



# Arizona Public Service Company Commodity Hedging Workshop

**March 7, 2008**



# Commodity Hedging Workshop

## General Purpose

- Overview of why we hedge (price volatility)
- Discussion of various hedge tools
- Review current commodity hedge program
- Discuss enhancements to current hedge plan



# Commodity Hedging Workshop

## Overall Objective

- Solicit feedback/comments from customer group
- Ensure stakeholders/customers appreciate market risks
- Consider feedback into hedging strategy
- Propose extension of hedge plan with customer input
- Seek regulatory approval of hedge program in 2008



# Commodity Hedging Workshop

## What is hedging?

Defined as: “to enter into transactions that will protect against loss through a compensatory price movement

Hedging:

- Reduces exposure to normal commodity price volatility
- Can act to stabilize costs (in our case, fuel costs)



# Commodity Hedging Workshop

## APS and Commodity Hedging

- Nuclear and coal prices historically hedged (fixed price contracts)
- Initiated commodity hedge program for natural gas and purchased power in late 1990's
- Concerns related to impact of price volatility to customers
- Prefers commodity hedge approach with minimal risk



# Commodity Hedging Workshop

## Liberty Group Fuel Audit Process

- Spring/Summer 2006
- Review of fuel procurement methods and decisions
  - Included assessment of energy risk management functions
- Audit of Organizational structures, staffing, and responsibilities
- Thorough assessment of various fuel related policies, procedures, computer systems and decision making tools.



# Commodity Hedging Workshop

## Liberty Group Fuel Audit Results

- “APS has designed and operates a sound hedging program”
- “The Company’s Energy Risk Management Guidelines and Procedures and its administration of its risk management program are as strong as any that Liberty has examined.”
- “Liberty found the capabilities of the systems and staff involved in hedging to be strengths”



# Commodity Hedging Workshop

## Liberty Group Audit Recommendation –August 6, 2006

- Engage stakeholders in a discussion of hedging program objectives
- Establish ways to explore the needs, expectations, concerns, values, and preference of customer groups.
- Rationalize (if possible) customer expectations and concerns
- Provide report to the Arizona Corporation Commission



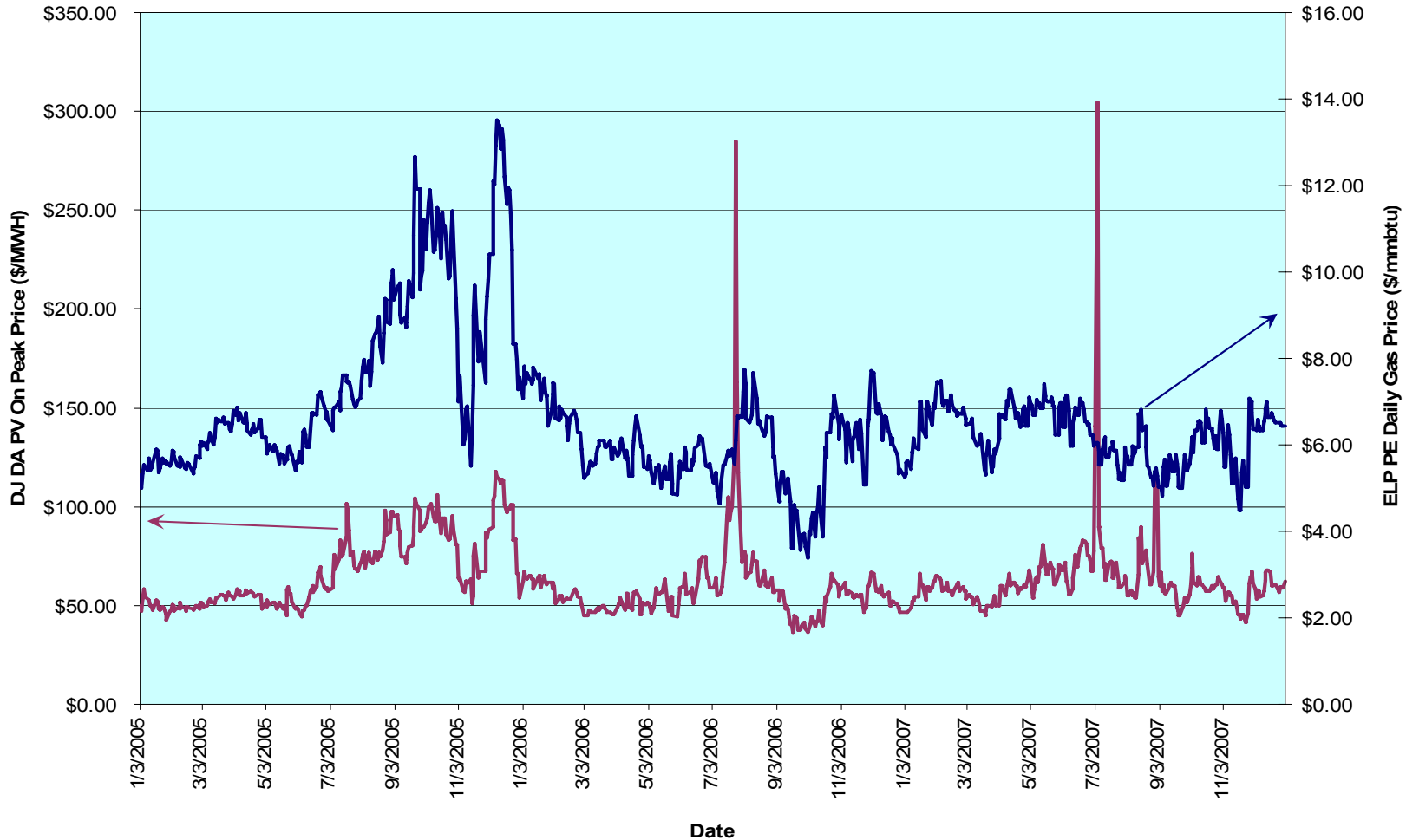
## Why Hedge?

