

Cook Inlet Natural Gas Demand

Presentation to

South Central Alaska Energy Forum

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Division of Oil and Gas

September 20, 2006

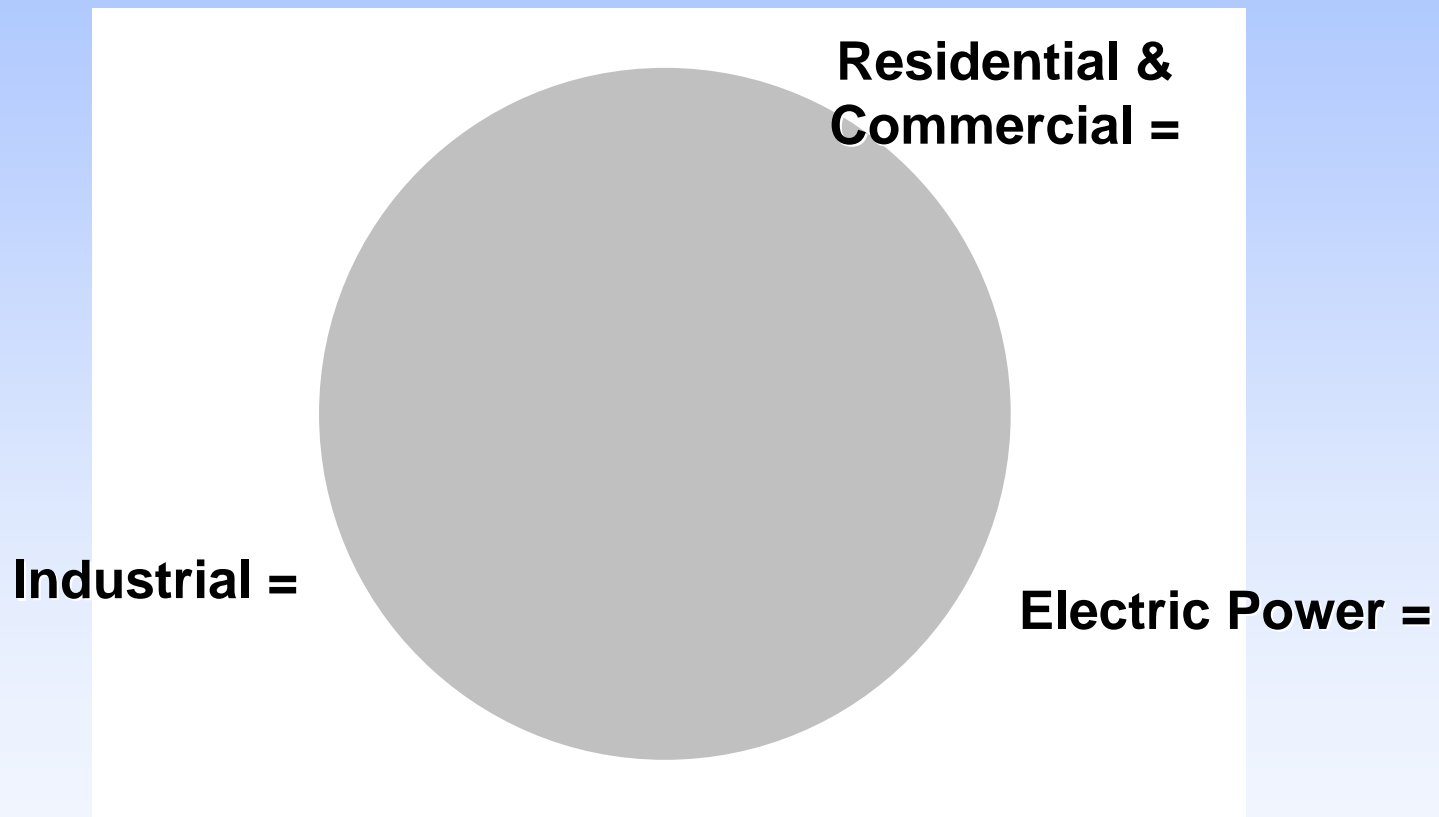


Alaska Department of
**Natural
Resources**

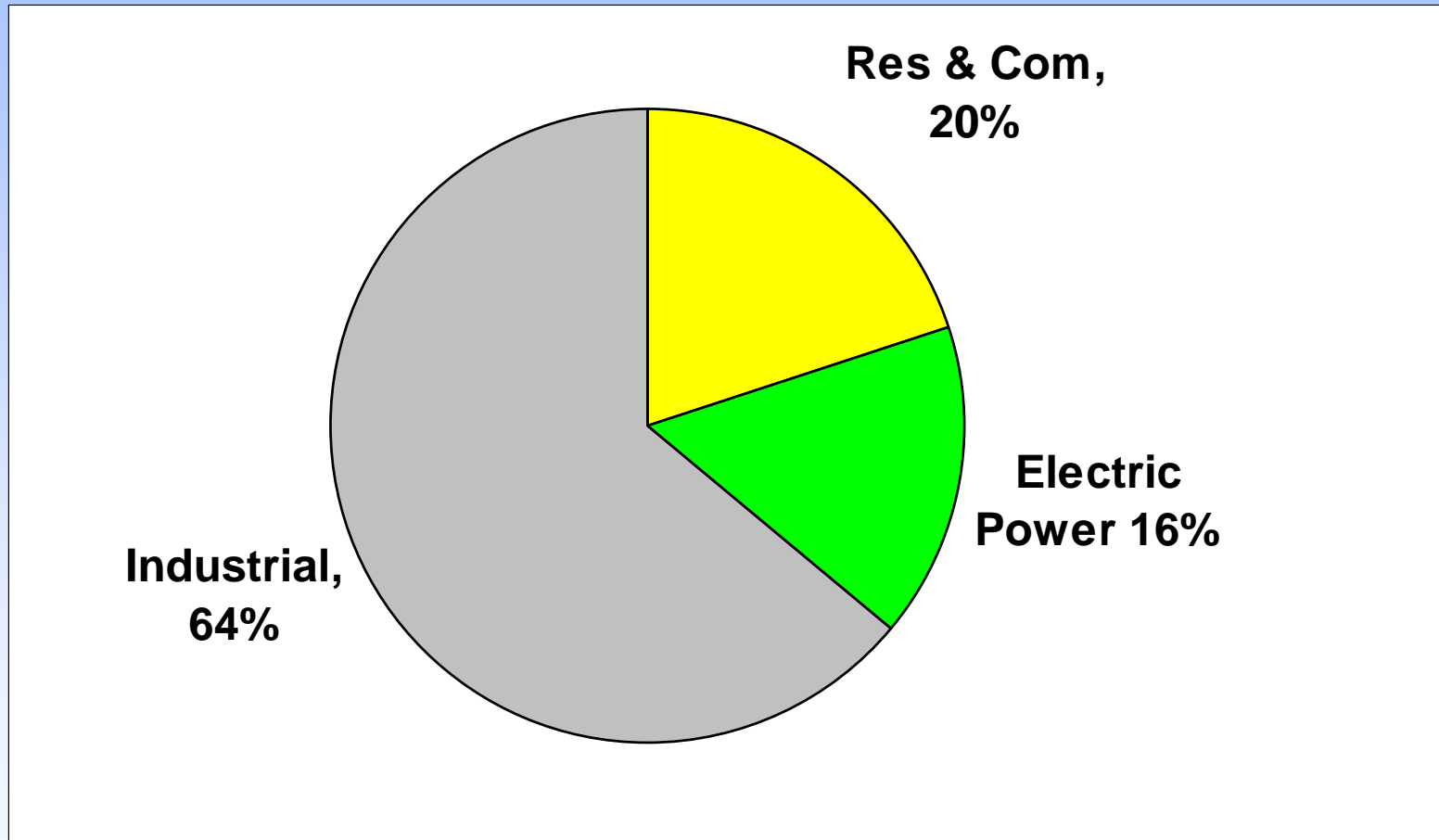
Major Points Covered In Presentation

- A. Structure of Demand
- B. Determinants of Demand
- C. Outlook and Policy Implications

Total Gas Consumption in 2005 = 207 Billion Cubic Feet (Bcf)



