Sioux Scrubber Retrofit Project

Progress & Cost Update

August 2008

Agenda

- Project Background
- Timeline
- Contracting Approach
- Progress to Date
- Cost Projection History
- Cost Factors
  - Labor Demand
  - Equipment & Material Cost Increases
- Other FGD Project Costs

Project Background

- Project initiated in 2005 due to pending CAIR and CAMR rules and the expectation in the utility industry that these rules or others would require additional emissions controls for:
  - SO_2
  - NO_x
  - Hg
  - Fine particulate including SO_3
- Wet FGD technology was selected based on comparative analyses of commercial and near-commercial processes suitable for retrofit.

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Project Background (cont'd)

- Project Benefits:
  - Improved air quality in the St. Louis region.
  - Based on fueling assumptions, Sioux would produce the most SO_2 tons at AmerenUE.
  - Adds to SO_2 position, spreads cash flows, helps to levelize resource requirements, and keeps future options open.
  - Gain experience with scrubber project; e.g. FGD process, design, operations and maintenance before additional scrubbers would be installed at Rush Island and Labadie.
  - Early fuel flexibility (4.0# SO_2) enabled.
  - Evaluated lowest cost option was to install wet scrubbers.

Project Background (cont'd)

- Sioux FGD Program Scope of Work:
  - Wet LSFO Scrubber for Flue Gas Desulfurization
  - Limestone Reagent
  - Designed for Medium Sulfur Blended Fuel
  - New Water Treatment Plant
  - Substation to Provide Aux Power
  - Transmission Line Mods and Upgrades
  - Wet "Gypsum Stack" for Gypsum Disposal
  - Access Road Improvements
  - Off-Site Limestone Grinding by 3rd Party
  - Current Total Capital Cost Estimate = $588 million

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Timeline Overview

- 2003 to 2005 – Sargent & Lundy assisted with studies, project planning and preparation of specifications for Sioux scrubber process engineered equipment.
- Approval to proceed with bidding FGD requested in September, 2005.
- October ’05 through June ’06 – procured FGD engineered process equipment.
- Allied Power Solutions formed Fall 2006 – 1st Qtr 2007.
- Began minor site work March 2006 (misc. relocations).
- General Contractor groundbreaking – December ’06.
- Unit 1 in-service December ’09.
- Unit 2 in-service April 2010.

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Contracting Approach

- Ameren decision to work with major construction companies to gain timely commitments for necessary services/resources.
- Allied Power Solutions formed as LLC comprised of Graycor, MC Industrial, Alberici, and Sachs Electric.
  - Provide program management and project oversight, administration, and management/resources support to projects at Duck Creek, Coffeen, and Sioux.
- MC Industrial and Sachs are prime contractors at Sioux for general and electrical construction services, respectively.
- Contracts are cost-plus with incentive KPI's based on performance.
- Contracting timing and approach were needed to lock in resources that could support the Sioux project schedule.

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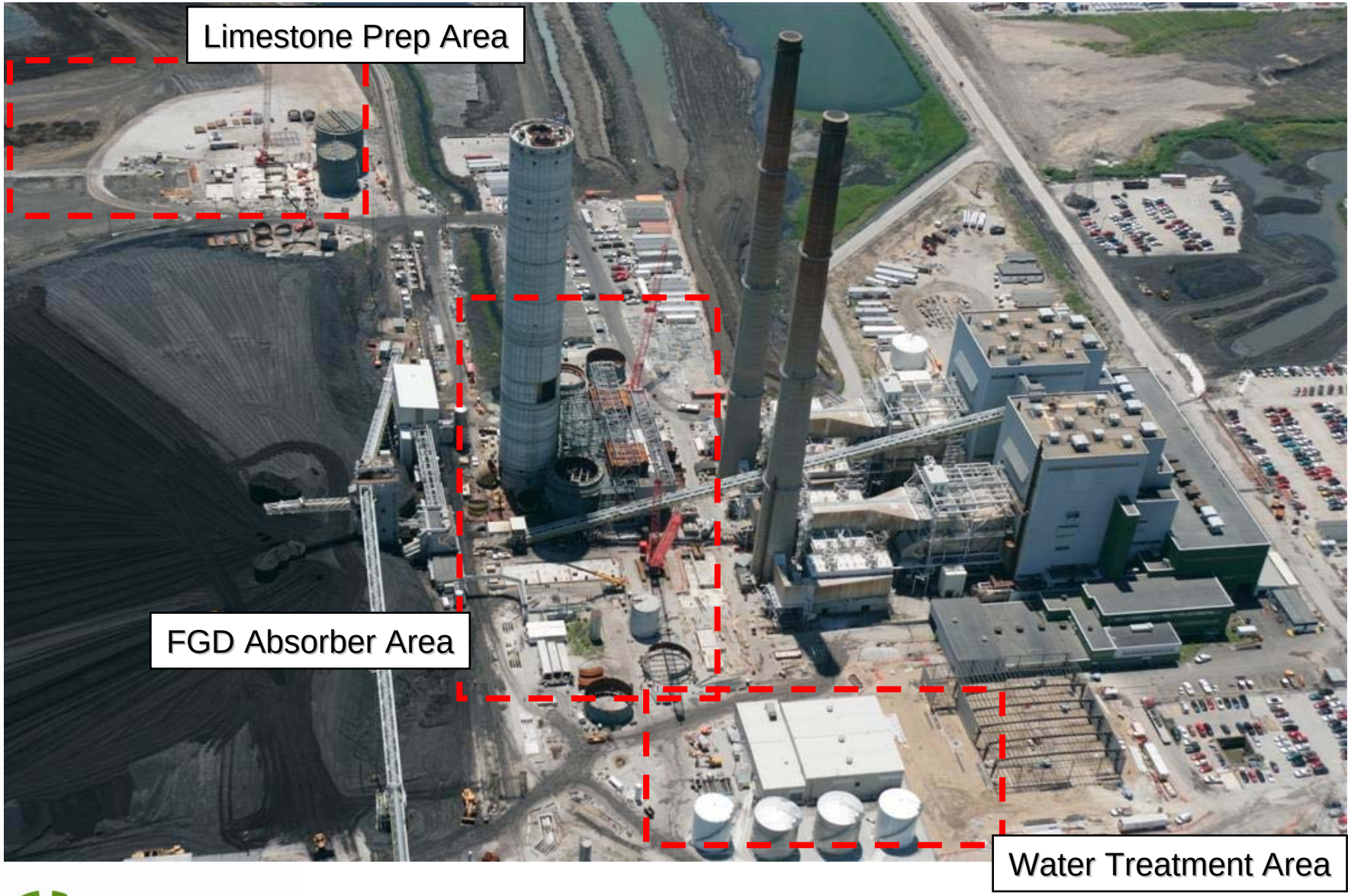
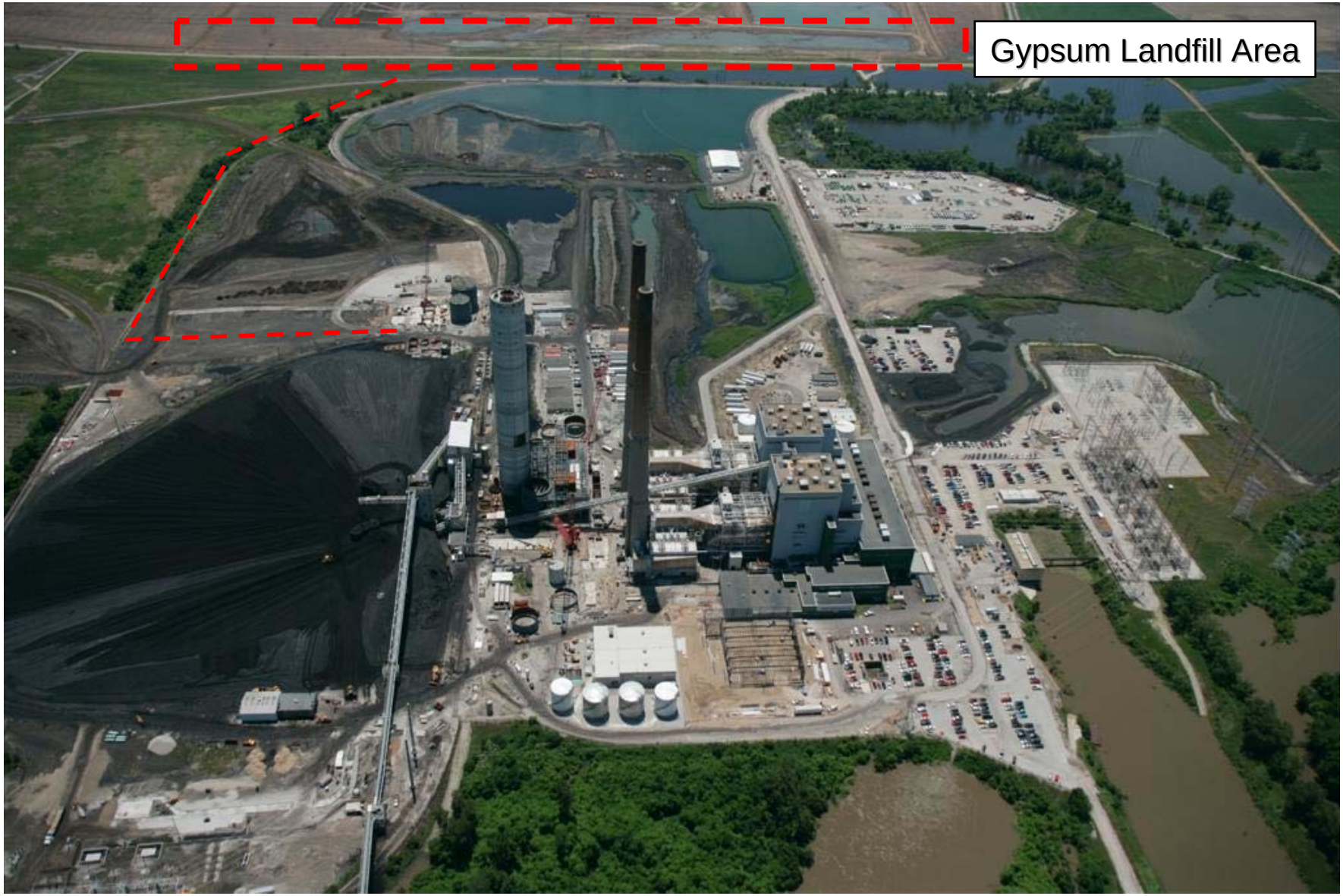
Contracting Approach (cont'd)

- Major Sioux FGD Prime Contractors:
  - Sargent & Lundy – A/E design, engineering and project management services.
  - Hitachi – engineered process & equipment.
  - Hillsdale Fabricators – structural steel and ductwork.
  - Karrena – furnish and install concrete chimney and liners. CBI is major subcontractor.
  - Devcon (Futura Coatings) – glass linings and coatings.
  - MC Industrial – general contractor.
  - Sachs Electric – electrical construction.
  - APS – program/project management and support services.
  - Kolb – gypsum stack / landfill civil construction.