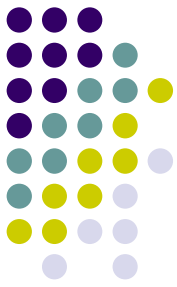
- Reduce customer exposure to market price volatility (***OBJECTIVE***)
- Limit exposure to significant pricing events (***EXPECTATION***)
- Establish “predictable” range of fuels costs (***VALUE***)
- Systematic, well defined hedge strategy (***A PLAN***)

# Recent Commodity Price Volatility



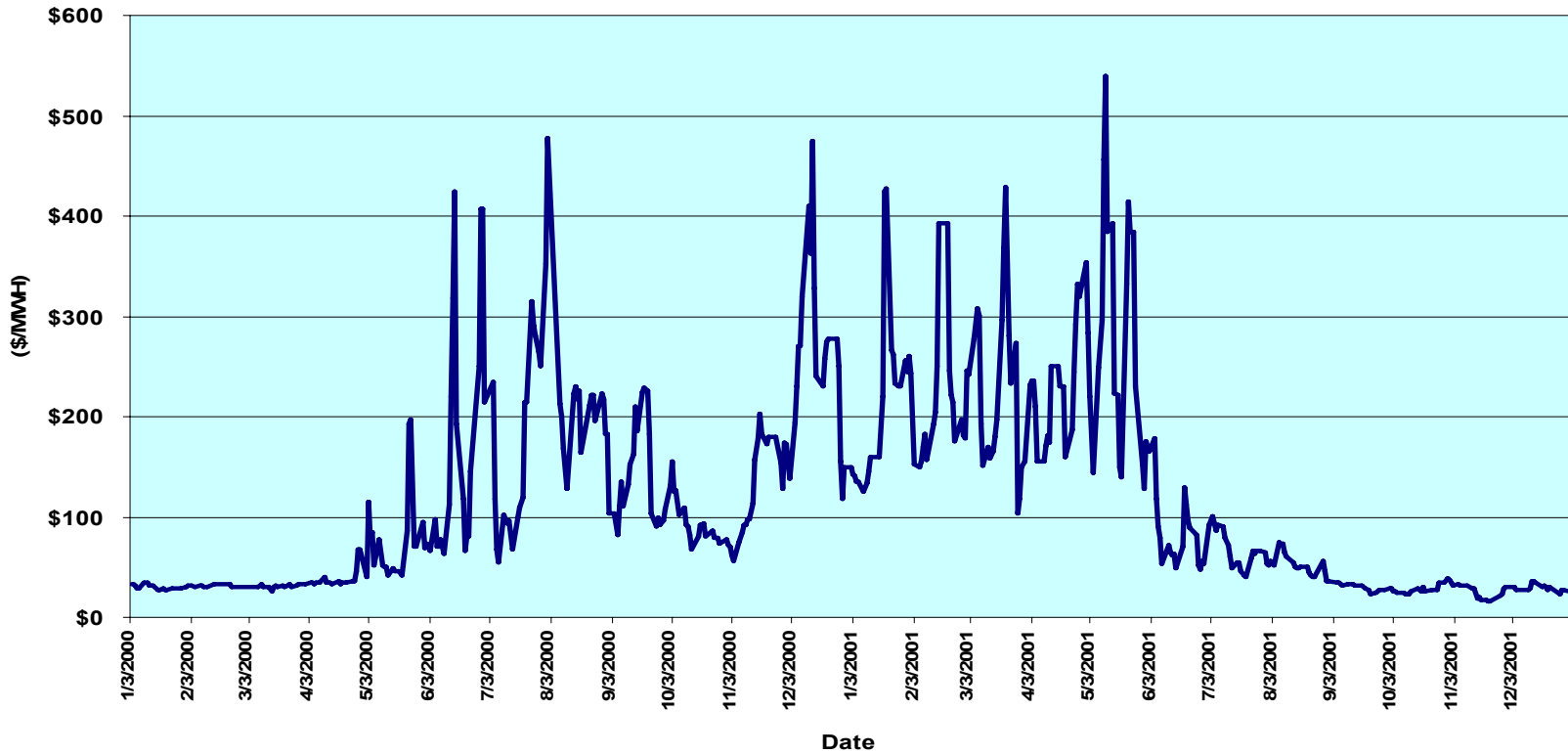
Palo Verde Day Ahead On Peak Power & El Paso Permian Daily Gas Price  
Calendar 2005 - 2007