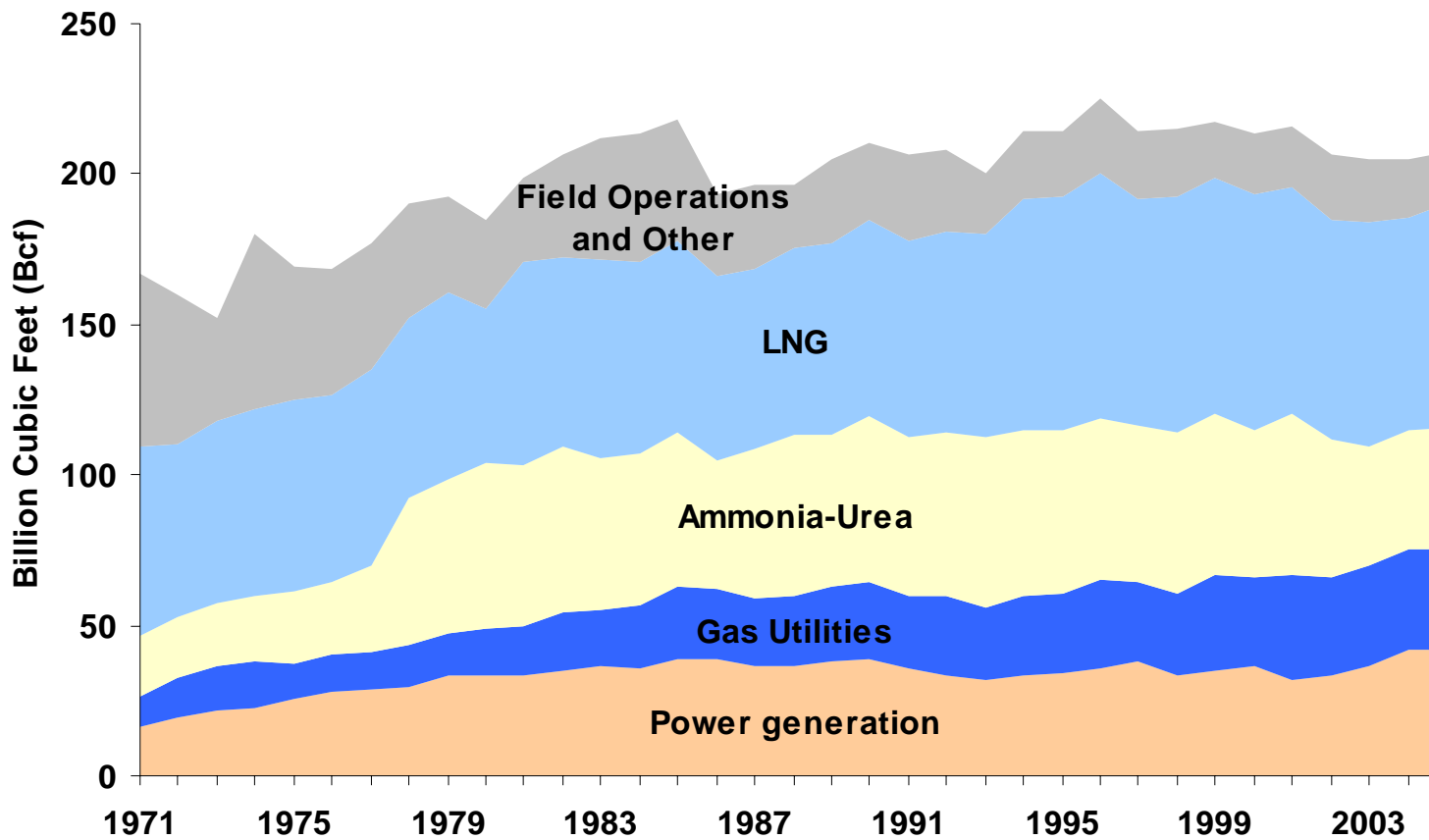
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Annual Average Natural Gas Consumption by Major Group

		2005		1996-2005	
		<u>(Bcf / Yr)</u>	<u>(%)</u>	<u>(Bcf / Yr)</u>	<u>(%)</u>
Res & Com		33.3	20%	36.4	17%
Electric		41.8	16%	31.1	15%
Industrial		132.3	64%	145.1	68%
	LNG	74.9	36%	76.0	36%
	Fertilizer	40.4	20%	48.3	23%
	Field Ops	17.1	8%	20.8	10%
Total		207.4	100%	212.6	100%

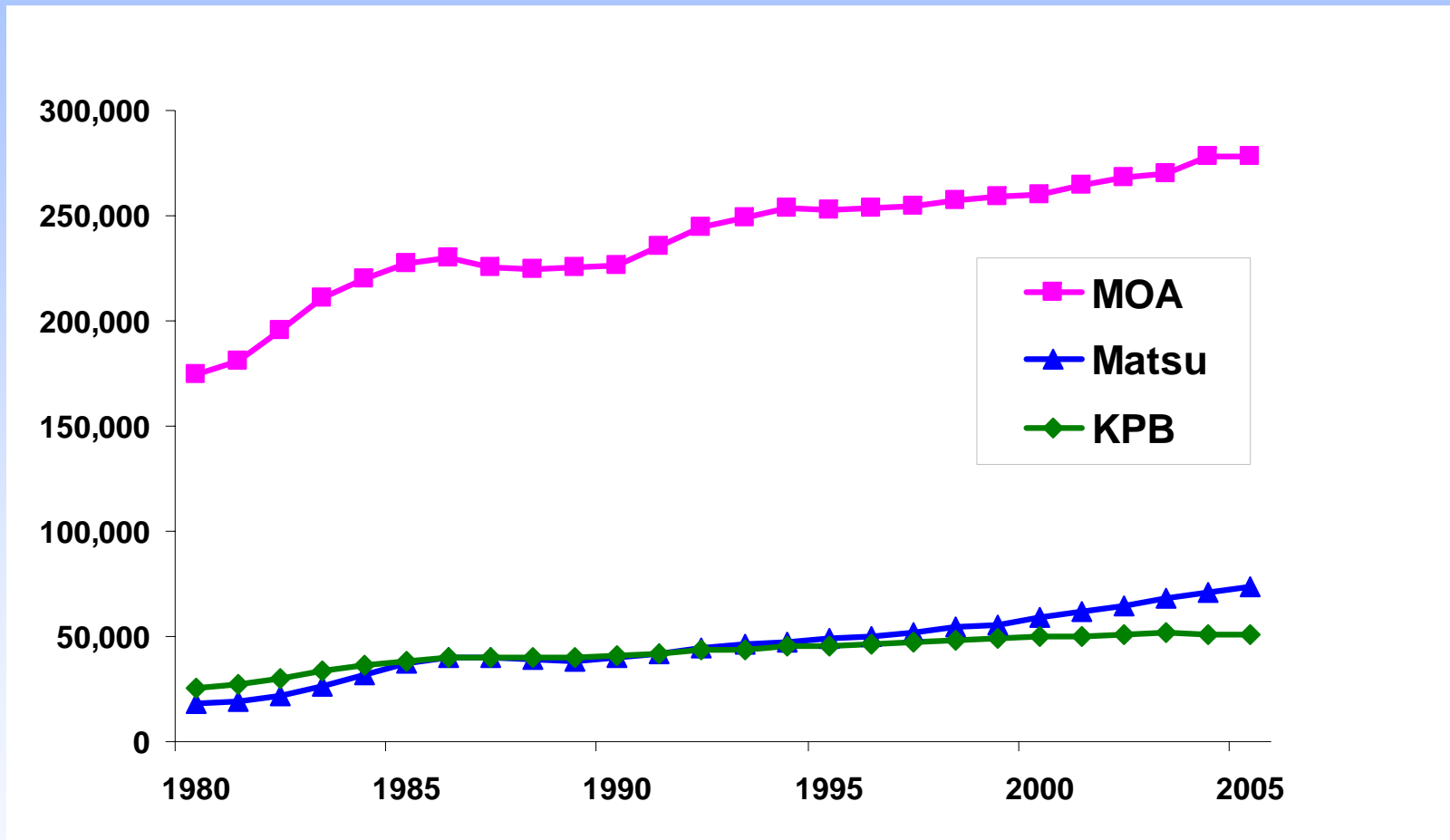
Annual Average Natural Gas Consumption by Major Group 1971 - 2005