Sioux Scrubber Progress

- Engineering & design – 83% complete.
- Construction:
  - General Contractor (MCI) – 33% complete.
  - Electrical (Sachs) – 18%
  - Chimney (Karrena) – 85%
- Construction photos follow:


Limestone Prep Area
FGD Absorber Area
Water Treatment Area



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Portage Des Sioux
July 26 2008

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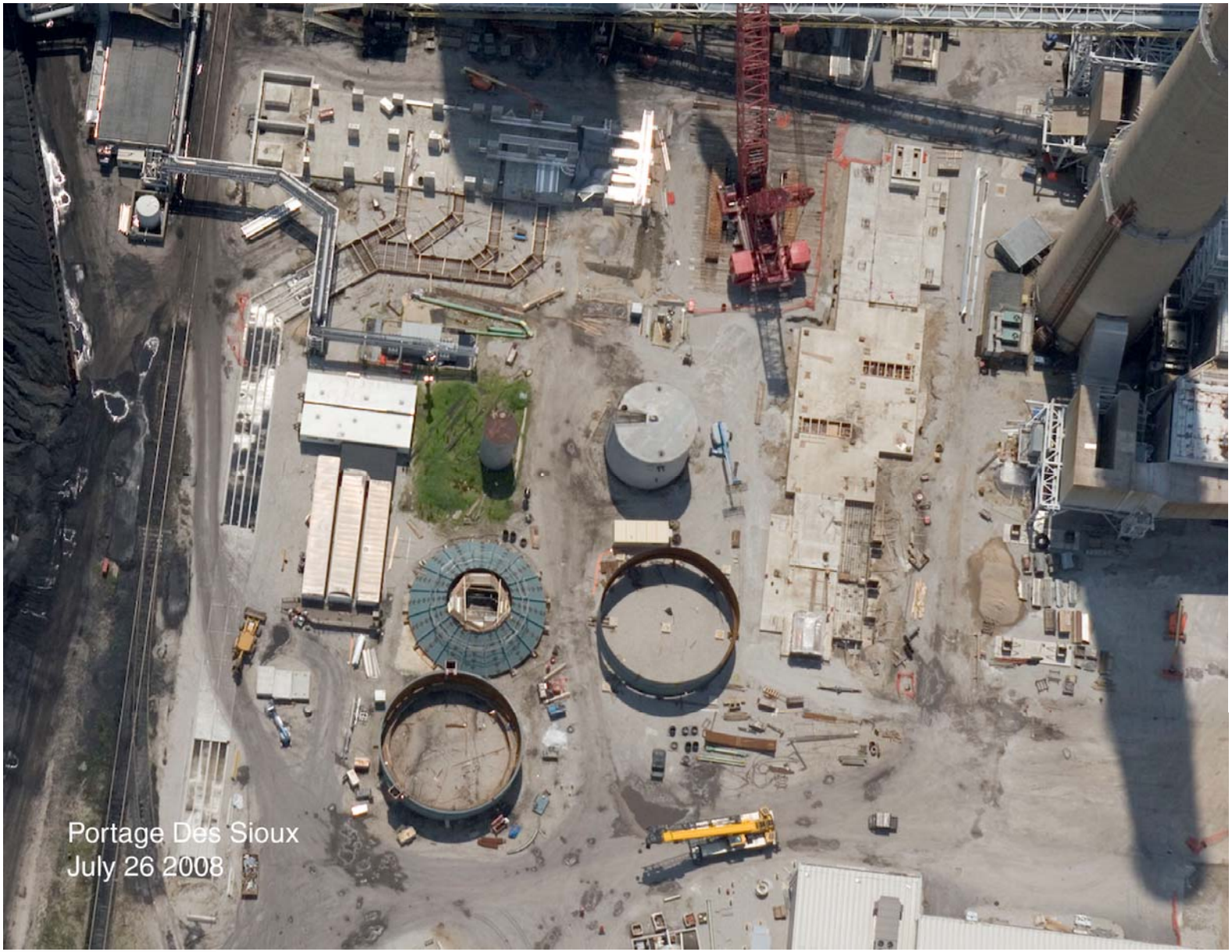
Portage Des Sioux
July 26 2008


Portage Des Sioux
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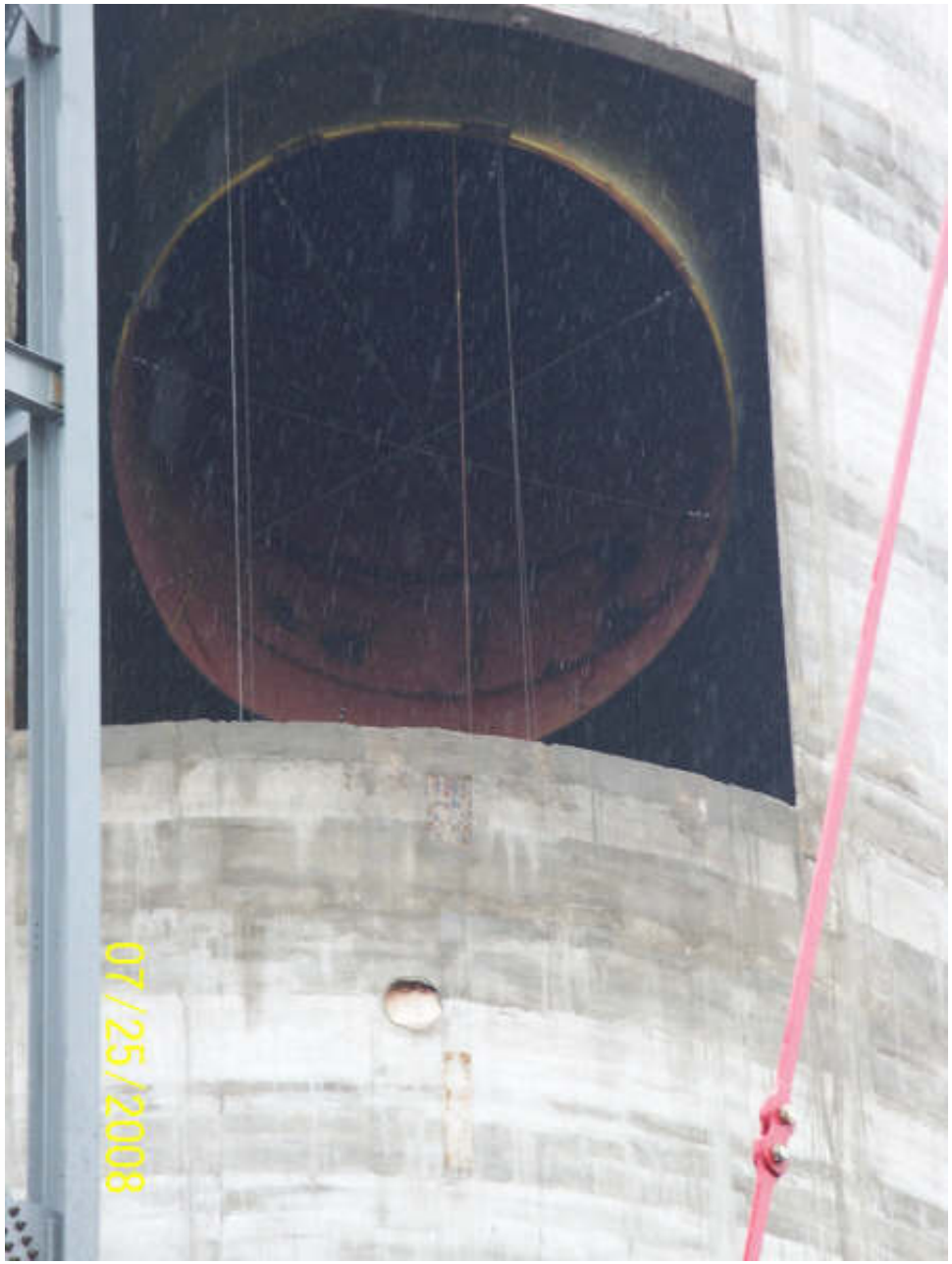
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Construction Progress

Sioux Scrubber “Process Island” Cost Review

Note: All costs are given in thousands of U.S. $

Initial Design Basis (Sept. ’05)

- General Requirements
  - Unit Ratings at 535MW (gross), each.
  - 4.0 lb SO2/MBtu coal.
- Reagent handling & Preparation System
  - Limestone delivery by rail or truck.
  - 30 days of limestone storage
  - 2 x 100% ball mills
  - 1 - 24 hour slurry tank
  - 2 x 100% capacity slurry pumps
- Absorber System
  - Single Absorber module for each unit.
  - 4 levels of sprays
  - 2 x 100% oxidation compressors per unit.
  - 2205 alloy absorber, C-276 clad wet/dry interface and outlet duct
- Draft System
  - Bypass dampers
  - 2 x 50% Booster ID Fans, per unit
  - Common chimney with dual flue alloy liners
- Gypsum Handling
  - Primary and secondary dewatering
  - Truck removal from site
- Makeup Water Supply
  - Existing facilities with 1 hour storage tank.
- Wastewater Treatment System
  - FGD blowdown to be treated for heavy metals and suspended solids.
- SO3 Mitigation
  - Trona injection system provided.
- Financial Basis
  - Escalation at 3%
  - AFUDC at 8.84% annual
  - Ameren overheads at 4%
  - System Operation in fall of 2008

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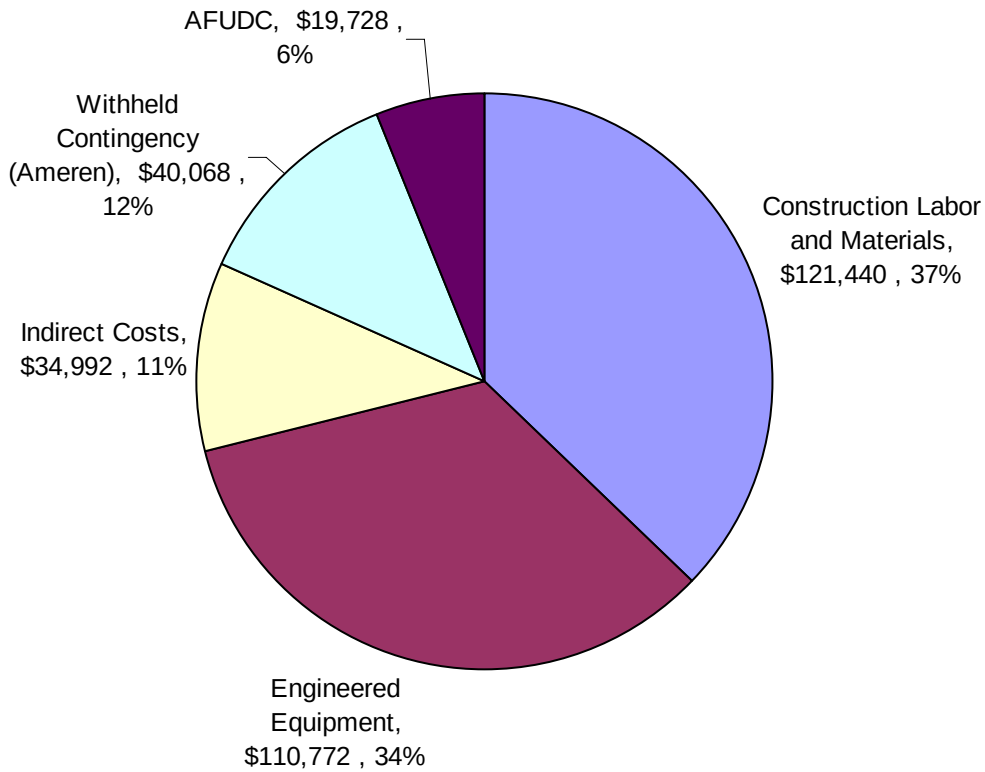
September 2005 Conceptual Cost Estimate*

- Total Cost of $327M
- Cost Estimate based on similar scrubber projects underway in the Midwest.
- Adjusted for St. Louis labor productivity.