# This is volatility!

## Palo Verde Day Ahead On Peak Pricing Calendar 2000/2001





## How is a Hedge Plan developed?

- Exposure to price volatility is measured
- “Do we have the tools to manage”
  - Procurement sources/ market liquidity
  - Personnel
  - Risk Controls/ Credit/Contracts
  - Credit – financial strength to carry out
  - Modeling tools



# What do you hedge with?

## Financial Contracts

- NYMEX (New York Mercantile Exchange)
- ICE (Web –based trading platform)
- Over the counter
- Highly liquid

## Physical Contracts

- Typically between producer of commodity and buyer
- Entails delivery obligation

## Financial or Physical Options

- Less price certainty = higher risk
- Physical options not liquid



# Commodity Hedging Workshop

## Commodities Hedged by Others

- US Dollar
- Gold
- Orange Juice
- Crude Oil
- Corn

## Commodities Hedged by APS

- Natural Gas
- Electricity



# Implied Price Volatility\*

March 2007

## Prompt (next) Month Price Volatilities

- US Dollar: 5% to 7%
- Gold: 10% to 15%
- Orange Juice: 25% to 30%
- Crude Oil: 30% to 40%
- Corn: 35% to 45%
- **Natural Gas: 40% to 60%**

\*Implied price volatility refers to the expected change in price based on the relationship between the value of option premiums and the underlying product



# APS Hedging Program

## Hedge Strategy

- Historically hedged gas/power since late 1990's
- Intent is to reduce price volatility