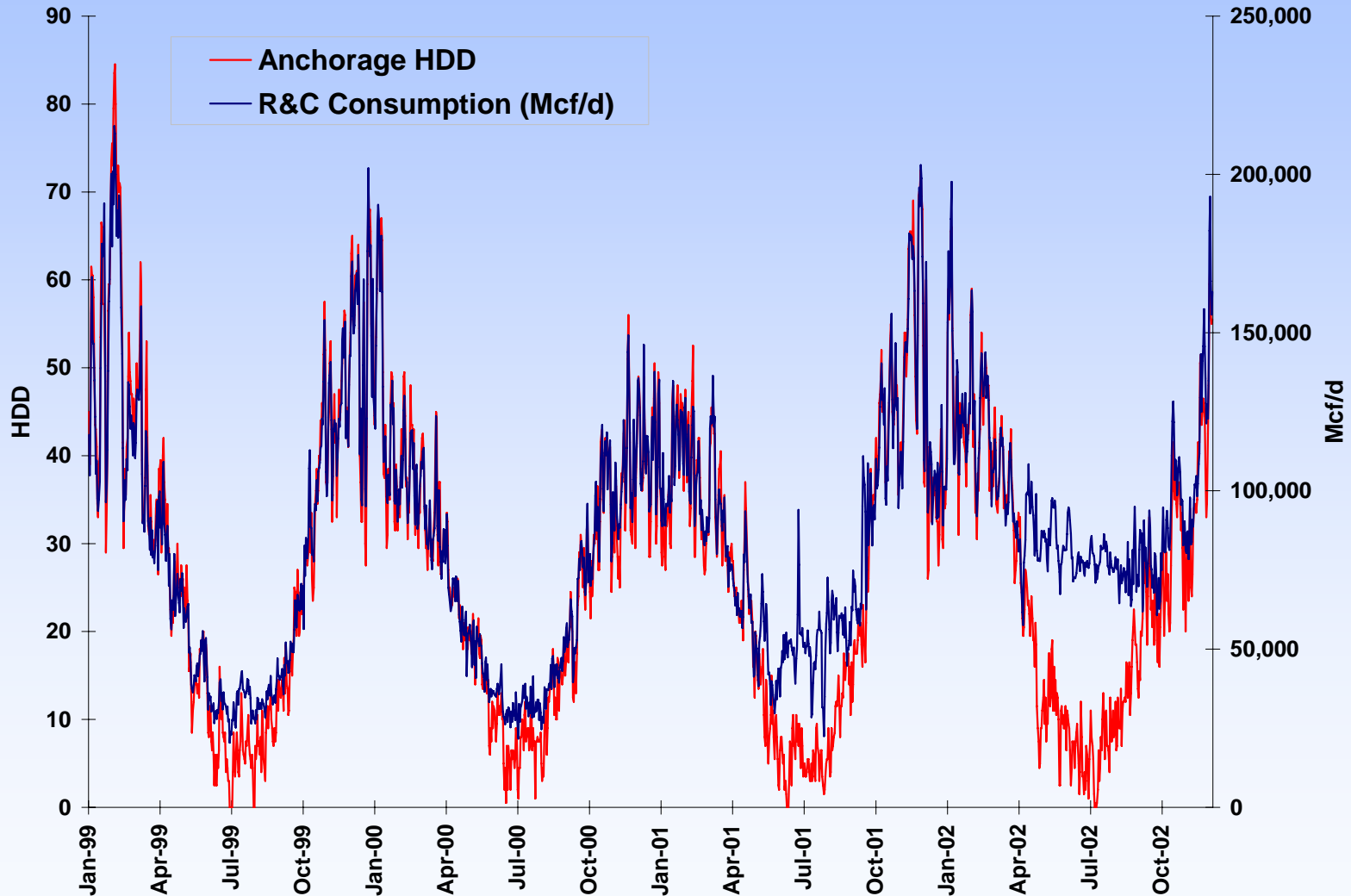
Residential & Commercial

- Growth driven by South Central Economy
 - South Central Pop Growth 1980-05 = 2.5%
 - Expect R&C >1.2% per year through 2018
 - Housing Stock
- Dependent upon Natural Gas
 - Historically inexpensive
 - Clean, efficient fuel
- Fuel Oil
 - Former fuel of choice
 - \$18.77 Mm Btu Equivalence
- Seasonality and Deliverability
- Price Sensitivity