* Thousands, U.S. $

Initial vs Current Design Basis

September 2005

- General Requirements
  - Unit Ratings at 535MW (gross), each.
  - 4.0 lb SO2/MBtu coal.
  - 98% SO2 collection
- Reagent handling & Preparation System
  - Limestone delivery by rail or truck.
  - 30 days of limestone storage
  - 2 x 100% ball mills
  - 1 - 24 hour slurry tank
  - 2 x 100% capacity slurry pumps per unit
- Absorber System
  - Single Absorber module for each unit.
  - 4 levels of sprays
  - 2 x 100% oxidation compressors per unit.
  - 2205 alloy absorber, C-276 clad wet/dry interface and outlet duct
- Draft System
  - Bypass dampers
  - 2 x 50% Booster ID Fans, per unit
  - Common chimney with dual flue alloy liners
- Gypsum Handling
  - Primary and secondary dewatering
  - Truck removal from site
- Makeup Water Supply
  - Existing facilities with 1 hour storage tank.
- Wastewater Treatment System
  - FGD blowdown to be treated for heavy metals and suspended solids.
- SO3 Mitigation
  - Trona injection system provided.
- Financial Basis
  - Escalation at 3%
  - AFUDC at 8.84% annual
  - System Operation in fall of 2008
  - Ameren overheads at 4%

May 2008

- General Requirements
  - Unit Ratings at 535MW (gross), each.
  - 4.0 lb SO2/MBtu coal.
  - **99% SO2 Collection**
- Reagent handling & Preparation System
  - **Limestone delivery by truck.**
  - **28 days of dry ground limestone storage**
  - **Offsite Grinding**
  - **1 - 48 hour slurry tank**
  - 2 x 100% capacity slurry pumps per unit
- Absorber System
  - Single Absorber module for each unit.
  - **5 levels of sprays**
  - **3 x 100% oxidation compressors per station.**
  - **Flake glass lined absorber & ductwork**
- Draft System
  - **No Bypass dampers**
  - **2 x 50% Axial ID Fans, per unit with SCR capability**
  - **Common chimney with dual flake glass lined liners**
  - **Replace ESP Inlet ducts.**
  - **Relocate water treatment facilities**
- Gypsum Handling
  - **No mechanical dewatering.**
  - **Slurry to landfill**
- Makeup Water Supply
  - **Replace circulating water pumps, new raw water pumps.**
  - **1 hour storage tank.**
- Wastewater Treatment System
  - **No blowdown, zero discharge design.**
- SO3 Mitigation
  - **No Trona injection system provided.**
- Financial Basis
  - **Escalation as high as 100% for some materials**
  - **AFUDC at 7.98% annual**
  - **System Operation in fall of 2009, spring of 2010**
  - **Ameren overheads at 3.67%**

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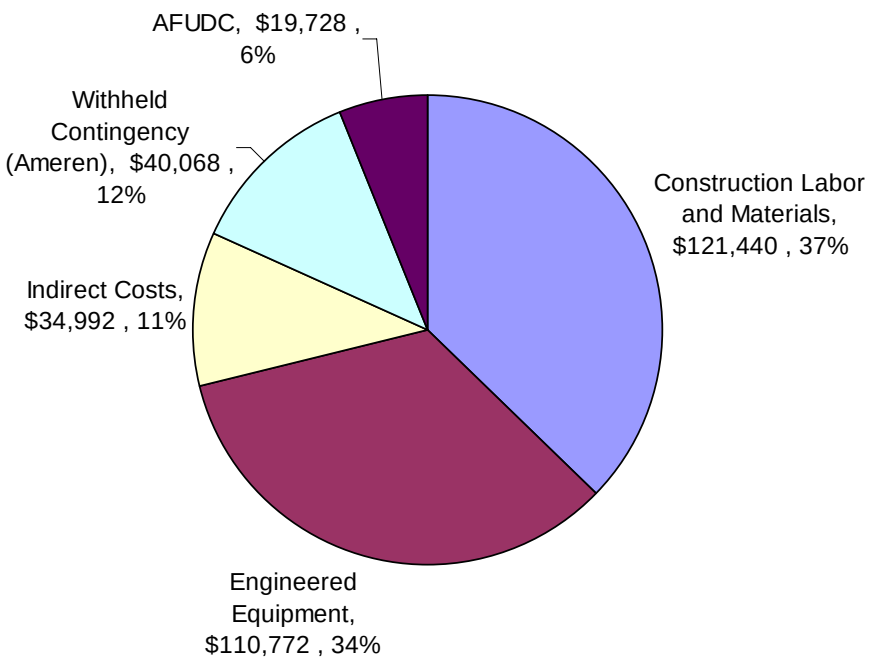
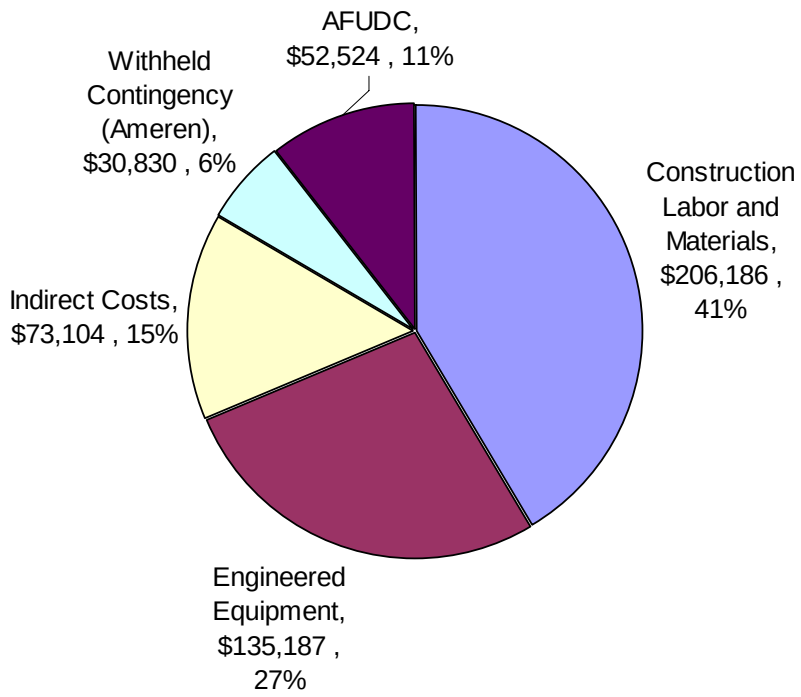
September 2005 Conceptual Cost Estimate versus May 2008 Estimate*

Sept 2005 Estimate



May 2008 Estimate



* Thousands, U.S. $

Sioux FGD Project
Fact Sheet

- Chimney
  - Height = 496.5 feet
- Absorber vessel size
  - 2 @ 70' diameter –
  - 130' tall, 47' slurry depth
- Absorber Slurry Flow = 54,570 GPM from each of 10 1550HP Weir recycle pumps
- Induced Draft Fans
  - Replacement Axial Fans
  - 2 per Unit – 14,500HP each
- SO_2 removal
  - Per Air permit 96% average reduction with a minimum of 91%
  - 108,500 tons per year using design basis fuel
- Concrete = 15,500 cubic yards
- Piles - steel H shapes - 1450 - most 135' (end bearing) and some 80 ' long (friction type)
- Steel –
  - 2500 tons of structural steel,
  - 1800 tons of ductwork
- Piping - 60,000 LF of piping
- Construction Craft = 1,300,000 hours

- Limestone usage= 275,000 tons per year
- Water usage = 2400 GPM of which 900 GPM is recycled from the gypsum stack
- By product produced = 280,000 tons per year - could be recycled at a later date into wallboard or sold to the cement industry

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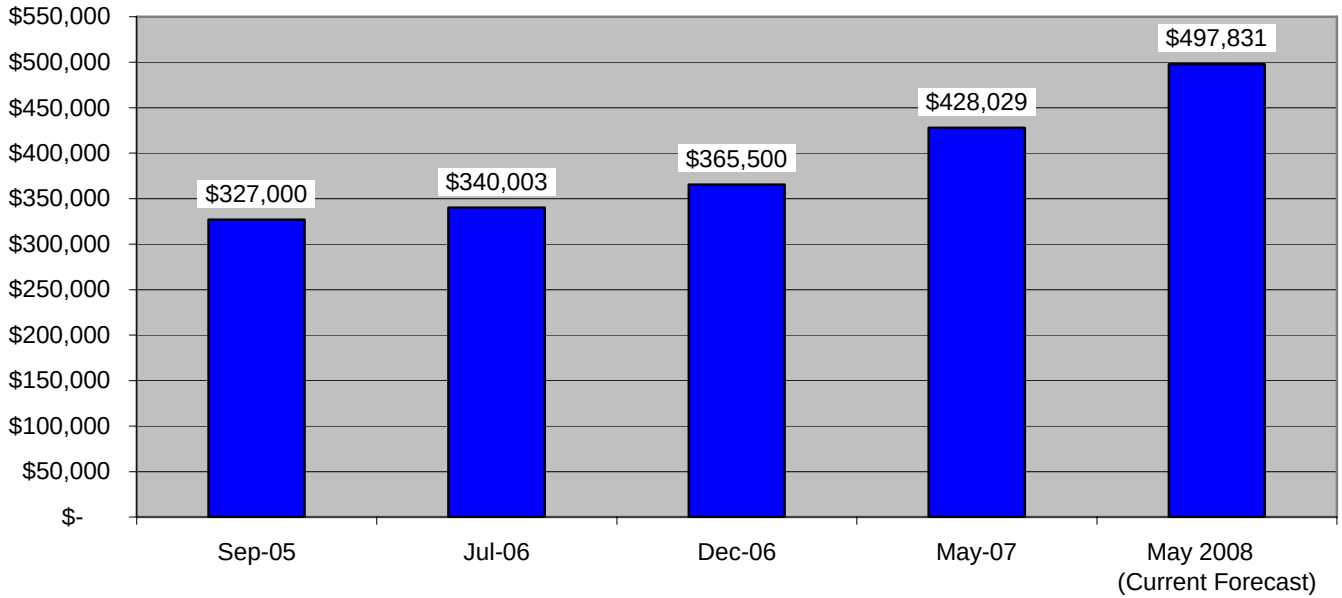
Sioux FGD Cost Estimates