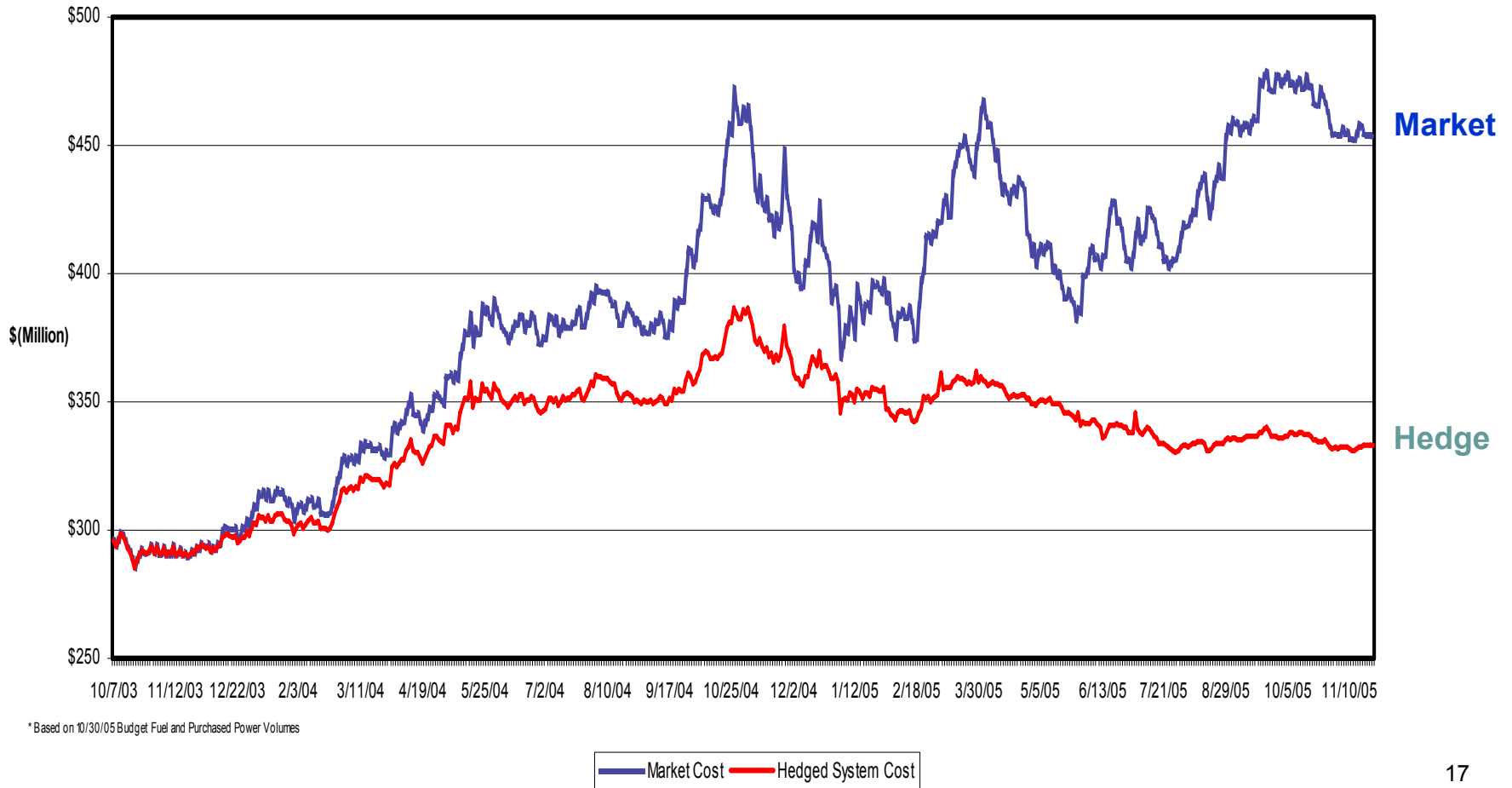
## Current Hedge Plan

- Systematic hedge approach three years forward
- Lowest volatility risk near term (forward 12 months)
- **Required compliance dates**
- **No market speculation**
- Combined natural gas and purchased power