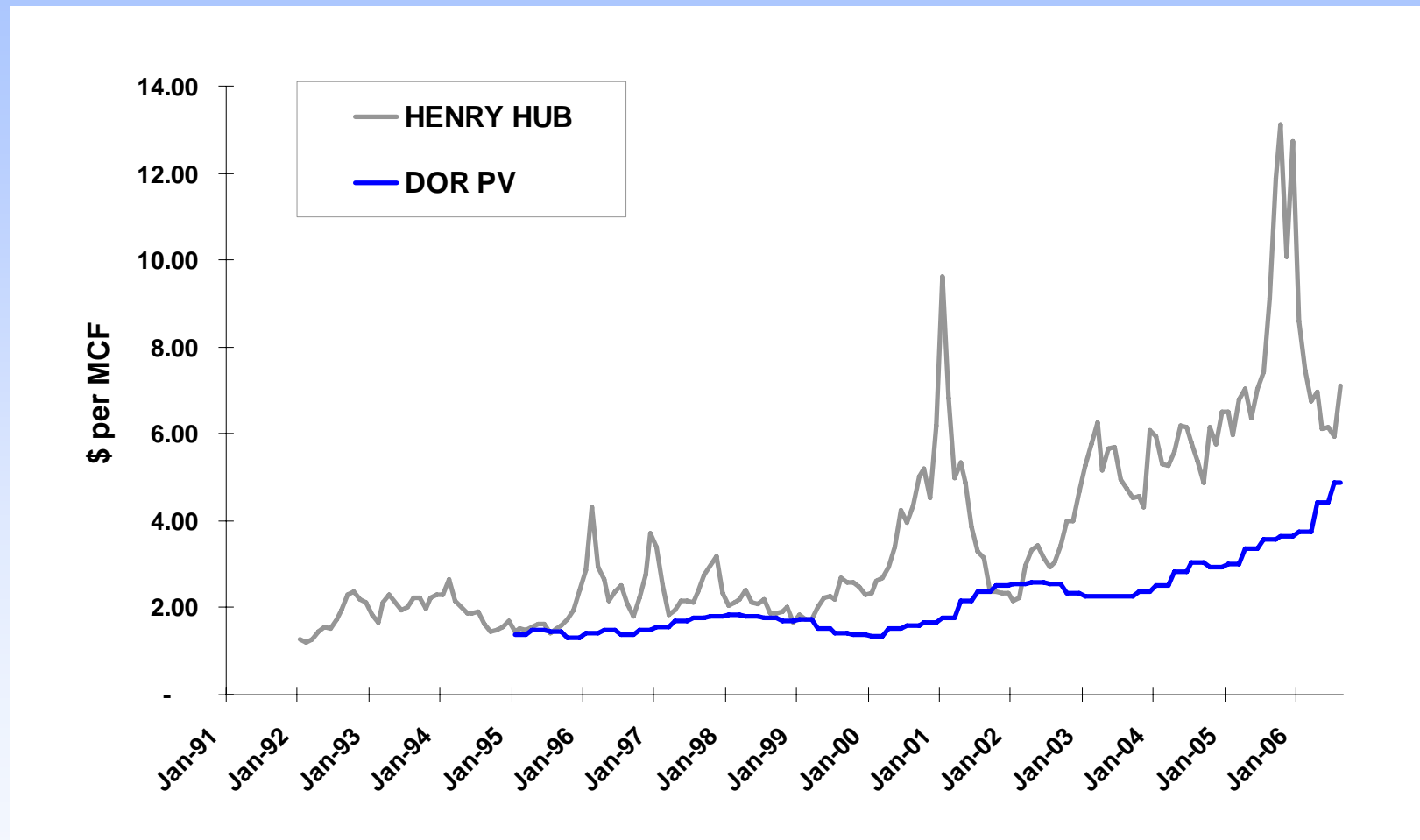
South Central Population, 1980-2005



Residential and Commercial Seasonal Gas Consumption 1999-2002

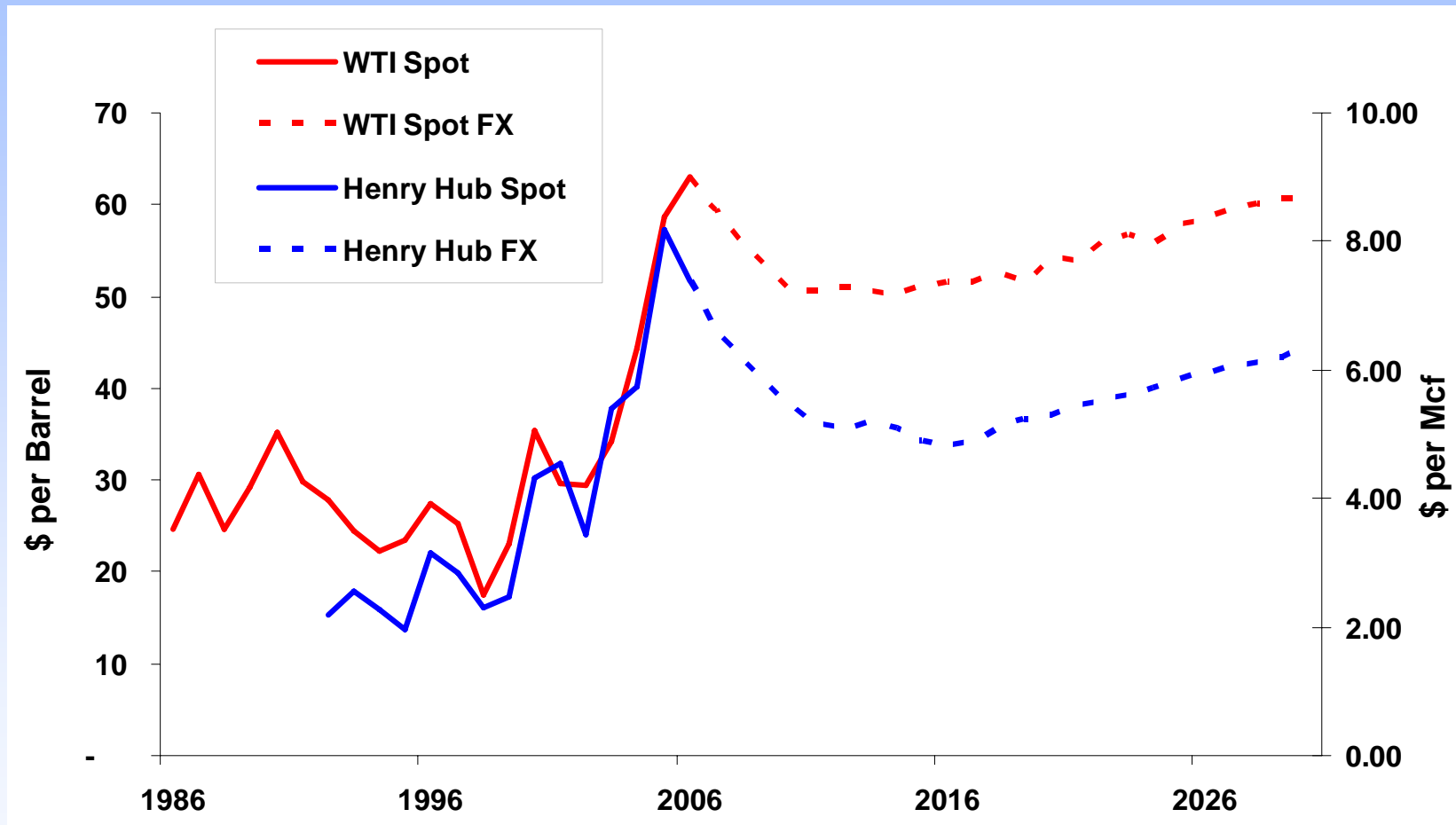


Henry Hub Spot & DOR Prevailing Value Jan 1991 – Aug 2006



Forecast of WTI and Henry Hub

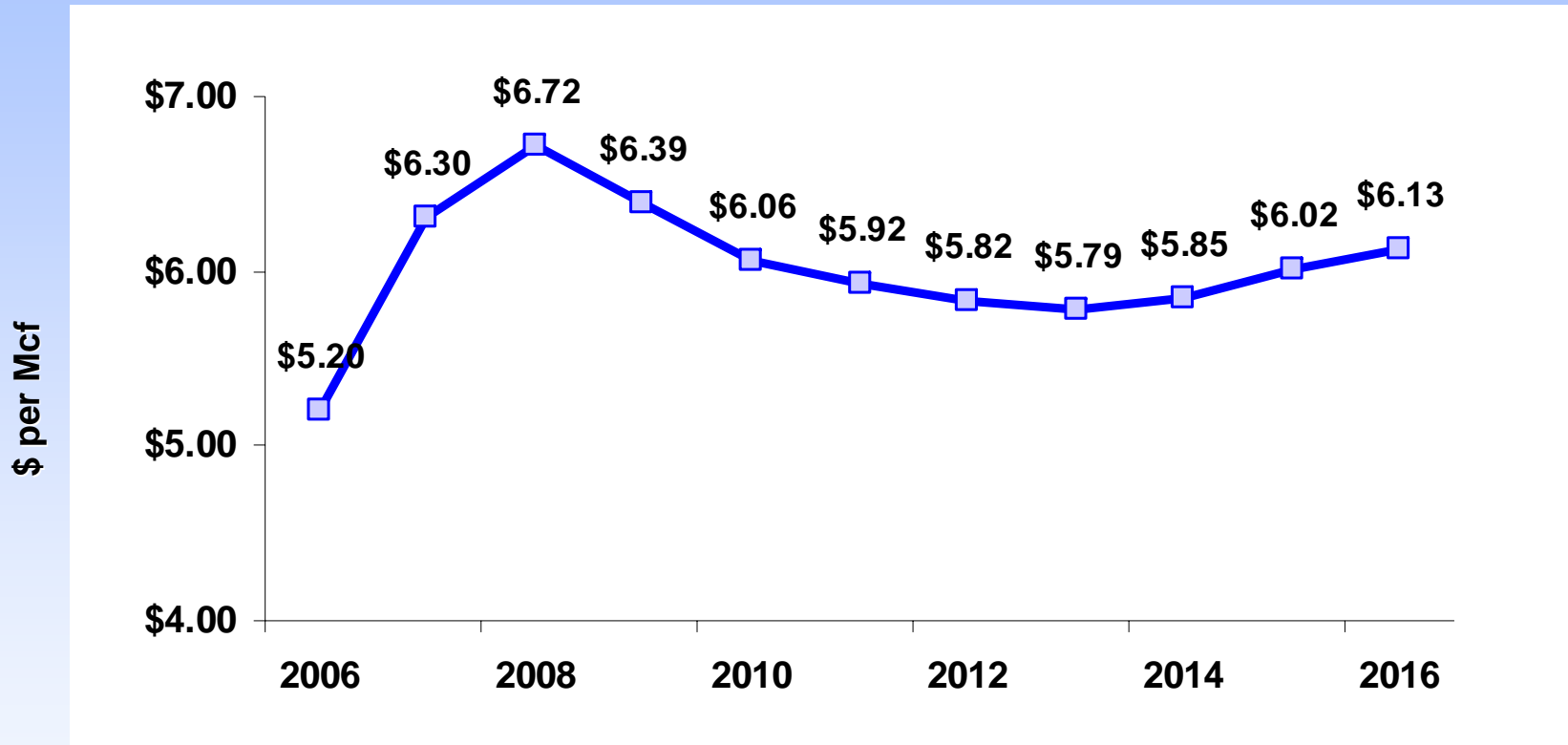
\$2006 per Barrel and \$2006 per Mcf



Source: *Annual Energy Outlook 2006*, Energy Information Administration, U.S. DOE. Based on Imported Low Sulfur Light Crude Oil Price and Average U.S. Wellhead Natural Gas Price.

