



The Solutions Network

Rochester, New York

Strategies to Manage Fuel Risks Supply-Side Perspective

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1

Agenda



- Strategic Energy Management
- Factors Impact Gas Price Volatility
- Strategies for Managing Price Volatility
- Managing Price Volatility – Core Elements
- Hedging Tools
- DESC Service Offerings
- Risk Management Plan Execution for Tobyhanna Army Depot
- Conclusions

Strategic Energy Management



- What does it mean in today's environment?
 - Price volatility due to imbalances b/t supply and demand
 - Understanding of financial and physical energy risk management
 - Ability to value risk w/ regard to reliability and cost
 - After deregulation and prior to 2000/2001, the emphasis was on **cost minimization**
 - Due to the increased volatility in the market, the emphasis has shifted towards **price stabilization**

Strategic Energy Management



What does it mean in today's environment?

- Develop strategic plan to mitigate risks through:
 - alternate energy sources
 - pricing alternatives
 - load management plans

Factors Impacting Gas Price Volatility



Demand Factors

- **Weather**
 - In short term, the most influential factor in pricing and volatility
- **Fuel Switching**
 - Little to no capability in commercial and residential sector
 - Reduced capability in industrial sector
 - Significant amount still exists in power generation sector
- **Oil Prices**
 - Determines price at which fuel switching is economical
 - When oil prices are competitive w/ natural gas prices, volatility is reduced
- **Economic Growth**
 - Growth of weather-sensitive loads and power generation likely to increase daily demand volatility, which will likely increase price volatility

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Factors Impacting Gas Price Volatility



Supply Factors

- **Production**
 - Declining productive capacity in existing supply areas
 - Growth in long term will come from "non-traditional" sources of supply
(e.g. Arctic, eastern Canadian offshore, deepwater gas in Gulf of Mexico)
- **LNG Imports**
 - Impact will depend on how the facilities are utilized (baseload vs peak or seasonal demand)
 - International market competition
- **Canadian Imports**



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Factors Impacting Gas Price Volatility



Infrastructure Constraints

- **Storage**
 - Natural gas storage levels have direct impact on natural gas price volatility
 - Important tool for price arbitrage and hedging
 - New storage technologies may help reduce price volatility
- **Pipeline Capacity**
 - Constraints during peak demand periods lead to price spikes

Speculative Interests

Speculators see volatility as a profit opportunity. Increased technical trading can cause the market to diverge from the fundamentals to create additional imbalances and volatility in the market.

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Price Volatility



**Figure 8. U.S. Natural Gas Spot Prices
(Base Case and 95% Confidence Interval*)**



*The confidence intervals show +/- 2 standard errors based on the properties of the model. The ranges do not include the effects of major supply disruptions.

Sources: History: Natural Gas Week; Projections: Short-Term Energy Outlook, July 2004.



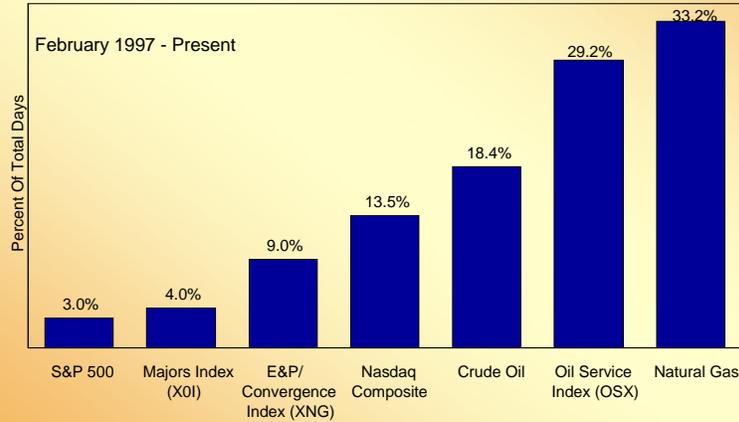
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8

Get Used To The Volatility



% of Days with a +/- 3% Move



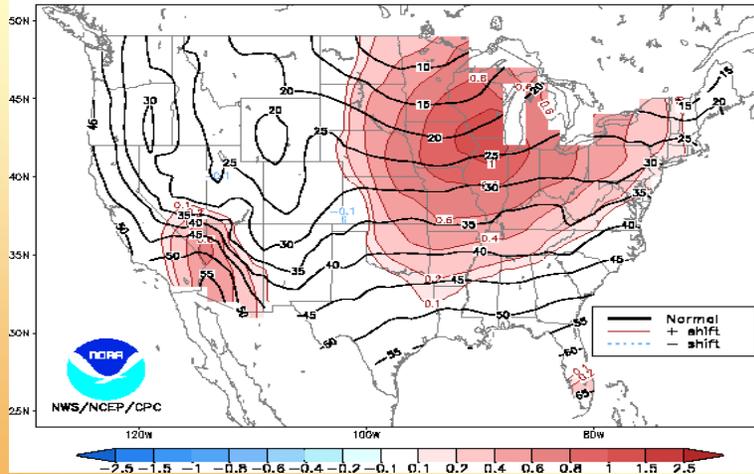
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9