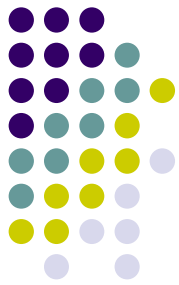


# Effect of Hedge: 2005

APS System Hedge Report  
Comparison of Hedge Costs to Market  
2005

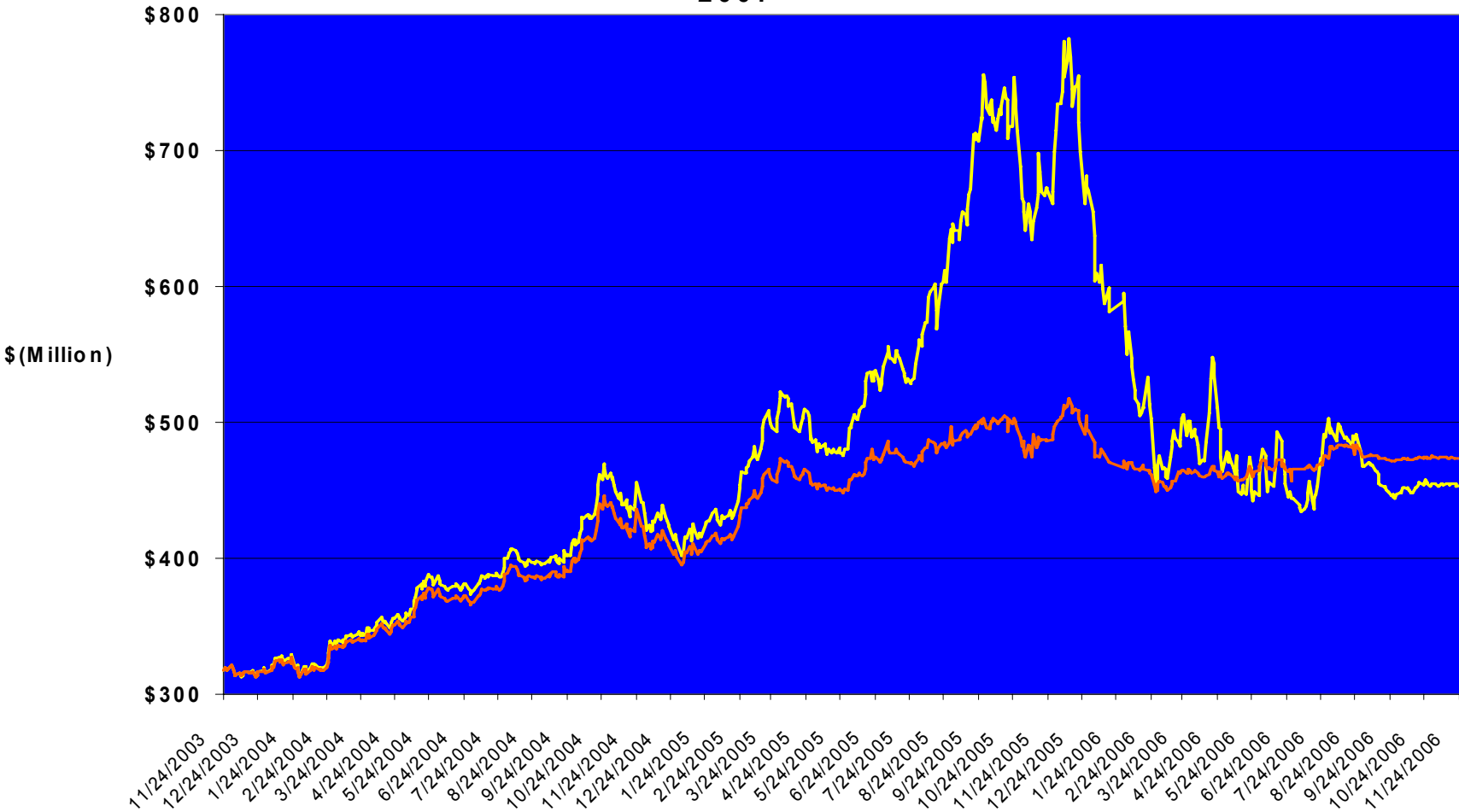


\* Based on 10/30/05 Budget Fuel and Purchased Power Volumes



# Effect of Hedge: 2007

APS System Hedge Report  
Comparison of Hedged Costs to Market Costs  
2007

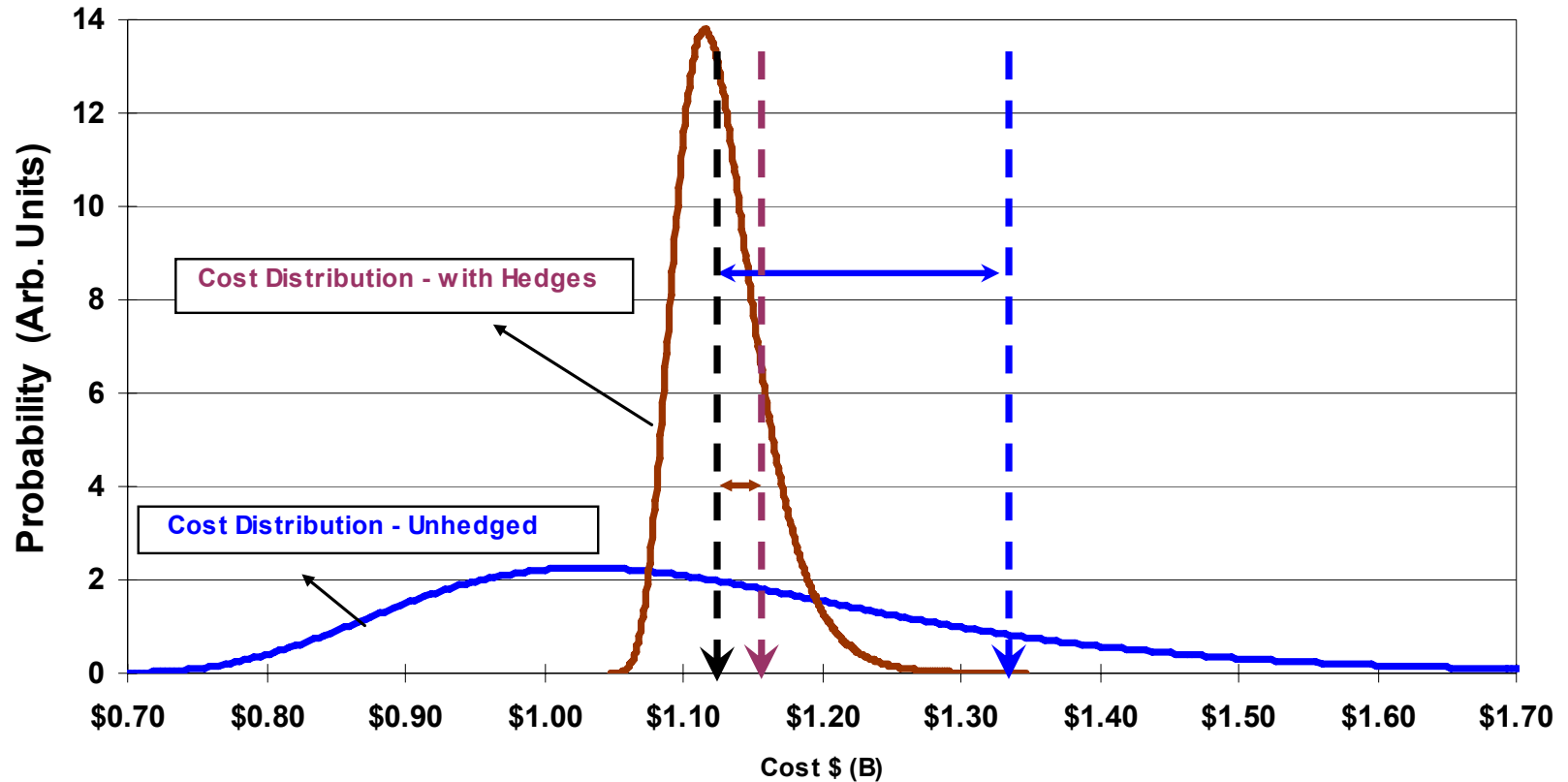


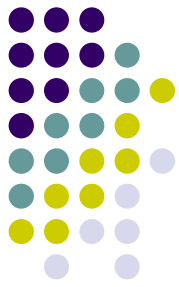