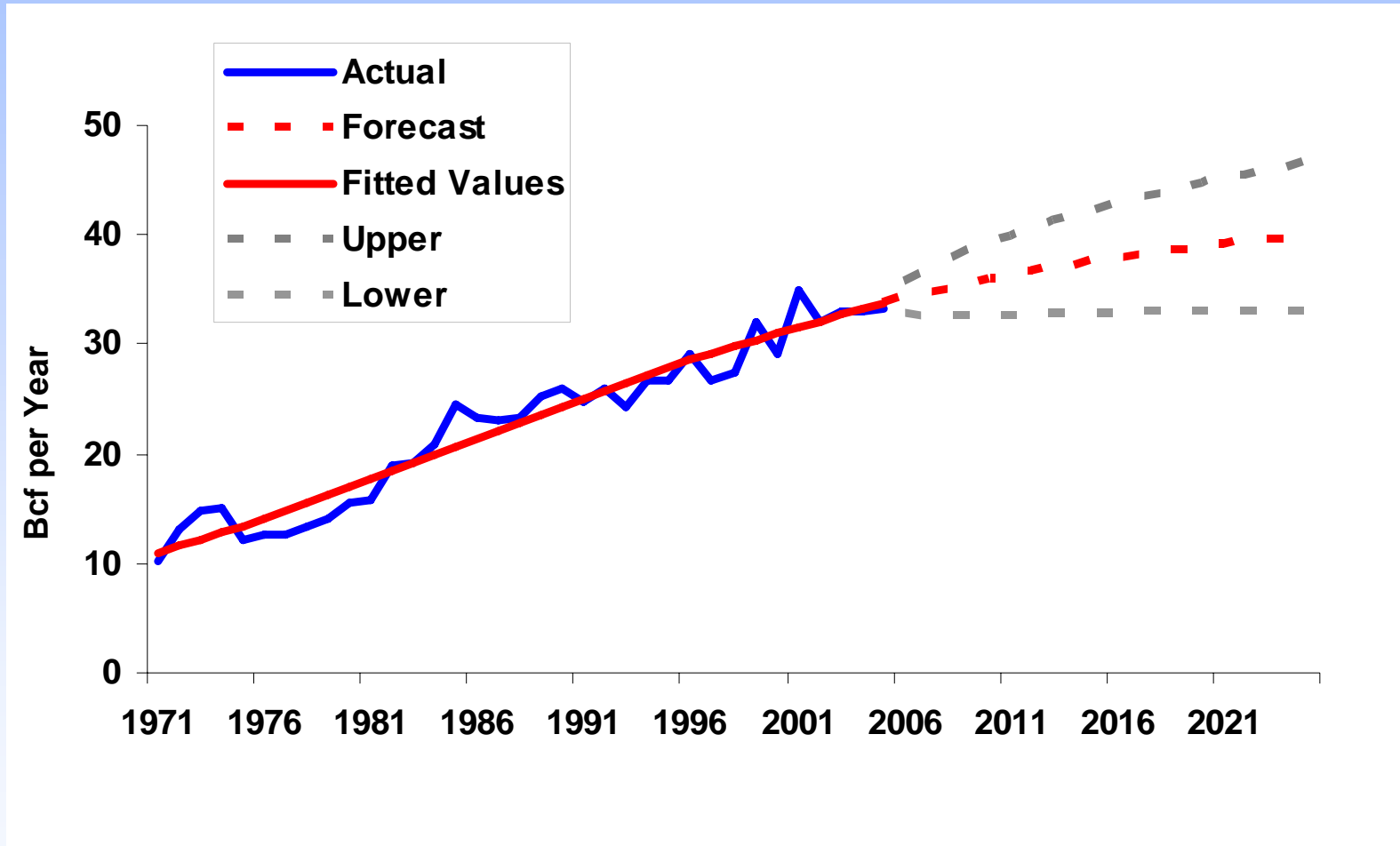
Weighted Cost of Gas Outlook

(\$ per Mcf, Nominal)



Estimates based on DOE oil and gas price forecasts and ENSTAR gas supply contract terms.

Price Sensitivity Residential & Commercial

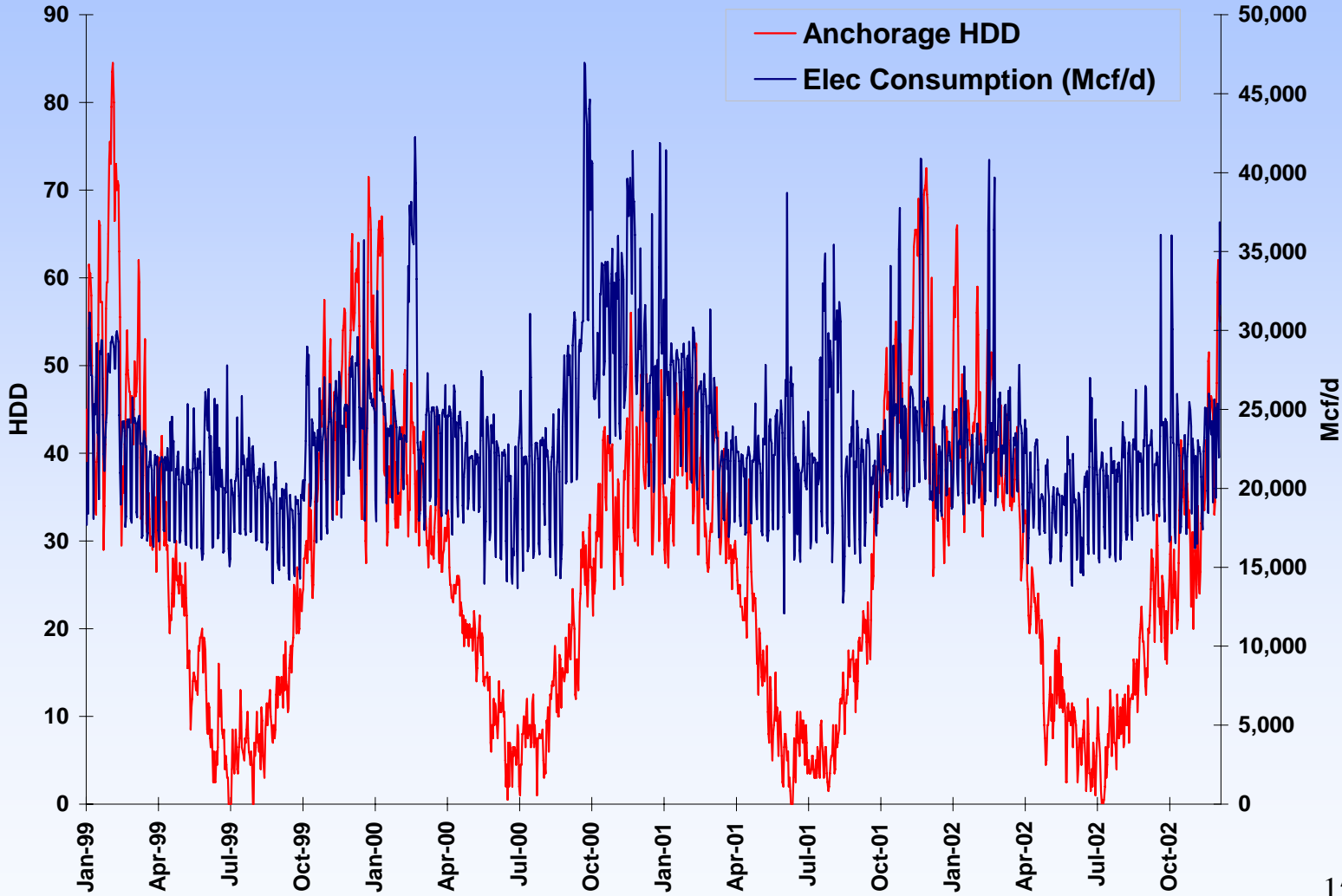


Upper and Lower Bounds based on 80% Confidence Interval.

Gas-Fired Electric Generation

- CEA and MLP: 25 Plants, 1,008 MW
 - Capacity = 115 Mmcf/d, 42 Bcf/y (16% of CIB)
 - Infrastructure almost entirely gas based
 - Some hydroelectric capacity
- Long term gas supply
 - CEA gas supply contracts ~2010+
 - MLP equity gas ~2010+
 - Generator replacement