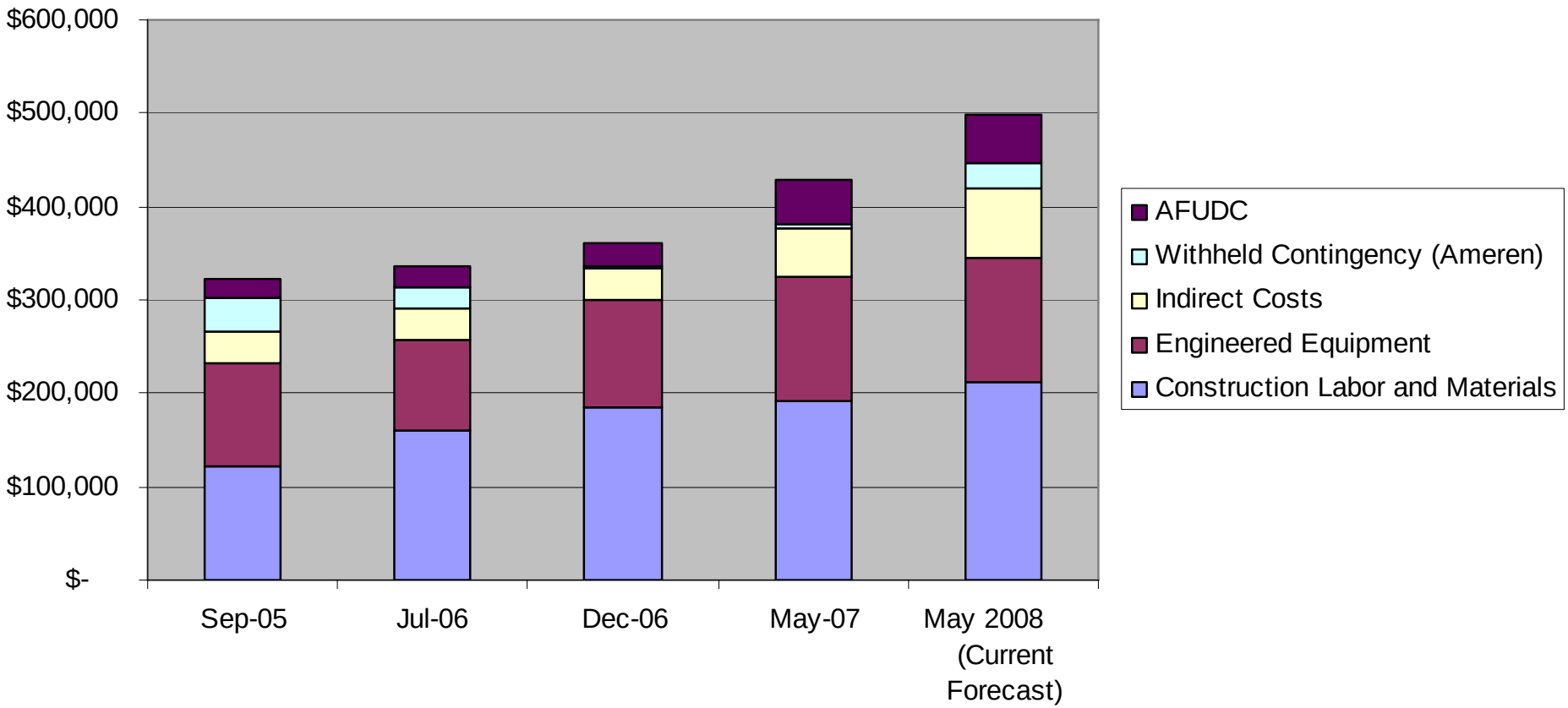


Engineering Status (% Complete)	Conceptual	<1%	17%	38%	75%
Construction Status (% Complete)	0%	0%	2%	10%	26%

Cost Estimate Evolution

Estimate Issue	Date of Issue	Percent of Engineering Complete	Percent of Construction Complete
Conceptual Estimate	September 2005	Concept	0%
Update based on scrubber system supplier contract award.	July 2006	<1%	0%
Revisions based on additional procurement and design progress.	December 2006	17%	2%
Revisions based on additional procurement and design progress.	May 2007	38%	10%
Monthly from May 2007 through Present	May 2008	75%	26%

Sioux FGD Project
Cost History



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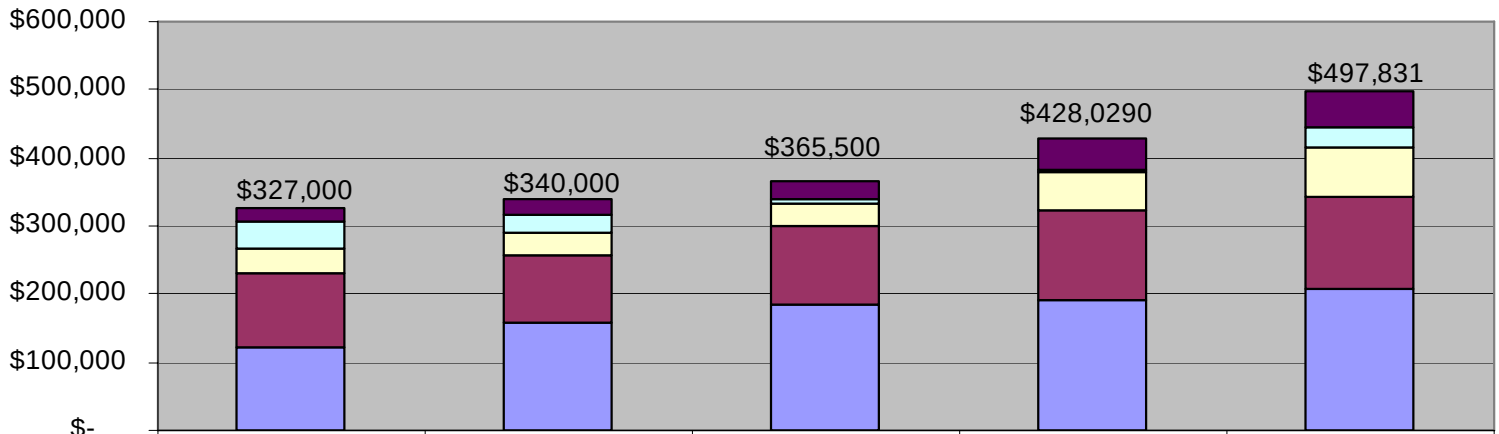
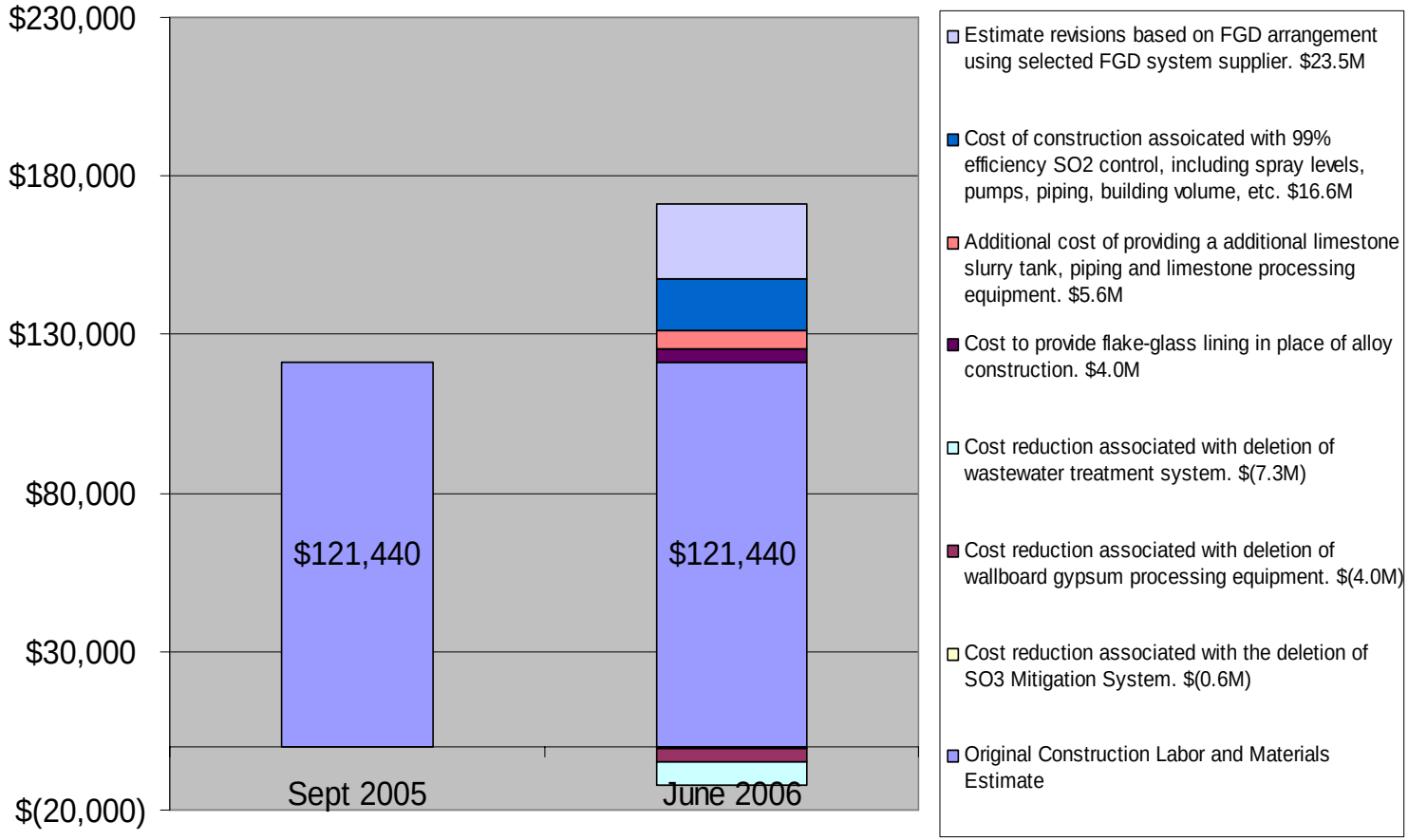
Sioux FGD Project
Cost History



	Sep-05	Jul-06	Dec-06	May-07	May 2008 (Current Forecast)
AFUDC	$19,728	$22,526	$24,700	$46,388	$52,524
Withheld Contingency (Ameren)	$40,068	$26,761	$8,000	$4,000	$30,830
Indirect Costs	$34,992	$32,595	$32,600	$53,268	$73,104
Engineered Equipment	$110,772	$98,825	$116,200	$133,104	$135,187
Construction Labor and Materials	$121,440	$159,296	$184,000	$191,269	$206,186

Sioux FGD Project
History of Construction Portion of Estimate



Sioux FGD Project
History of Construction Portion of Estimate

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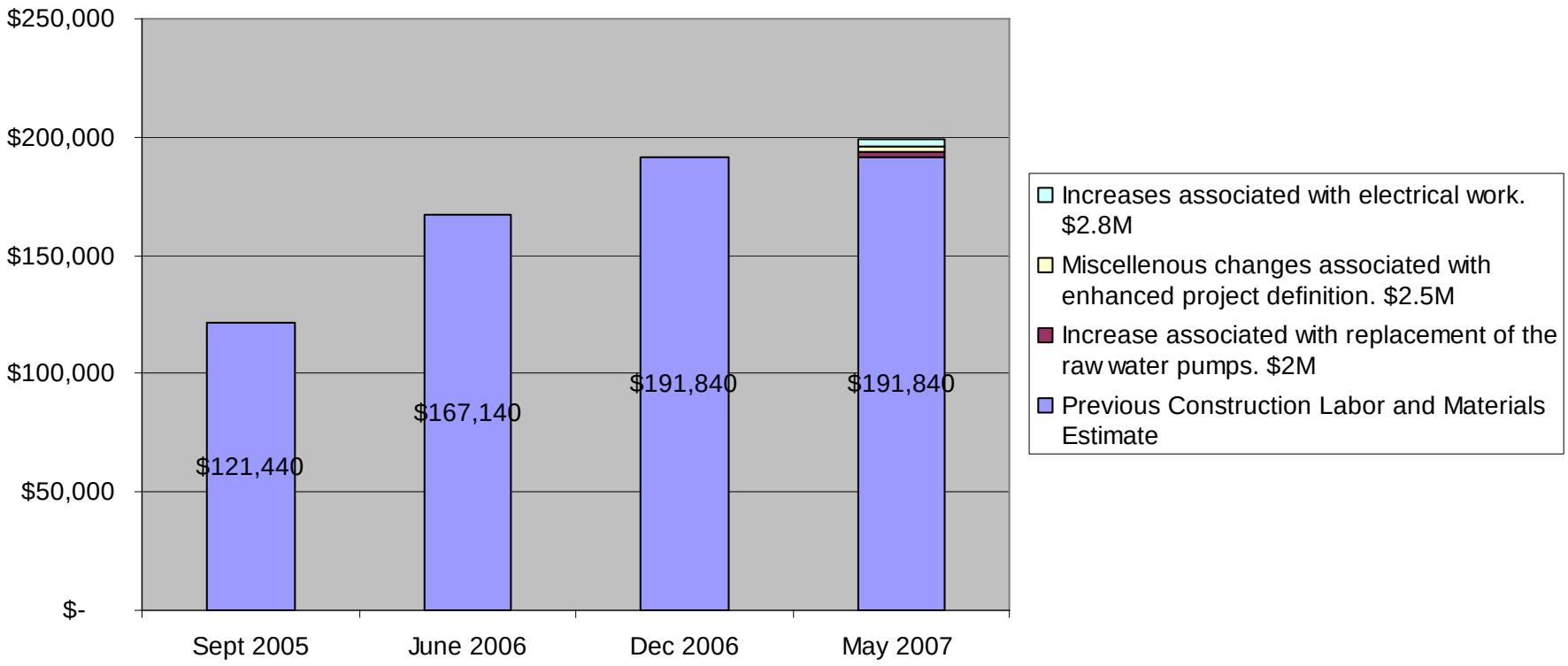