\* Based on budget fuel and purchased power volumes



# Historical Illustration of Hedge Impact

Based on 85% of Commodity Hedged



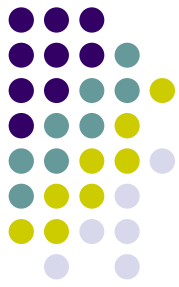


# APS Hedging Program

## Current Hedge Plan Specifics

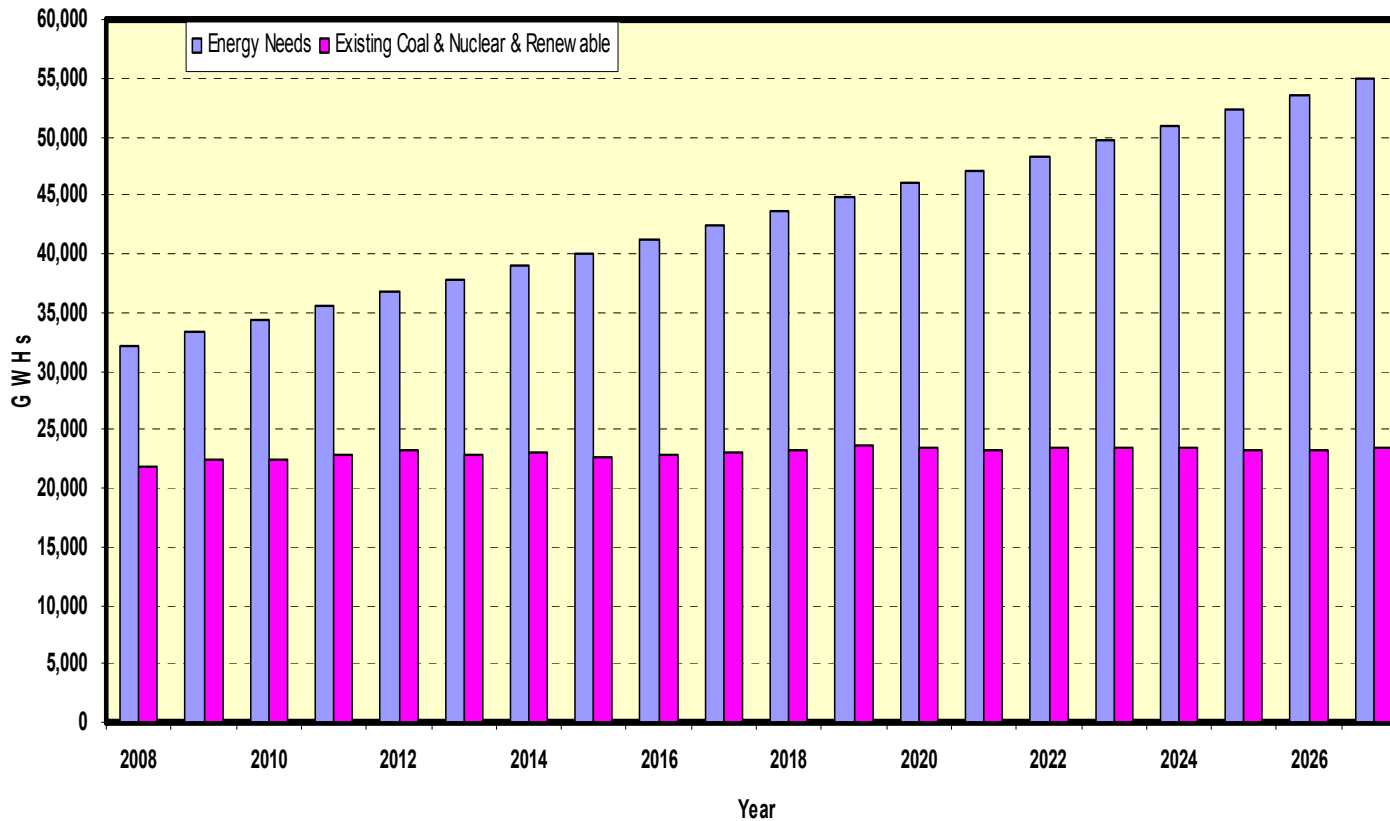
- Rolling three years forward
- 85% of price risk hedged in Year One
- 50%-60% in Year Two
- 30%-40% in Year Three
- Natural gas basis risk hedged
- Compliance independently monitored