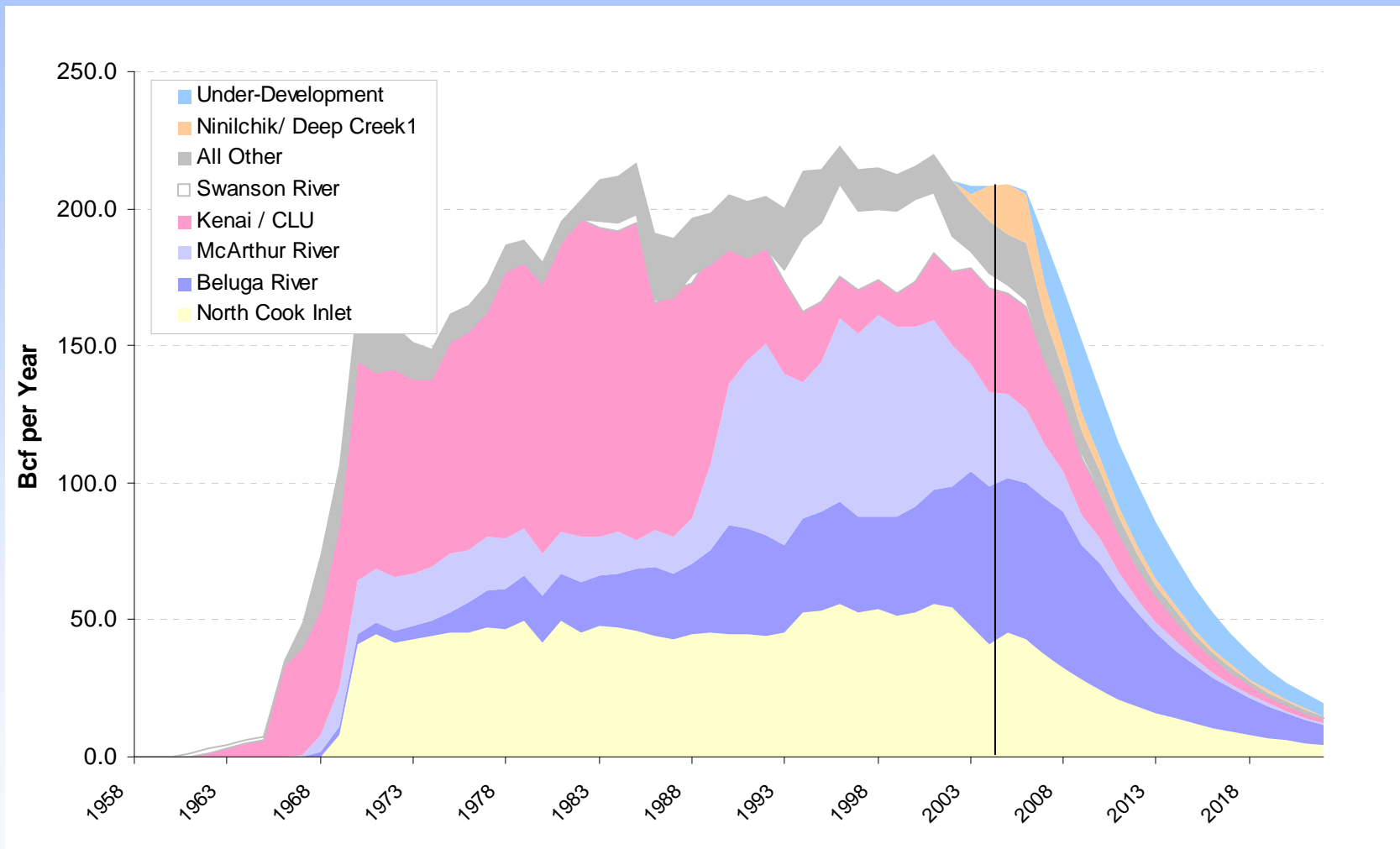
GFEF Seasonal Gas Consumption 1999-2002



Industrial Demand

- Two-thirds of Consumption Pie
- Driven by Export Markets
- Depend on cheap, base-load gas supply
- Constrained by Supply/ Price
- Reserves to Production (R/P) Ratio in CIB
 - **1980** **24**
 - **1990** **18**
 - **2000** **12**
 - **2006** **8**

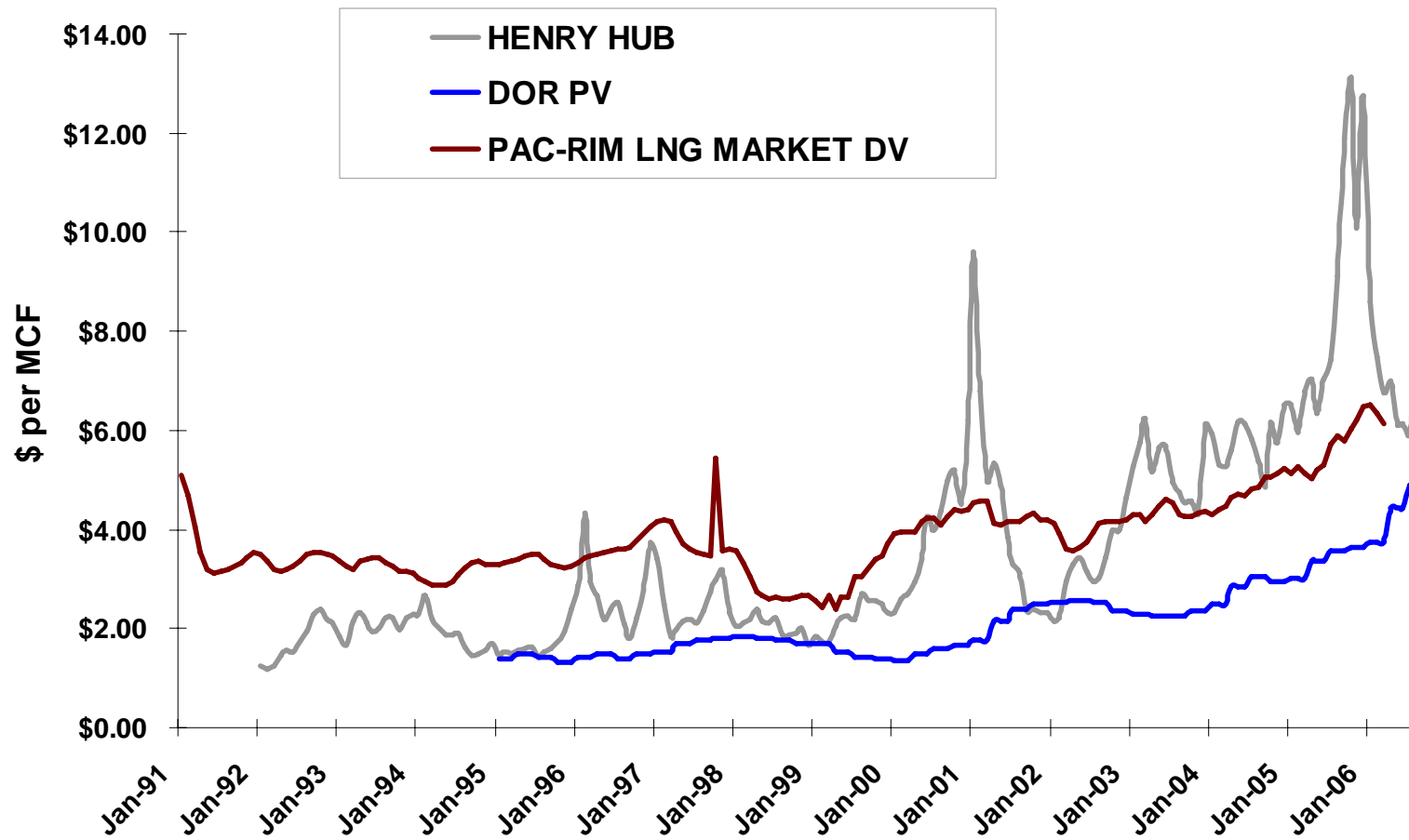
Cook Inlet Historic and Forecast Gas Production, 1958 - 2025



Nikiski LNG Plant

- Market – Japan Utilities
- Capacity = 220 Mmcf/d, 80 Bcf/y (36% of CIB)
- Export License Extension?
 - Decision depends on reservoir and demand studies currently underway
 - Such action is likely to be controversial
- Destination Value

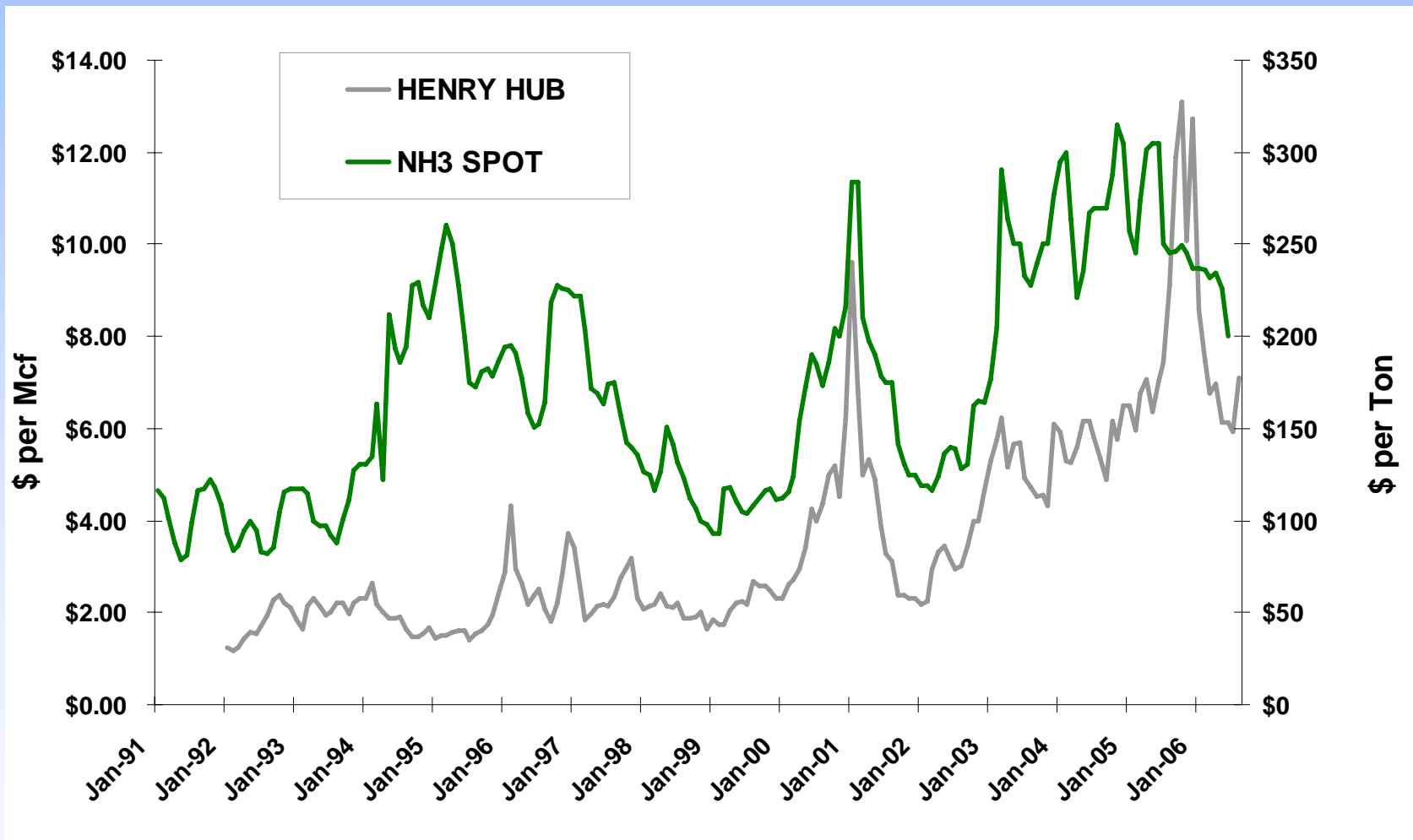
Pac Rim LNG Destination Value



Nikiski Fertilizer Plant

- Gas supply contracts through October 2007
- Plant expected to operate at 75% capacity
- Plant curtailment in Jan 06
 - Problem of seasonal peak demand
 - Total usage outstripped system deliverability
 - Frequency & duration likely to increase in future
 - Agrium anticipated the problem; no lay-offs
 - Gas storage helped combat problem
- Coal Gasification
- Product Prices

