Gas Hedging

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Topics

- Basic things to know about gas hedging
- Different hedging options
- Policy and economic issues
- Regulatory options

Definition of Hedging

- An economic activity whereby an individual or group uses the market to protect an existing or anticipated physical market exposure from unexpected or adverse price fluctuations.
- Example of a utility purchasing futures contracts to cover future months' requirements and to fix their purchase price.
  - When the month for which the utility requires physical gas approaches, it will sell its futures contract and purchase physical gas.
  - As the two transactions occur almost simultaneously, their prices cancel each other (with an adjustment for basis to account for the difference in the spot price at the Henry Hub and the local delivery point).
  - The result is that customers pay the original price of the futures contract for the physical gas they purchase from the utility.

Basic Things to Know about Hedging

- High natural-gas price volatility supports consideration of hedging by utilities and other large gas consumers, including with financial instruments (which may have lower costs and more liquidity than physical hedges).
- Since the beginning of this century, state commissions have conveyed to gas utilities that buying gas at the market or spot price may no longer be acceptable (i.e., may be “imprudent”).

Basic Things To Know -- *continued*

- Hedging may not always be desirable.
- State commissions vary in how much upfront guidance they give gas utilities regarding hedging activities.
- Almost always, more stable and predictable prices by way of hedging involve a long-run cost to consumers or other gas purchasers (no "free lunch"); the pertinent question then becomes: *How much should a utility pay (e.g., in the form of an options premium) to have more stable and predictable prices?*

Basic Things To Know -- *continued*

- The fundamental answer to the previous question depends upon *how much customers are willing to pay to have more stable and predictable prices or to avoid price spikes.*
- In the finance literature, firms primarily hedge to stabilize cash flow; but with PGAs and FACs, the biggest beneficiaries of hedging would be customers.

Basic Things To Know -- *continued*

- Hedging resulting in higher prices (*ex post*) to consumers can still be regarded as successful and prudent.
- Hedging has the risk of a utility and its customers paying above-market prices.
- A common position of state commissions is to tell the gas utility that: “go ahead and hedge, we won’t stop you, but we’ll evaluate your hedging strategy and the associated activities and costs after-the-fact with a prudence review.”

Basic Things To Know -- *continued*

- Although PGAs/FACs may weaken incentives for hedging by utilities, the threat of cost disallowance if the spot price of gas suddenly rises can induce utilities to hedge.
- Financial hedging instruments can cost less than physical hedging alternatives such as physical contracts and storage.
- Hedging is an integral part of any commodity market where prices are volatile.

Basic Things To Know -- *continued*

- How much to hedge and how to hedge are more complicated and subjective than traditional gas-procurement decision-making. Thus, hedging is highly susceptible to second-guessing.
- Hedging can be viewed as a value-added service distinct from traditional gas procurement practices (namely, the value of customers not having to pay high prices)

Gas Procurement Options

- Multi-month contracts
- Month-ahead contracts
- Daily spot purchases
- Stored gas

Different Hedging Options: Physical and Financial Hedges

- Physical fixed-price contracts
- Staggered contracts
- Financial instruments (e.g., futures contracts, options, swaps, collars)
- Storage
- Gas supply diversity (e.g., connected to at least 3 supply basins)
- Fuel and power plant diversity