***Proposal to extend to five years***



# Why a Five Year Hedge Plan?

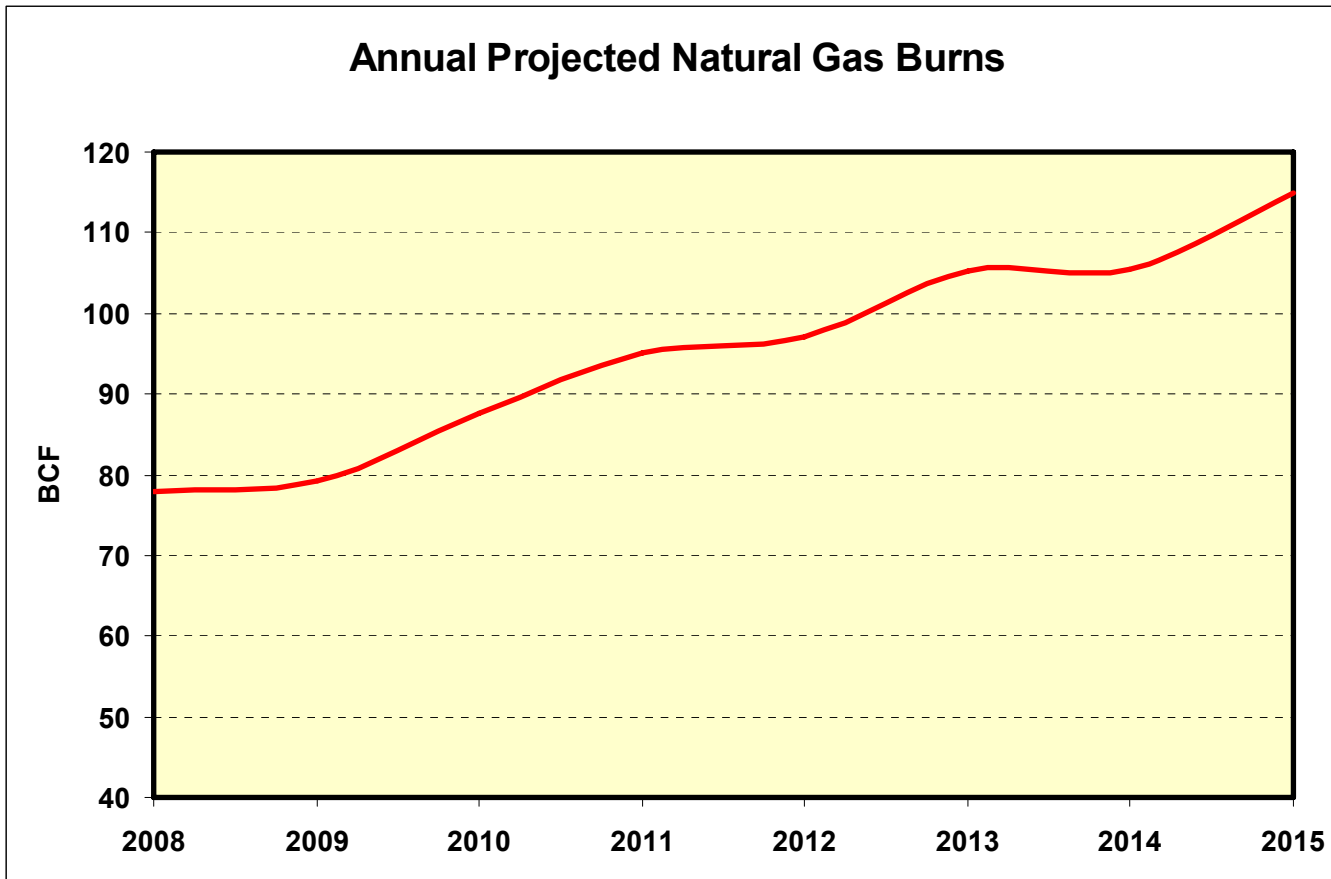
## Energy Needs Continue to Grow





# Why a Five Year Hedge Plan?

## Increased Exposure to Natural Gas Pricing

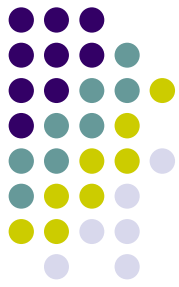




# Why a Five Year Hedge Plan?

## Global Natural Gas Issues

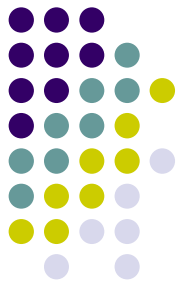
- Strong demand in China and Japan
- European growth –reliance on Russia and LNG
- Reduced Canadian Imports – coal tar sands
- LNG – future source with supply uncertainty
  - Costa Azul – likely limited supplies until 2010
- General decline in US conventional supplies outside of Colorado and Wyoming (Rockies)
- World's long term supply in Russia and Middle East



# Proposed Five Year Hedge Plan

## Five Year Hedge Plan Proposal

- Rolling five years forward
- 85% of price risk hedged in Year One
- 50%-60% in Year Two
- 30%-40% in Year Three
- 15% to 25% in Year Four
- 5% to 15% in Year Five
- **Required compliance deadlines**
- **No market speculation**



# Will the market be sufficient to expand to a five year plan?

## Market liquidity vastly improved

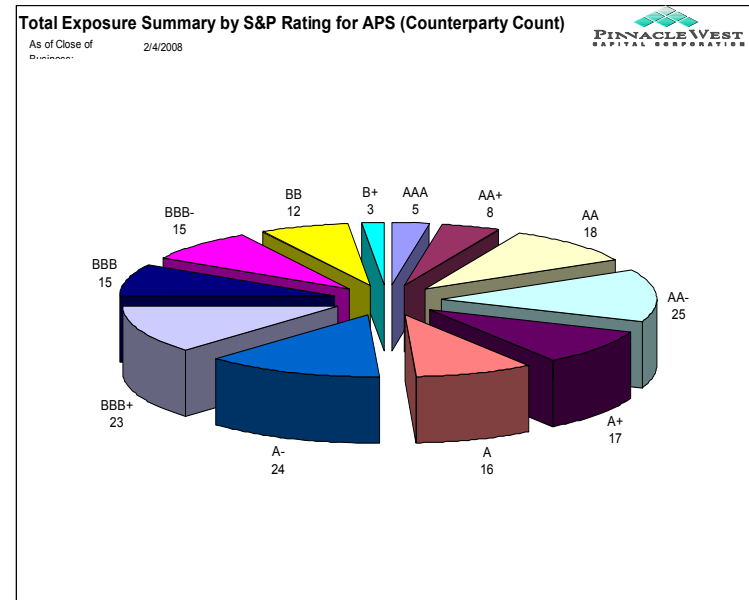
- NYMEX transacts through 2013
- ICE: trades five years forward
- OTC = limited only by credit
- Influx of banking institutions
- Electricity = moving fast to financial