Sioux FGD Project
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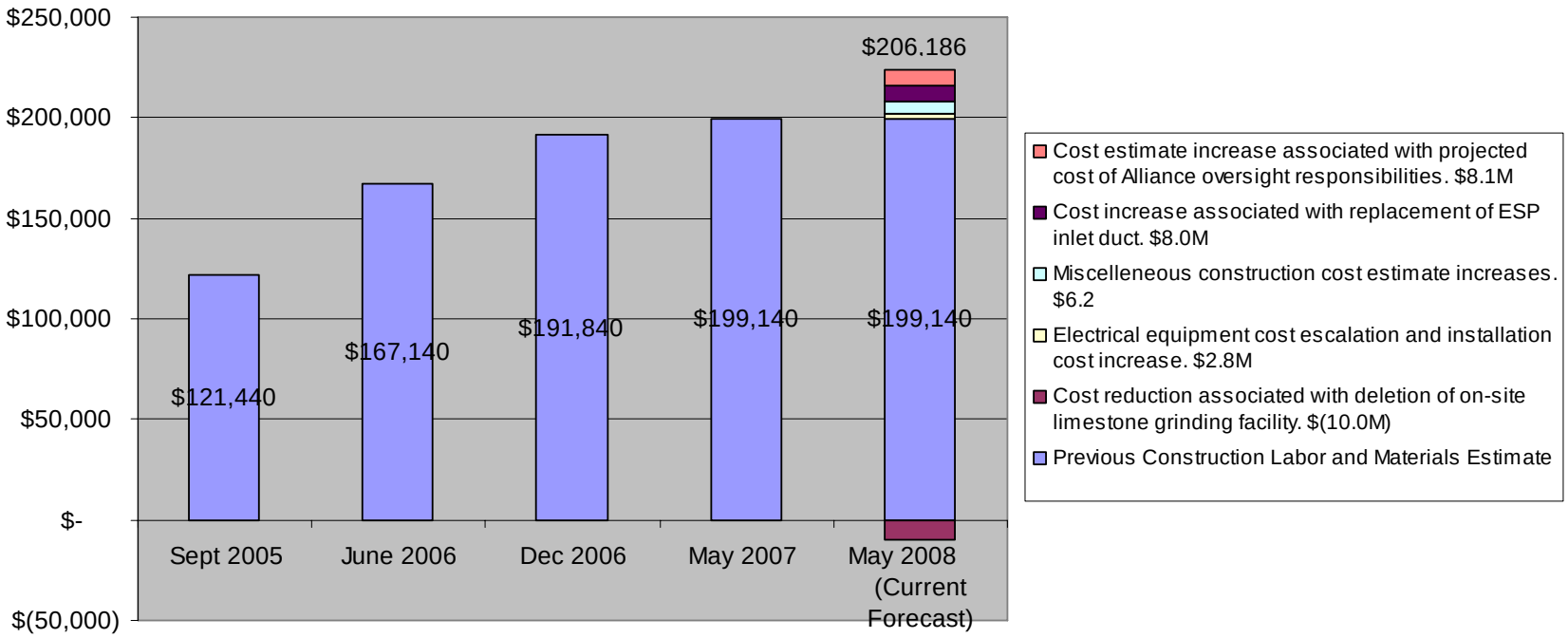
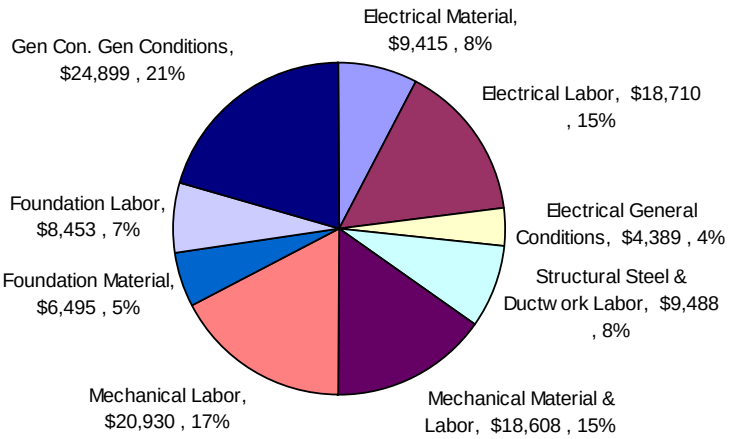