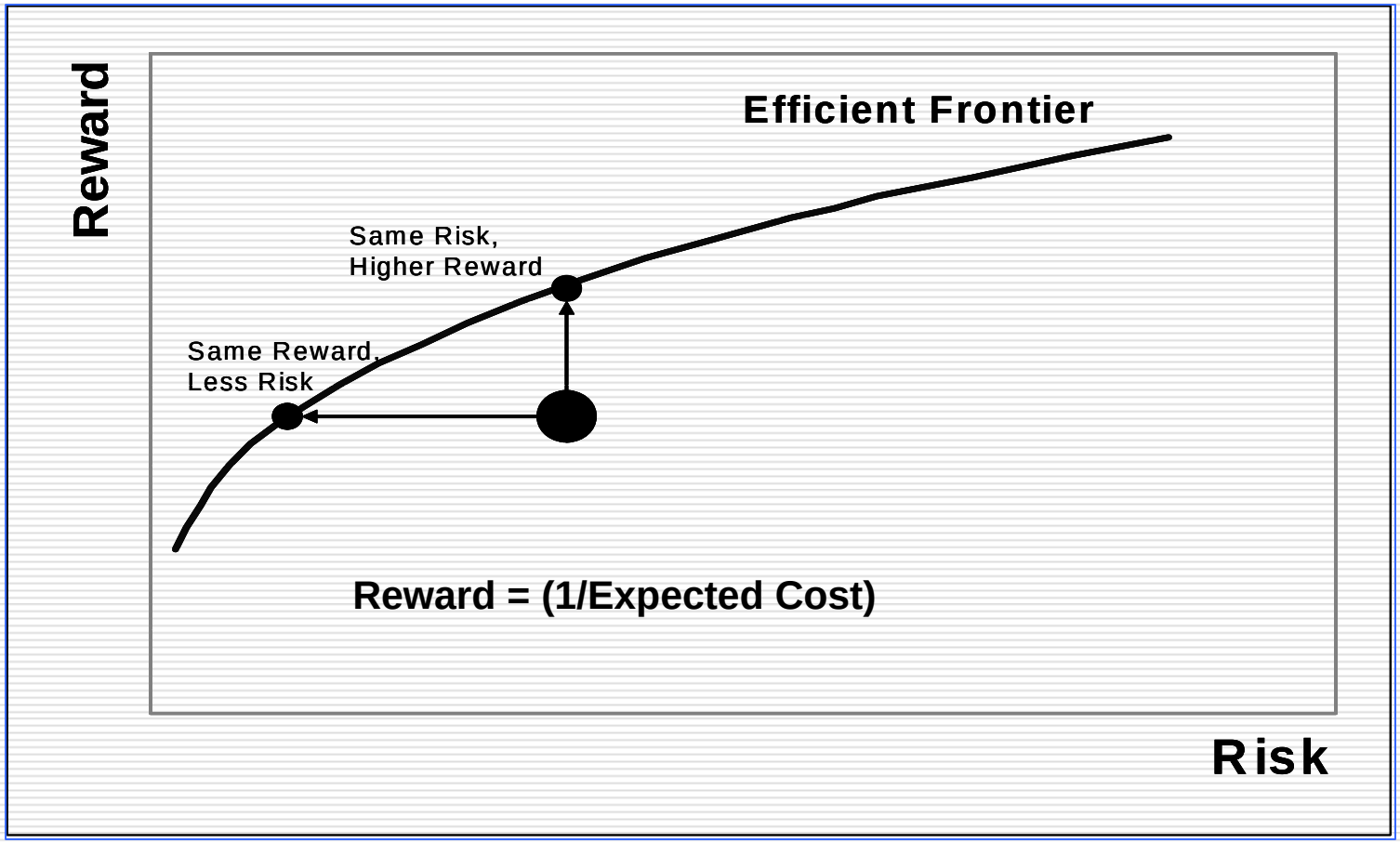
Hedging Benefits from Fuel Diversity

- Lower volatility in electricity prices
- Environmental benefits
- Improved electric reliability
- Lower risk from changes in governmental-regulatory policies
- Compatible with economic conditions in a highly uncertain environment
  - It provides more flexibility for a electric power system to (1) cope with unexpected events and (2) respond to updated information
- Overall, fuel diversity acts as a built-in hedge by reducing risk for electric consumers, power producers, and society as a whole

Factors Affecting the Risk of a Resource Portfolio

- Risks of individual resources
- Shares of individual resources in the portfolio
- Covariances (or correlations) between the different resources

Portfolio Analysis: Tradeoff between Risk and Expected Cost



Examples of Financial Instruments

- Futures contracts
- Swaps
- Caps
- Collars

Futures Contracts

- *Definition:* an agreement to purchase or sell gas for delivery in the future: (1) at a price that is determined at the beginning of the contract, (2) which obligates each party to the contract to fulfill the contract at the specified price, and (3) which may be satisfied by delivery or an offset
- *Illustration:* On August 1, 2008, a January 2009 gas futures contract sold for $6 per MMBtu; the January 2009 contract calls for 10,000 MMBtus of gas to be delivered over the month; by purchasing the futures contract at $6, the utility effectively locks in that price for its customers, notwithstanding the fact that the utility will actually buy the physical gas during January 2009 under a separate contract at the market price