Winter 2004-2005 Outlook



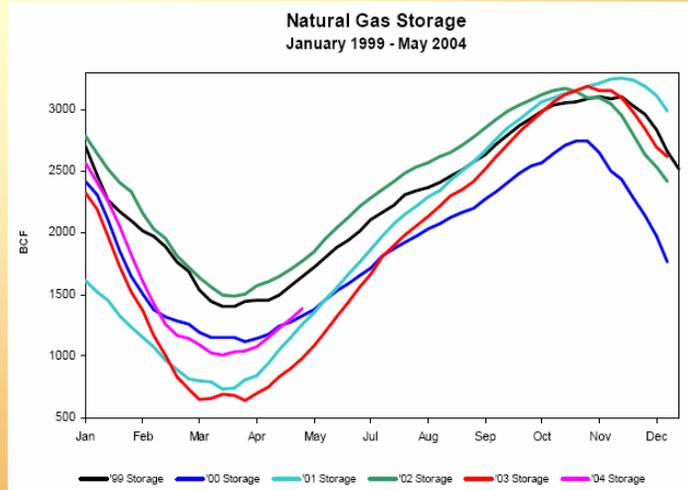
Outlook Shift of Center of Probability Distribution from Climatology Temperature Anomaly (degr F) Outlook, 6.5 Month Lead for DJF 2005



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10

Storage Inventories



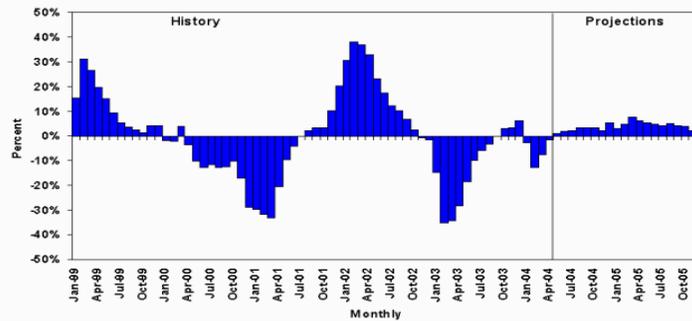
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11

Storage Outlook



Figure 8. U.S. Working Gas in Storage
(Difference from Previous 5-Year Average)



Short-Term Energy Outlook, May 2004



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12

Strategies for Managing Price Volatility



- **Management Strategies:**
 - Strategies, policies, and approaches designed to manage price volatility by allocating price risk among the market participants
 - May be adopted by individual participants.
- **Reduction Strategies:**
 - Strategies, policies, and approaches that may reduce energy price volatility by increasing the elasticity of supply and/or demand in the broader market
 - In general, these strategies require a fundamental change in the structure of the market and would need to be adopted broadly by market participants to be effective

Managing Price Volatility



- A strategy to manage price volatility involves allocating price risk among the market participants
- Re-allocation of risk is a “zero-sum” game
- Price stabilization is realized through a strategy of hedging natural gas supply costs
- Hedging strategy does not change the underlying volatility of the market

Managing Price Volatility (cont.)



- Hedging is not a risk-free activity. In any given period, there is a roughly equal chance that the cost of a hedged gas portfolio will be above market price as there is that it will be lower.
- A “fully hedged” gas supply portfolio does not guarantee that the gas will be acquired at the lowest possible price.
- Over the long term, the expected cost of hedging will be slightly above market due to associated transaction and administrative costs.

Managing Price Volatility Core Elements



- Market Segmentation
 - Differentiating customers based upon their risk tolerance and need for price stability
- Long-term contracts
 - Basic tool for allocating risk b/t parties
- Asset Diversification
 - Diversified portfolio of energy production or delivery assets can be used to balance price risk
- Financial Derivatives (e.g., futures, options, swaps)
 - Offer a method of offsetting price risk

Hedging Tools



- **Physical tools**
 - Storage
 - Long term firm transportation contracts
 - Multi-month fixed price supply contracts
- **Financial tools**
 - Financial derivatives (e.g., futures, options, swaps)
 - Contractual vehicles that convey a right and/or obligation to buy or sell a commodity at a specified price

DESC Service Offering *Supply-Side Management*



- **Physical tools**
 - Long term contracts
 - Indexed pricing ("first of month")
 - Firm fixed price
 - Combination of indexed and fixed price
 - Gain Sharing and Diversion Agreements
 - Permits contractor to sell all or a portion of the Government's interruptible or limited interruptible natural gas ordered and/or nominated for a delivery period on a spot market basis
 - Government switches to their alternative fuel (e.g. heating oil)
 - Net proceeds/profit from contractor's sell of natural gas shared between Government and Contractor as credit on future invoice
- **Financial tools**
 - Use energy marketer fixed price service offerings to provide customers with predictable and stable prices