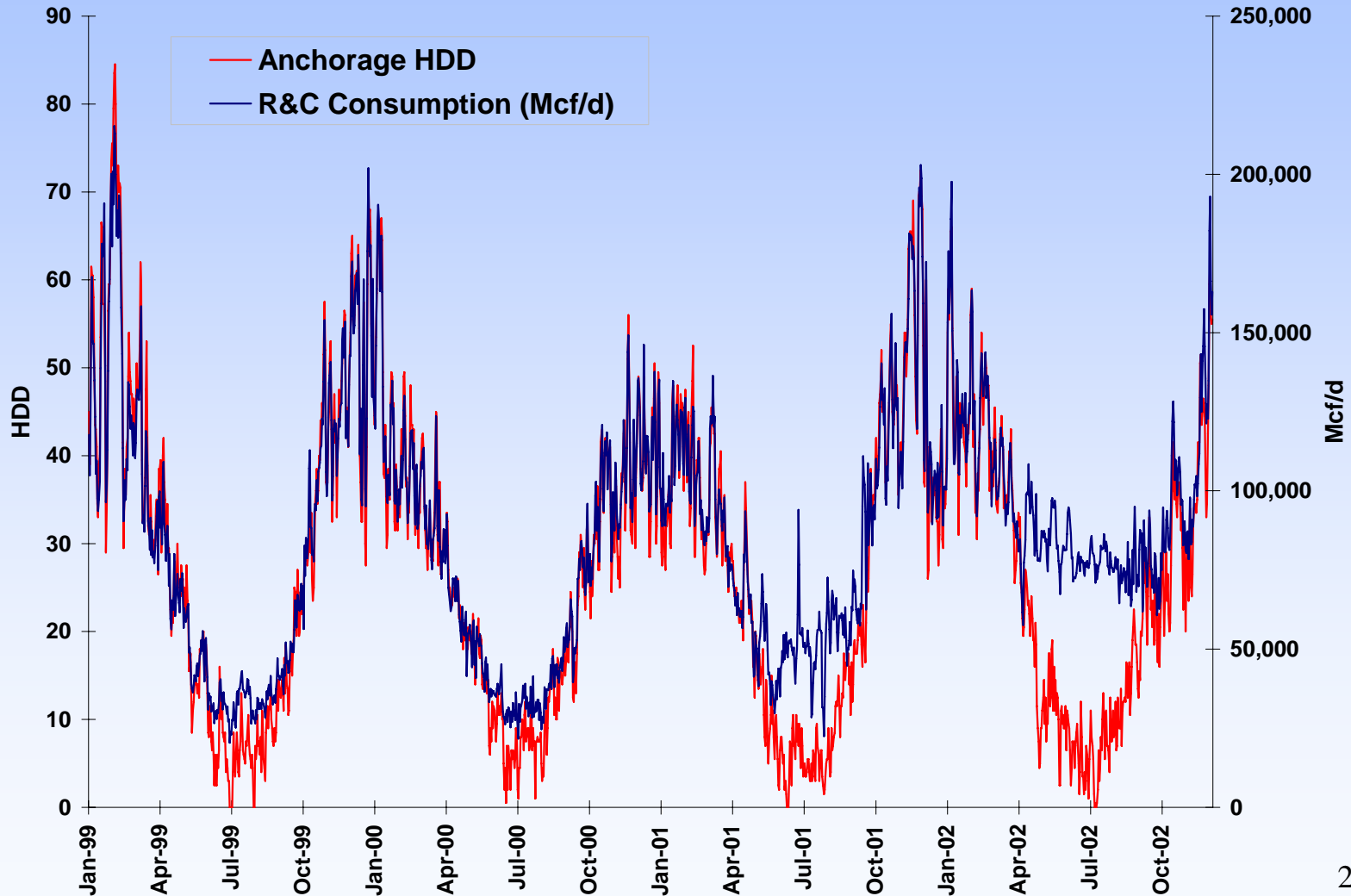
Anhydrous Ammonia (NH3) Destination Value



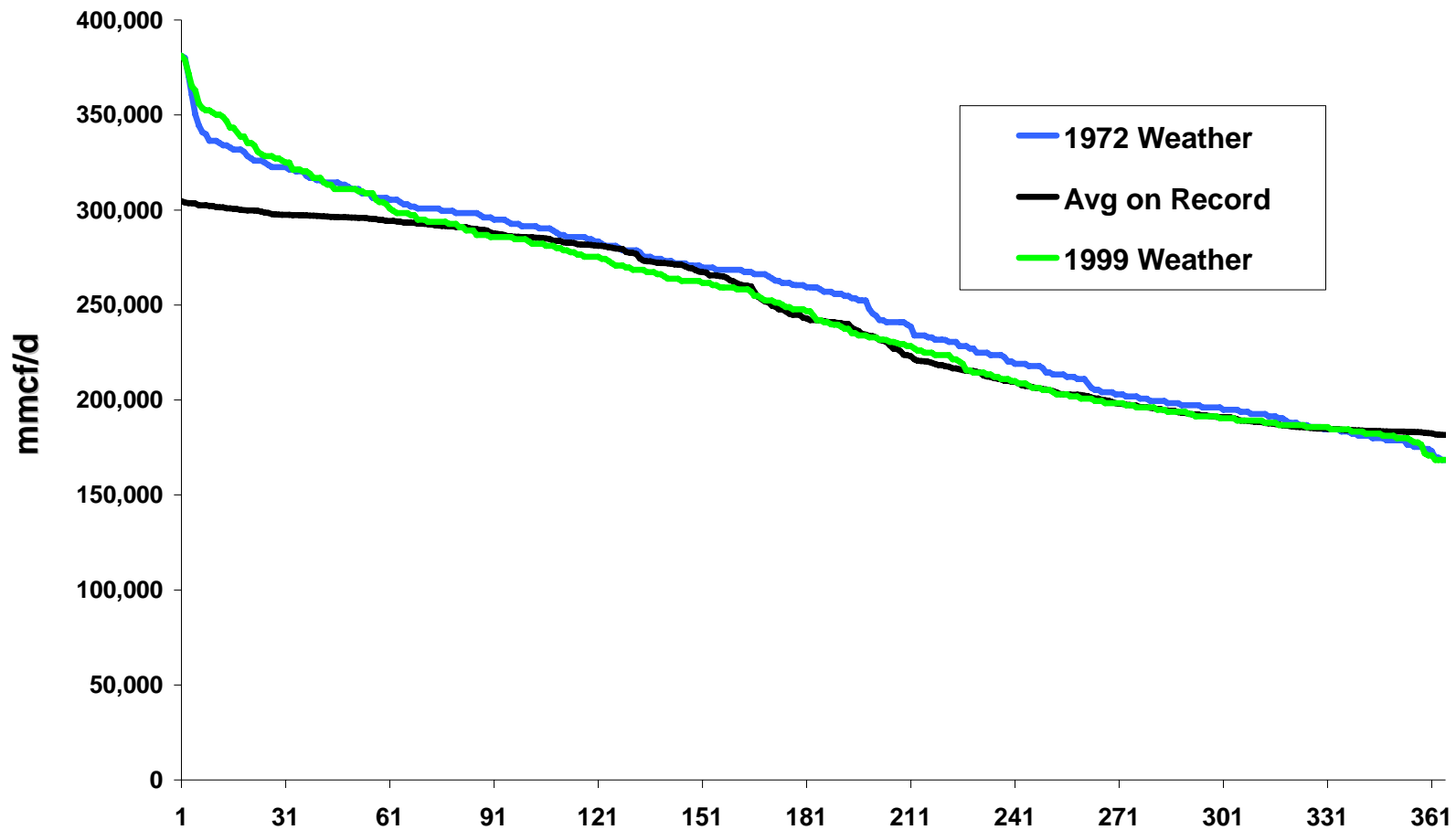
Peak Deliverability Requirements

- R&C and GFEG - Big Seasonal Swing
- Capacity of Producing Fields & Pipe
 - Just Enough to Serve Peak – TODAY!
 - Three Gas Storage Projects Underway
- Industrials Provide Backstop Deliverability if needed