Swaps

- *Definition:* transaction where parties exchange payments based on changes in the price of gas or a market index, while fixing the price they effectively pay for the physical commodity
- *Illustration:* Prairie State Gas Company purchases a swap from ENROCK trading company to lock in a fixed price of $5 per MMBtu; the utility continues to pay its supplier at index; at prices over $5, ENROCK pays the utility the difference; at prices below $5, the utility pays ENROCK the difference; the net price remains at $5 for the duration of the agreement

Caps

- *Definition:* a contract between two parties, whereby the buyer is assured that she will not pay more than a given maximum price
- *Illustration:* Prairie State Gas Company purchases a cap from ENROCK with a $6 strike price; the utility pays an upfront premium to ENROCK to protect the desired volume; should the market price rise above $6, ENROCK pays the difference between the strike price and the market price; if market prices fall below $6, the utility can discard the cap and buy gas in the spot market

Collars

- *Definition:* a contract between two parties, whereby the buyer is assured that he will not have to pay more than some maximum price, and whereby the seller is assured of receiving some minimum price
- *Illustration:* Prairie State Gas Company wishes to ensure it pays prices between $5-6; the utility subsequently purchases a $6 cap and sells a $5 floor, effectively "collaring" the amount to be paid; if the premiums paid/received are equal, the transaction is deemed a costless collar

Policy and Economic Issues

- Why should a utility hedge? Who are the major beneficiaries?
- How much should it hedge? How much should it spend on hedging?
- How should a utility hedge? How much should it hedge with storage and physical contracts, and with financial instruments?
- What role should the commission play in the development of a hedging strategy?

Policy and Economic Issues -- *continued*

- Should a commission give a utility guidance on the development of a hedging strategy?
- How should a commission retroactively evaluate a utility's strategy and activities?
- How should a utility's hedging costs be recovered from its customers?
- What should be the essential components of a hedging strategy?

Policy and Economic Issues -- *continued*

- What incentive does a utility have to hedge versus not to hedge?
- Should a utility be active in changing its tactics in response to changed market conditions?
  - If so, does it have the incentive given that it would require active management, continuous monitoring and the constant accumulation of market intelligence?
  - Would the utility be more susceptible to a prudence review since it would have to make more decisions?

Regulatory Options

- Taking a pro-active posture
  - Laying out guidelines or “rules of the road”
  - Evaluating the reasonable of a utility’s hedging strategy before it is executed
  - Evaluating the prudence of a plan’s execution for determining cost recovery
- Rationale for a pro-active commission
  - How much to hedge and how to hedge mainly affect customer (rather than utility shareholder) welfare, thus justifying commission and non-utility involvement
  - Hedging is highly susceptible to second-guessing or opportunism by regulators
  - It should help to narrow the scope and incidence of after-the-fact prudence reviews
  - It avoids placing a utility in a dilemma – no hedging versus hedging with no commission guidance.

An Example of Regulatory Guidelines

- Establish the need
- Keep a hedging strategy as simple as possible
- Articulate the objectives of a hedging strategy
- Identify all hedging costs
- Establish reporting requirements
- Know the utility's hedging expertise
- Articulate the prudence criteria (i.e., the conditions under which the commission would allow recovery of hedging costs)

Regulatory Options -- *continued*

- In establishing a prudence standard for hedging, a commission might want to
  - Define an acceptable level of price volatility (or consumer risk tolerance toward price volatility)
  - Define an acceptable average cost for gas, accounting for the costs associated with hedging
- Second-guessing and micromanaging should be avoided
  - Commissions should not (and really should not want to) tell utilities how to hedge
  - Second-guessing is contrary to the traditional prudence standard and, in addition, creates distorted incentives for utility hedging
  - But, according to the prudence standard, a commission should maintain authority to evaluate the reasonableness of (1) a hedging strategy ex ante, and (2) the execution of the strategy

Regulatory Options -- *continued*

- Another regulatory response is to do nothing until the utility requests recovery of hedging costs (Is this a good policy? If not, what is wrong with it?)
- Degree of regulatory commitment – what would be preferred?
  - *Full commitment* (e.g., pre-approval of a hedging plan and all of its costs)
  - *Partial commitment* (e.g., pre-approval of a hedging plan but not its costs; upfront guidelines)
  - *No commitment* (e.g., no guidance but after-the-fact prudence review)