Sioux FGD Project
History of Construction Cost Portion of Estimate

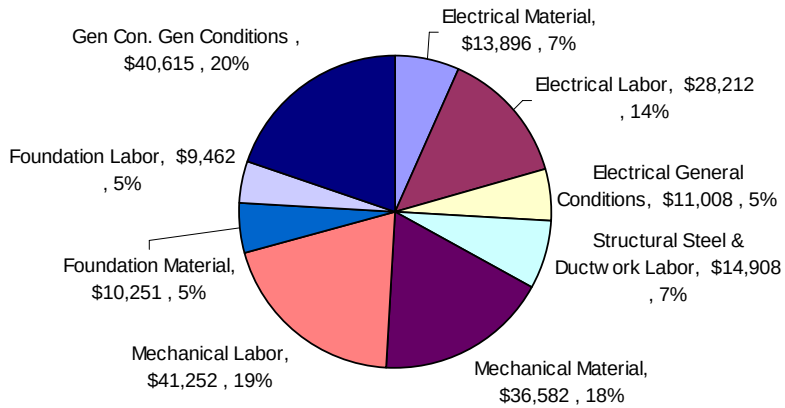
2005 Estimate

$121,440K



2008 Estimate

$206,186K



Sioux FGD Project
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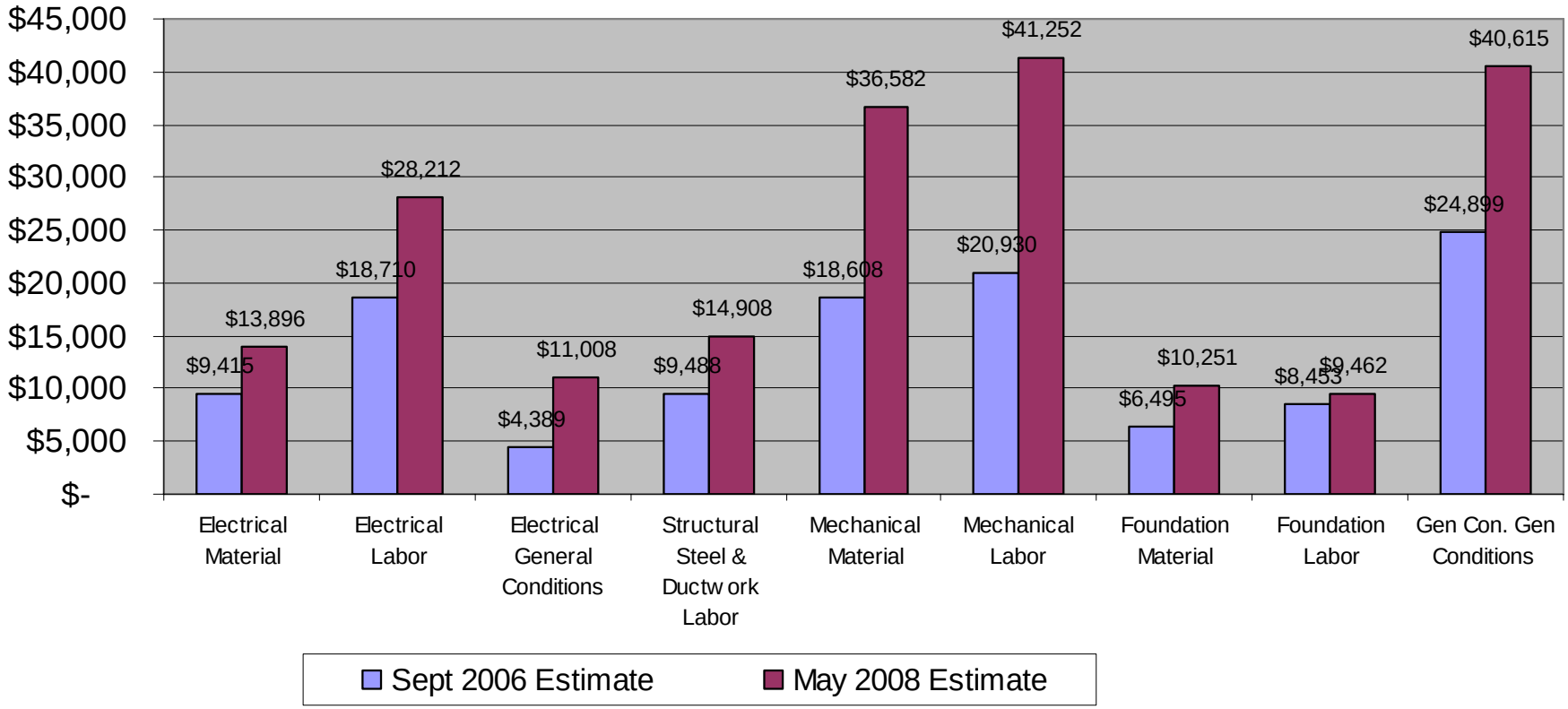
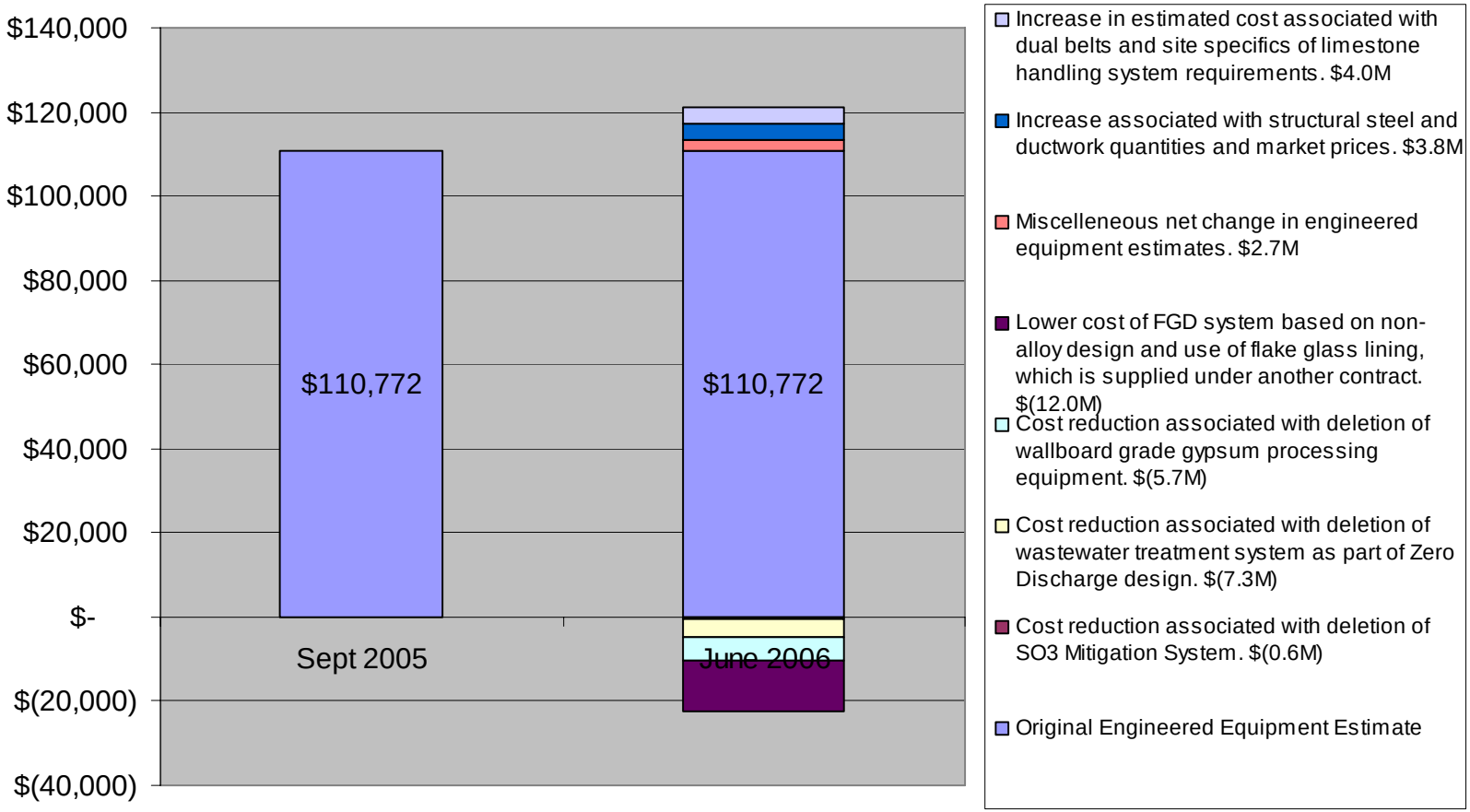
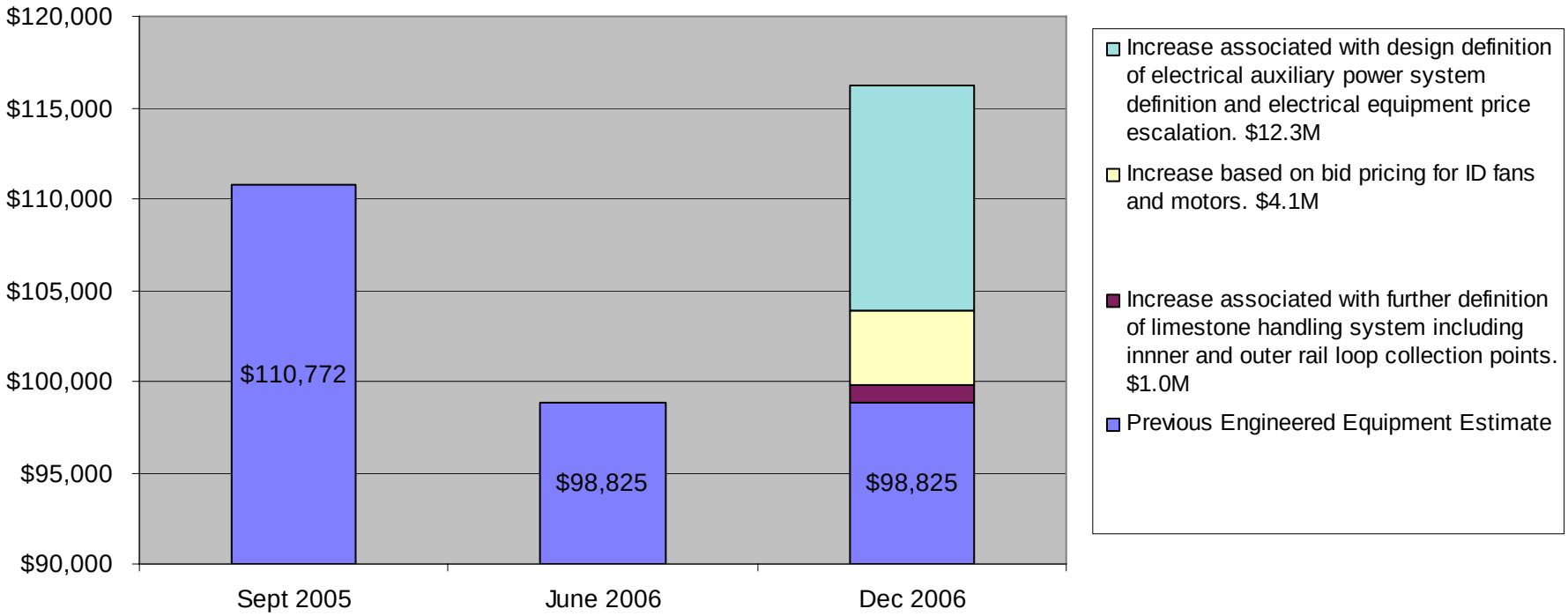


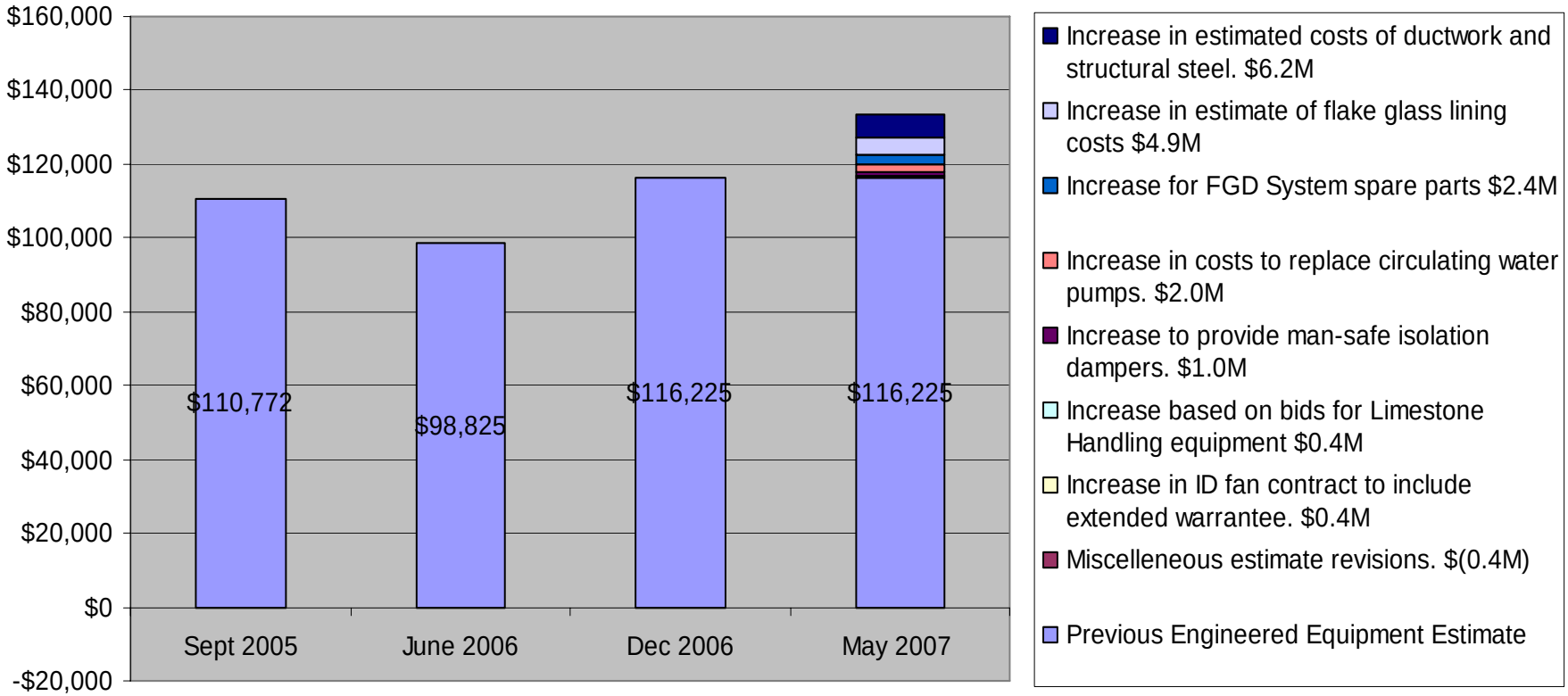
Sioux FGD Project
History of Equipment Cost Portion of Estimate



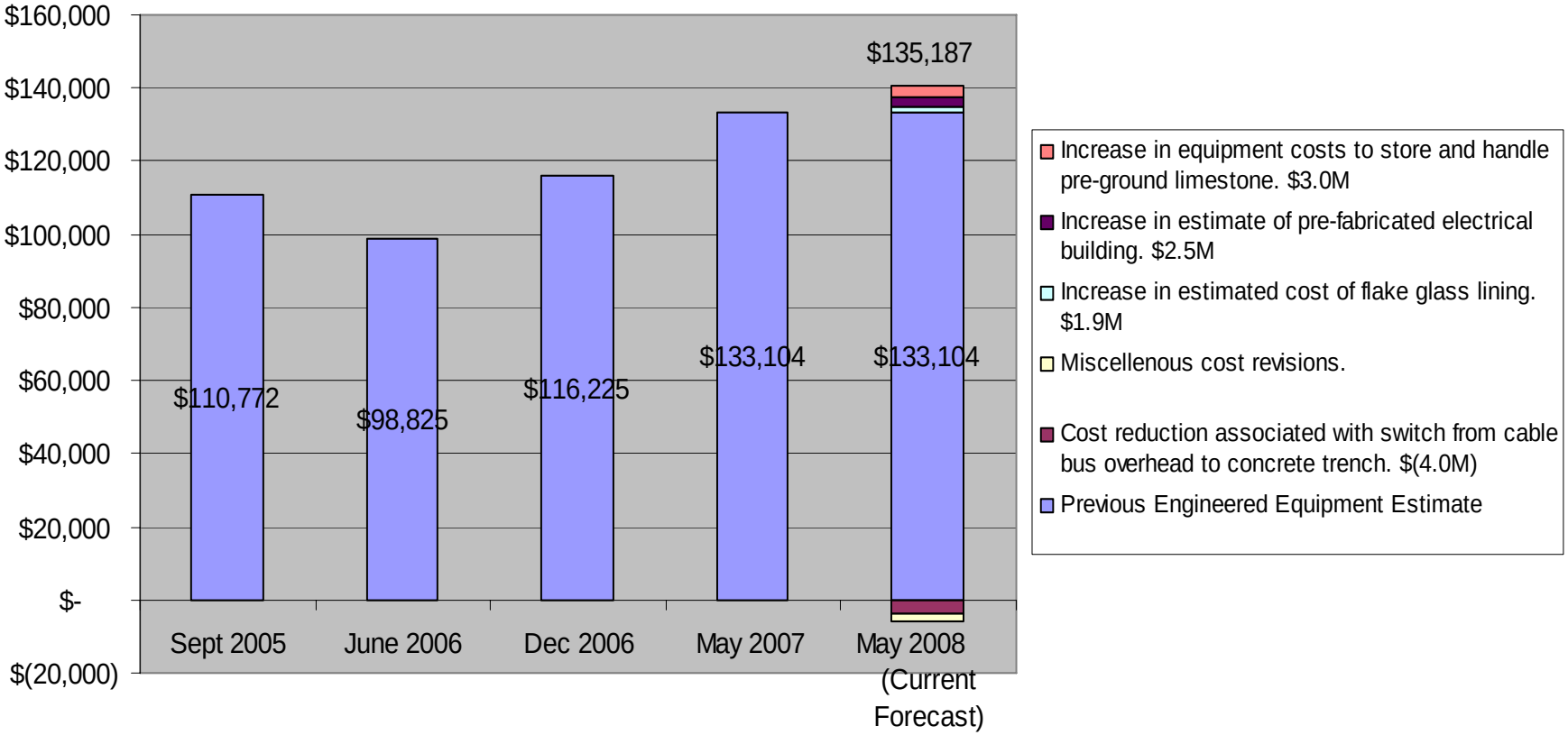
Sioux FGD Project
History of Equipment Cost Portion of Estimate