Residential and Commercial Seasonal Gas Consumption 1999-2002

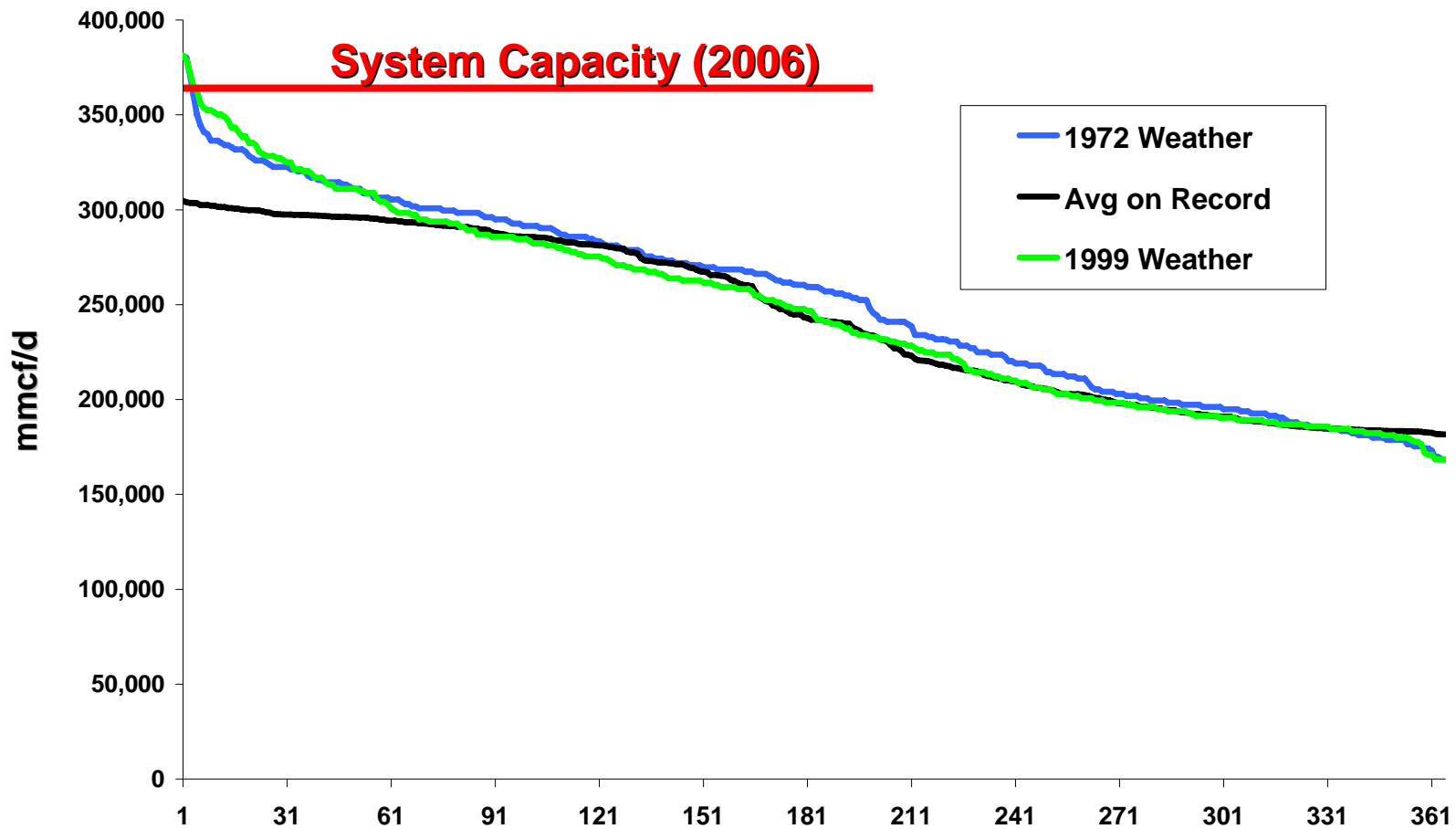


Load Duration Curves



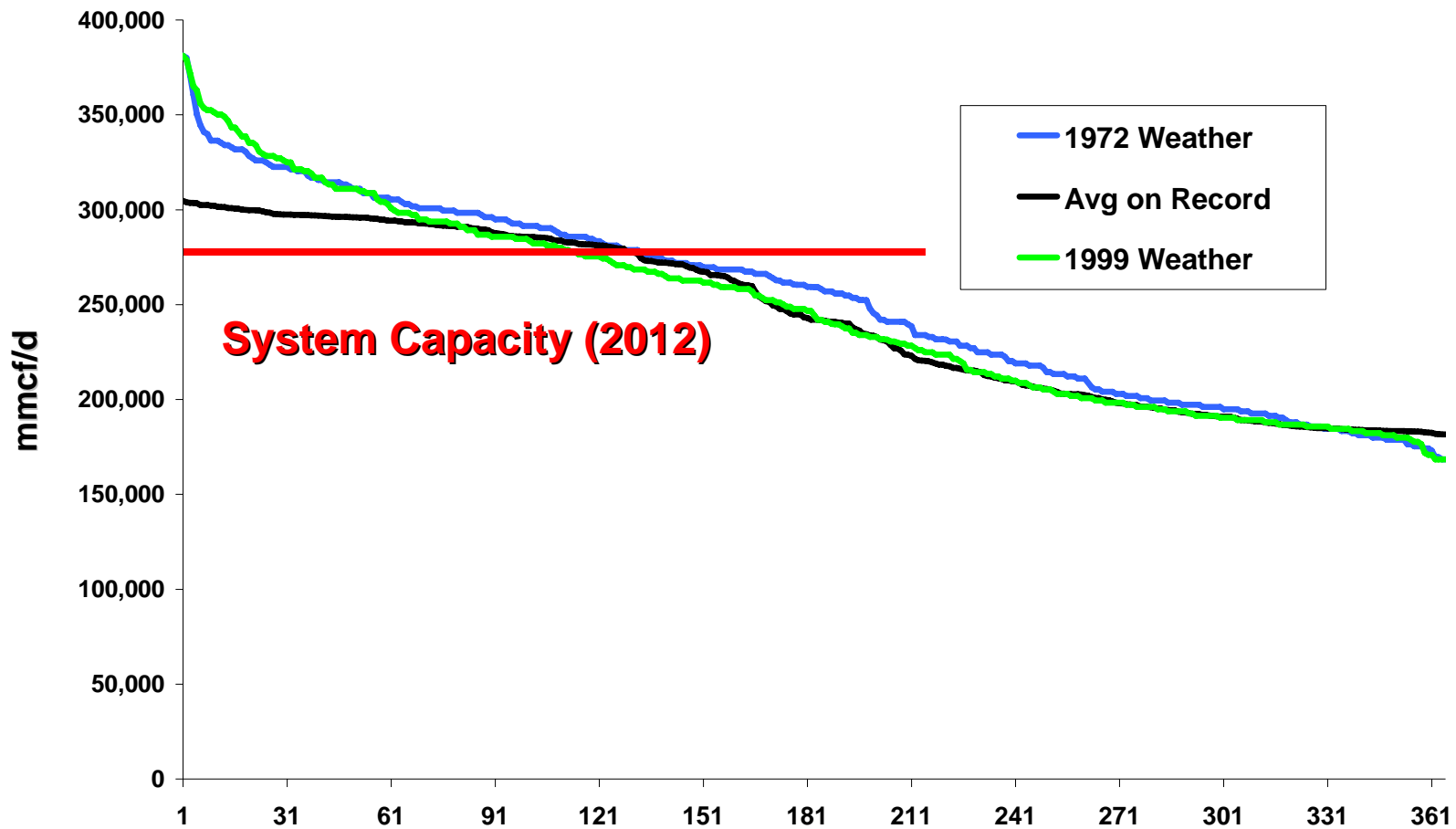
Includes Residential & Commercial, GFEG, Tesoro, and Other Industry;
excludes LNG Plant and Fertilizer Plant.

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Conclusion (Part 1)

Sea Change or Steady State?

- Pendulum Swings
 - Era of Excess Gas Supply is Past
 - Projected Decline in Proved Reserves
 - Peak Deliverability
- Positive Price Pressure
 - Linkage with Lower-48
 - Not Market Failure
 - R&C Exhibits some *Elasticity*
- Gas Storage Important Component
- Industrials Constrained by Supply / Price

Conclusion (Part 2)

Consequences of Industrial Demand Erosion

- Deliverability Backstop
- Incentive to Explore
- Shared System Costs
- Temporary Fix
- Spur Line Economics