# Will credit be adequate if we expand to a five year plan?



## Market Credit is Viable

- Over 150 financial/physical counterparties
- Most with higher credit ratings than APS
- Many with five year tenor
- Constant review for changes

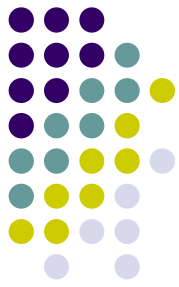




# Risks Associated With Hedging

## Uncertainty of Customer Load

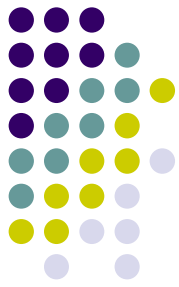
- Changes in customer load growth
- Effects of demand side management programs and customer conservation
- Changes in demand due to technology
  - Increase or decrease?
  - Plasma screen vs. efficient air conditioning?



# Risks Associated With Hedging

## Credit/Collateral

- Current collateral requirements are based on sustained/ improved credit.
- Move from three to five years does not significantly increase collateral risk based on current credit rating
- Ability to effectively implement hedge plan is dependent on APS financial status.
  - *Credit rating*
  - *Liquidity to support collateral arrangements*
  - *Predictability of cost recovery*



## Summary

- Purpose of hedging is to reduce price volatility
- Natural gas/purchased power needs expected to increase
- Natural gas volatility likely to remain high
- Extension to five years helps provide more stable prices to customers
- Regulatory approval of change to hedge plan necessary
- ***We need your feedback!***