Sioux FGD Project
History of Equipment Cost Portion of Estimate

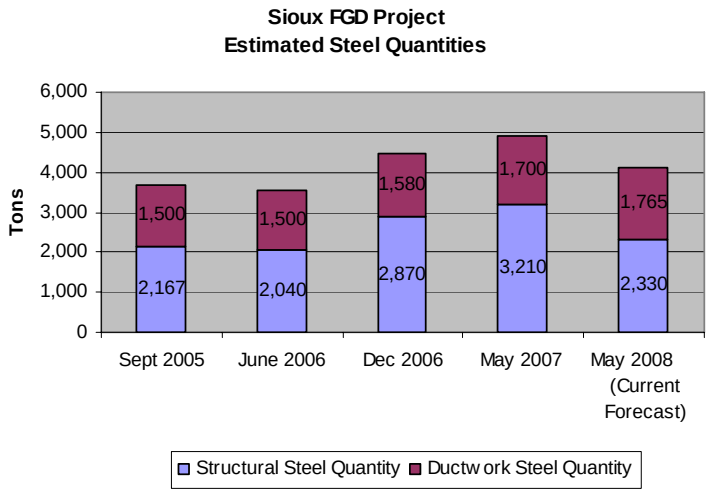


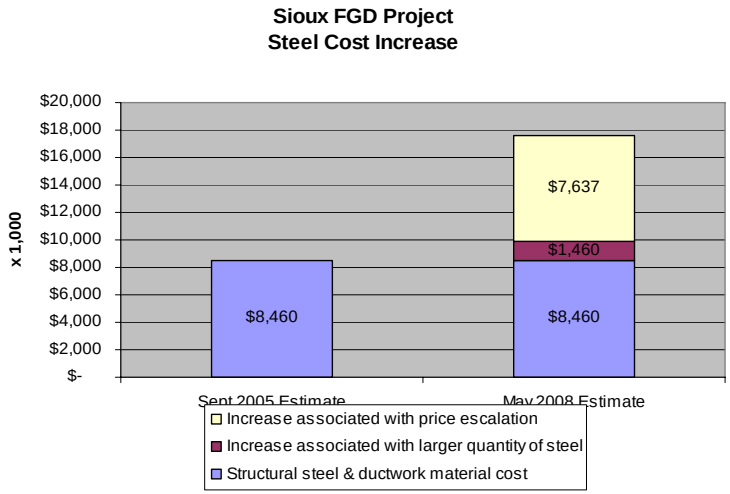
Sioux FGD Project
History of Equipment Cost Portion of Estimate



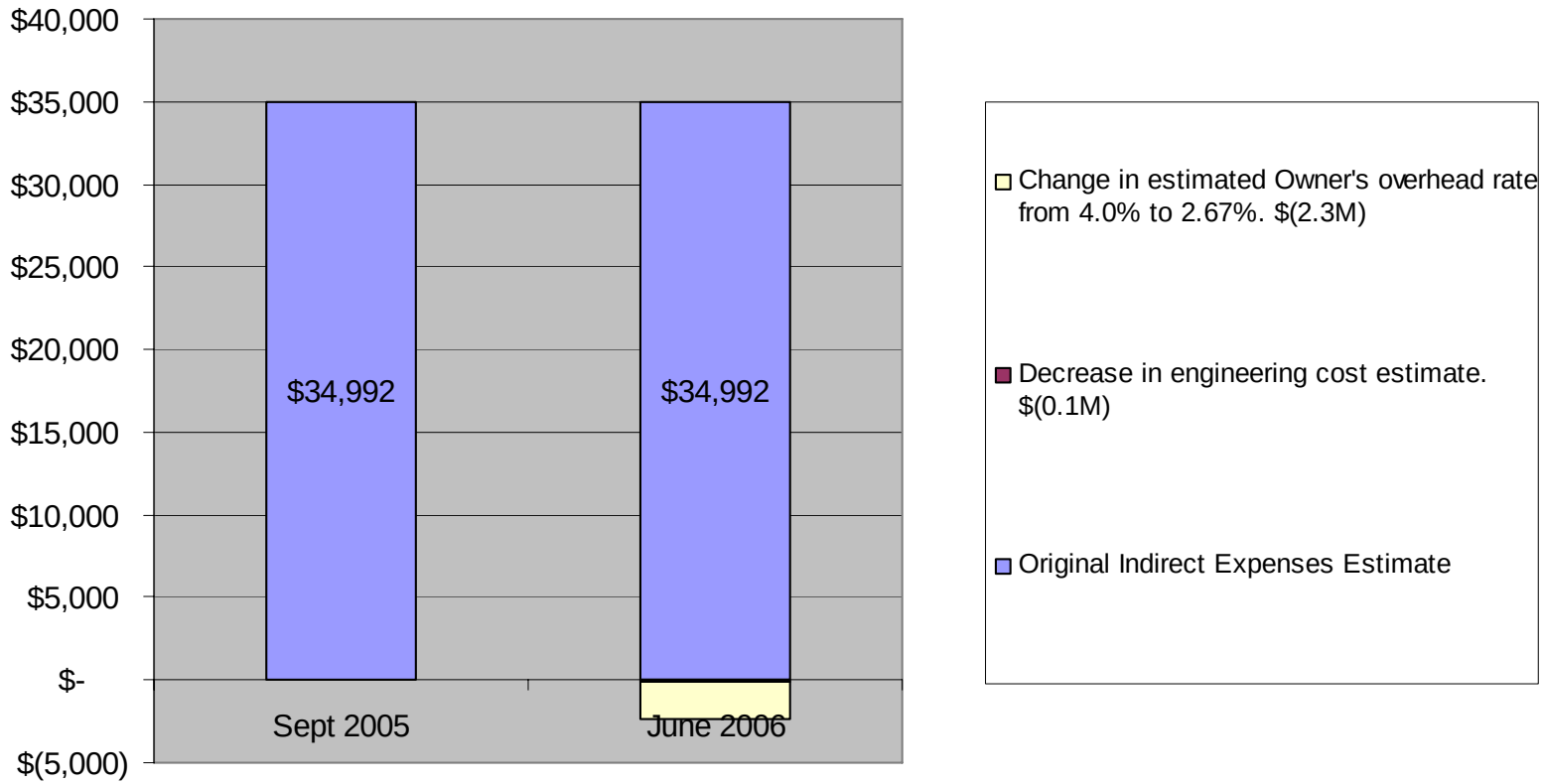
Impact of Steel Prices

- From Sept 2005 to May 2008 the estimated tonnage of steel increased by 12%.
- Steel cost increased by 108%.