DESC Supply-Side Management Options Matrix



<p>Procurement Strategy Short- or Long-term Contracts Pricing alternatives Indexed, Fixed Price or Combination Dual-fuel capabilities Impact of Demand-side Initiatives</p>	<p>Aggregation of Requirements By region By local utility company By pipeline Across Services</p>
<p>Risk Management Determine risk profile of customer Cost Minimization vs Price Stabilization Use of Financial Derivative Service Offerings of Suppliers</p>	<p>Vendor Selection Best Value Source Selection Technical capabilities Financial responsibility Industry experience Past performance Socio-economic commitment Price Risk Management Service Offerings</p>

DESC Service Offering Risk Management



- During contract performance, DESC or contractor may propose to change Indexed price to Firm Fixed Price (FFP) for a specified quantity and specified time period
 - Minimum duration of one month; Maximum 36 months
 - Quantity: 10,000 dekatherm increments (preferable)
 - One conversion per delivery month (not a hard business rule)
 - Actual NYMEX contract is between our contractor and an unknown third party selected by NYMEX thru their clearing house

- To execute firm fixed price conversion, DESC must have:
 - Minimum monthly gas consumption requirements
 - Maximum price ceiling per Dekatherm (can vary by month)
 - Concurrence for DESC to act on our customer's behalf
 - Budgetary approvals
 - MIPR coverage for DESC funded contracts
 - Funds statement for customer funded contracts

DESC Service Offering Risk Management



Tobyhanna Army Depot FY2003

	Quantities	65% Rounded	NYMEX	Commodity	Winter Adjustment	Citygate Price per	Citygate	
	02-R-0085	To 1000's	11/6/2002 10:22	Subtotal	Factor	DTH	Subtotal	
Dec-02	63090	41000	\$3.9250	\$160,925.00	\$1.0293	\$4.9543	\$203,126.30	
Jan-03	56548	37000	\$4.0400	\$149,480.00	\$1.0293	\$5.0693	\$187,564.10	
Feb-03	48116	31000	\$3.9850	\$123,535.00	\$1.0293	\$5.0143	\$155,443.30	
Mar-03	50024	33000	\$3.9250	\$129,525.00	\$1.0293	\$4.9543	\$163,491.90	
	217778	142000		\$563,465.00			\$709,625.60	Total
			WACOG	\$3.9681			\$4.9974	

DESC Service Offering Risk Management



Tobyhanna Army Depot FY2003

Summary of Estimated Cost Savings								
Dec-02	\$6,637.90	2.37%						FY03 plus FY02
Jan-03	\$36,700.30	10.22%						\$206,523.80
Feb-03	\$52,448.90	14.61%						
Mar-03	\$169,682.70	38.64%						
	\$265,469.80	18.47%						
	Percentage of reduction							
December Cost Calculations - w/o Strip					February Cost Calculations - w/o Strip			
EPA Firm	54261	\$5.1593	\$279,948.78		EPA Firm	53676	\$6.6893	\$359,054.87
Strip Calculations:	DTH	Cost/DTH	Subtotal		Strip Calculations:	DTH	Cost/DTH	Subtotal
EPA Firm	13261	\$5.1593	\$68,417.48		EPA Firm	22676	\$6.6893	\$151,686.57
FFP Firm	41000	\$4.9974	\$204,893.40		FFP Firm	31000	\$4.9974	\$154,919.40
	54261		\$273,310.88			53676		\$306,605.97
	Strip Cost Savings for December		\$6,637.90			Strip Cost Savings for February		\$52,448.90
January Cost Calculations - w/o Strip					March Cost Calculations - w/o Strip			
EPA Firm	59985	\$5.9893	\$359,268.16		EPA Firm	43312	\$10.1393	\$439,153.36
Strip Calculations:	DTH	Cost/DTH	Subtotal		Strip Calculations:	DTH	Cost/DTH	Subtotal
EPA Firm	22985	\$5.9893	\$137,664.06		EPA Firm	10312	\$10.1393	\$104,556.46
FFP Firm	37000	\$4.9974	\$184,903.80		FFP Firm	33000	\$4.9974	\$164,914.20
	59985		\$322,567.86			43312		\$269,470.66
	Strip Cost Savings for January		\$36,700.30			Strip Cost Savings for March		\$169,682.70

Conclusions (part 1)



- **Volatility in the market will remain for the foreseeable future**
- **Energy managers must understand financial and physical energy risk management and have the ability to value risk w/ regard to reliability and cost**
- **A strategic plan to manage fuel costs must include an integrated approach to energy management**

Conclusions (final)



- **Customers must determine their level of risk tolerance and need for price stabilization**
- **A price risk mitigation strategy will not guarantee lowest cost**
- **Success of strategy is measured by the ability to implement and execute a risk management plan that is agreed upon in advance and meets budgetary goals**