychopaths make better investment decisions" *(Stanford University)*
- "Risk aversion decreases after a player suffers early losses" *(Howie Mandel)*

Mechanistic or quantitative hedging models can limit the influence of emotion on hedging decisions

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When to hedge?

Mechanistic approach

- Hedge a pre-determined percentage at pre-determined intervals
- “Neutral” view of market and risk
- The amount hedged may not be optimal
- In the long run, you pay the average market price, but with less volatility

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When to hedge?

Quantitative approach

- Hedge when amount at risk exceeds defined limits
- Eg. Maintain 90% confidence that gas costs for 2009 will not change by more than $250,000 in the next 30 days
- Risk is hard to see…more sophisticated tools are needed for this approach

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How to save money when hedging

- Have a portfolio of counterparties
- Hedge only as much as you need to
- Buy in liquid markets
  - Standard products
  - Liquid hubs

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How to save money when hedging

NOT by:

- Market timing
- “Winning” hedges
- Target pricing

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How do you know it's working?

- Set up performance tracking systems at the start
- Define the performance measures in the context of the program objectives
  - Cost reductions resulting from cost reduction strategies
  - Predictable outcomes resulting from hedging strategies

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How do you know it's working?

- Get cross-functional and management agreement
- Keep the reporting focused
  - Resist addition of extraneous measures (eg., our unit price vs index, hedge gains/losses)

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In summary

- Much of what passes for “hedging” in gas buying is not hedging at all
- Risk reduction comes from effective hedging programs
- Cost reduction comes from efficient procurement

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In summary

- Effective hedging program requires:
  - Risk management objectives well-defined
  - Strategy suited to objectives
  - Performance measures relevant to objectives
  - Focused implementation

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On the web

www.aegent.ca and click on **Resources**

- Deal or No Deal
- Buying by Flipping a Coin
- RiskSensor ©
- 5 Key Steps for Energy Buying

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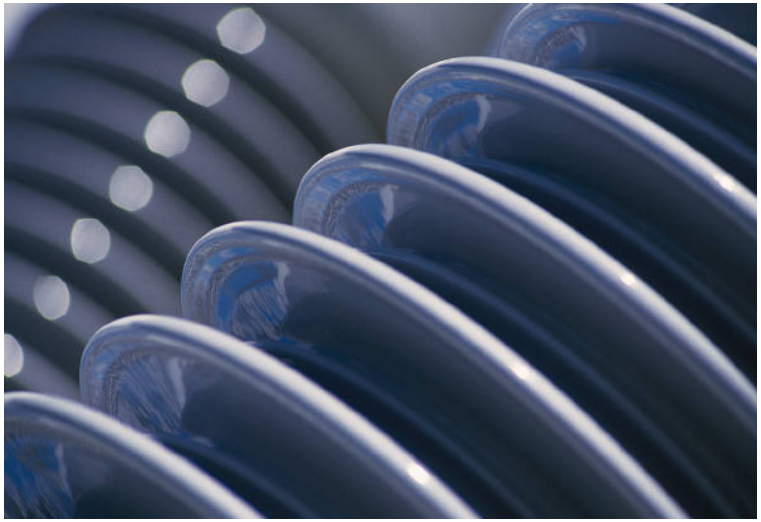

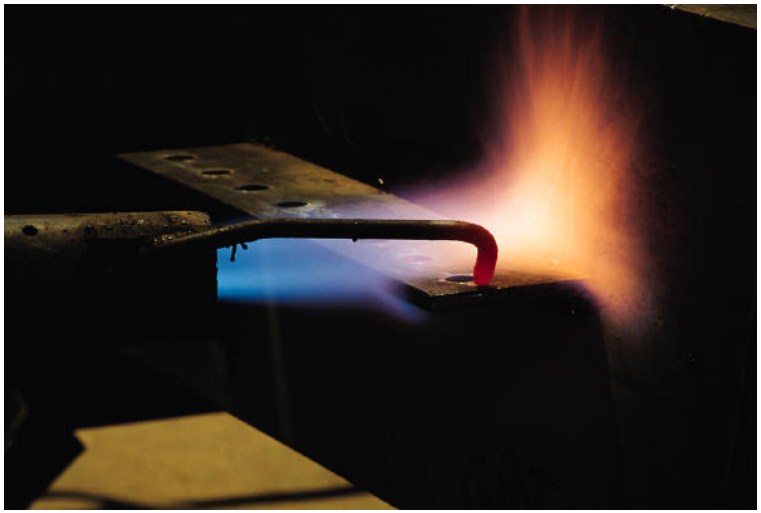

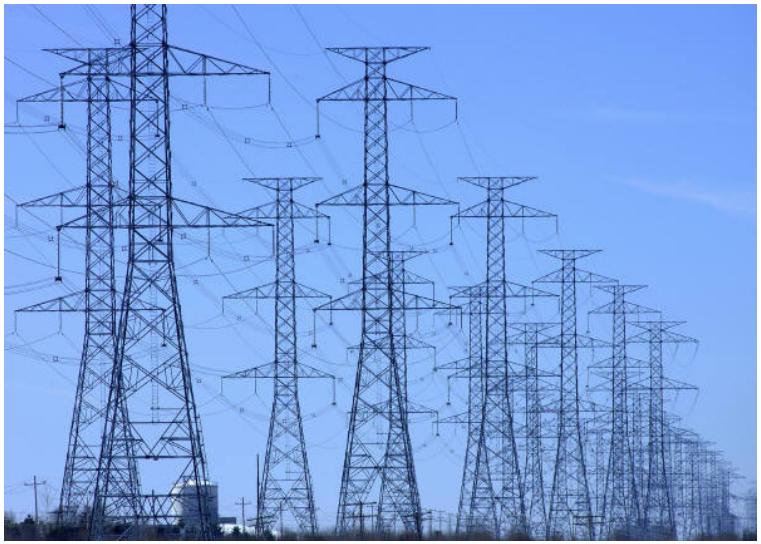

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