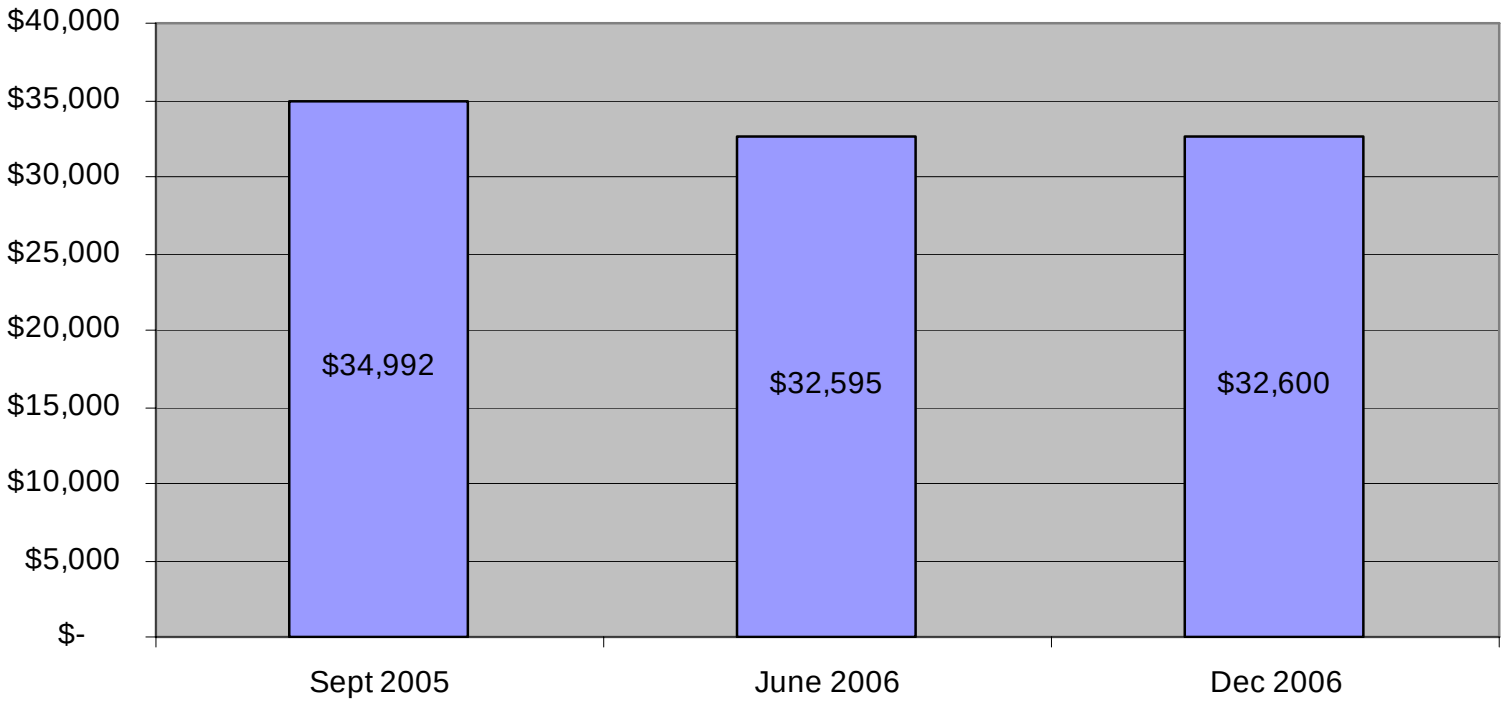




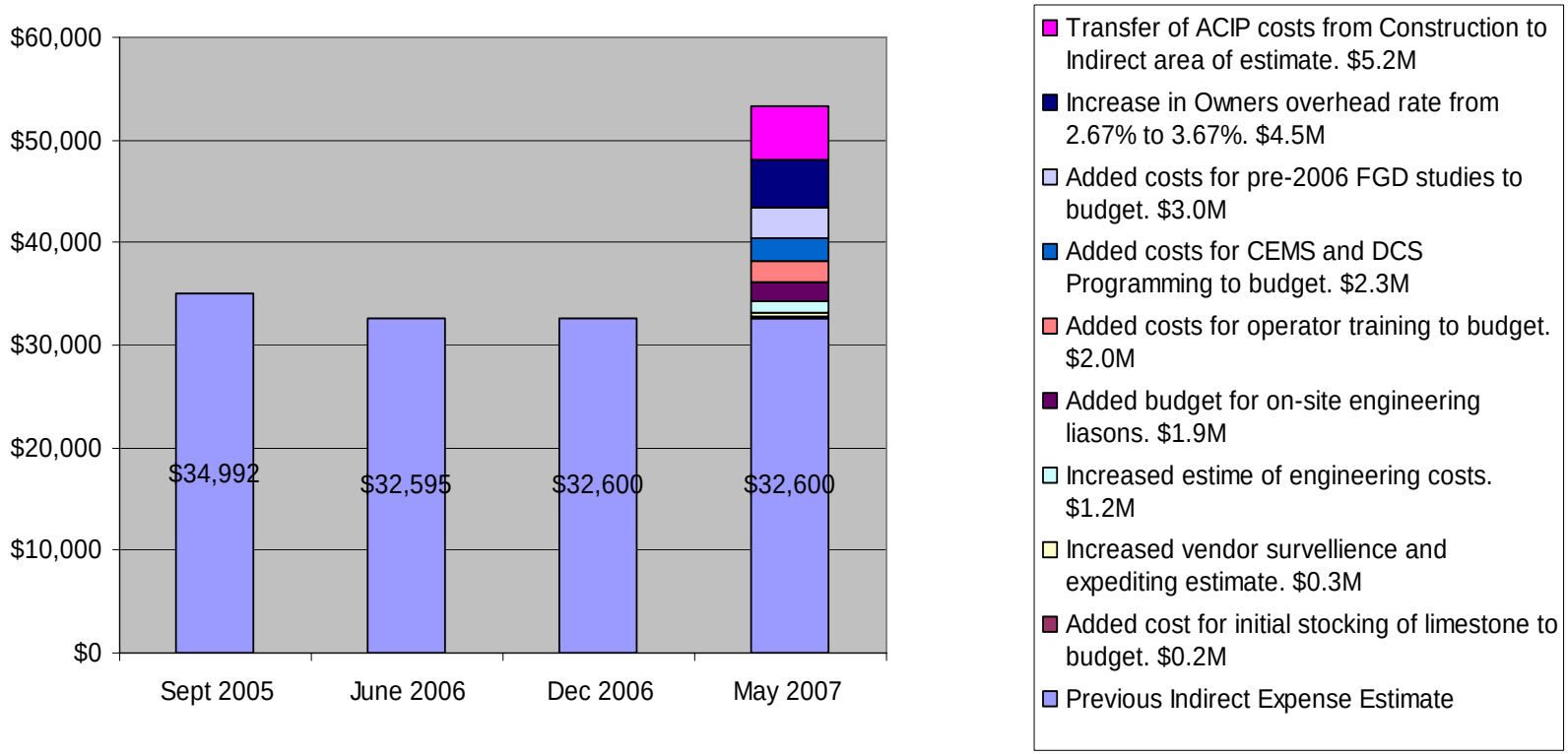
Sioux FGD Project
History of Indirect Expenses Cost Portion of Estimate



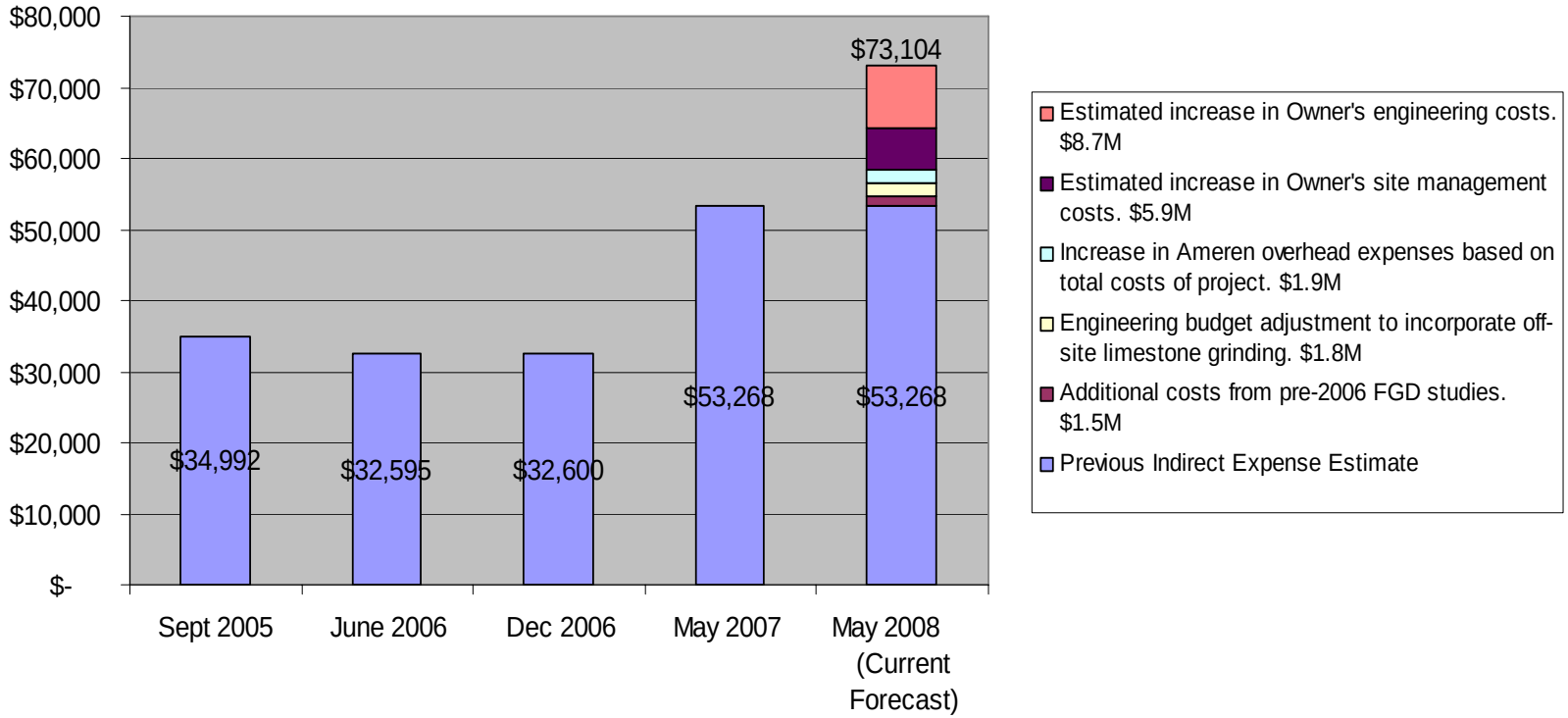
Sioux FGD Project
History of Indirect Expenses Cost Portion of Estimate



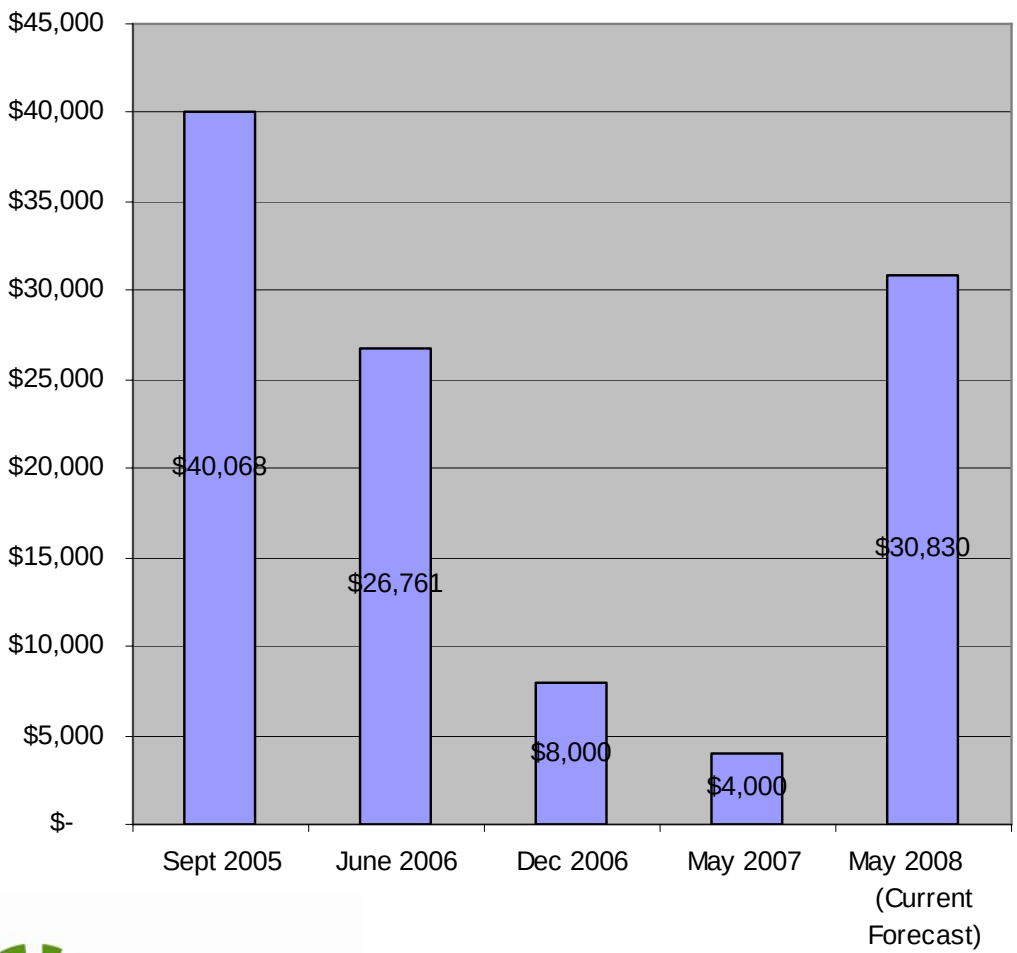
Sioux FGD Project
History of Indirect Expenses Cost Portion of Estimate



Sioux FGD Project
History of Indirect Expenses Cost Portion of Estimate



Sioux FGD Project
History of Withheld Contingency Cost Portion of Estimate



- Contingency was reduced in June 2006 estimate based on procurement of FGD system.
- Contingency withheld by Ameren was shifted to “construction contingency” in the construction portion of the estimate, $15M.
- Contingency was increased in the May 2008 estimate based on uncertainty in the performance of Hitachi, National Steel and Devcon.

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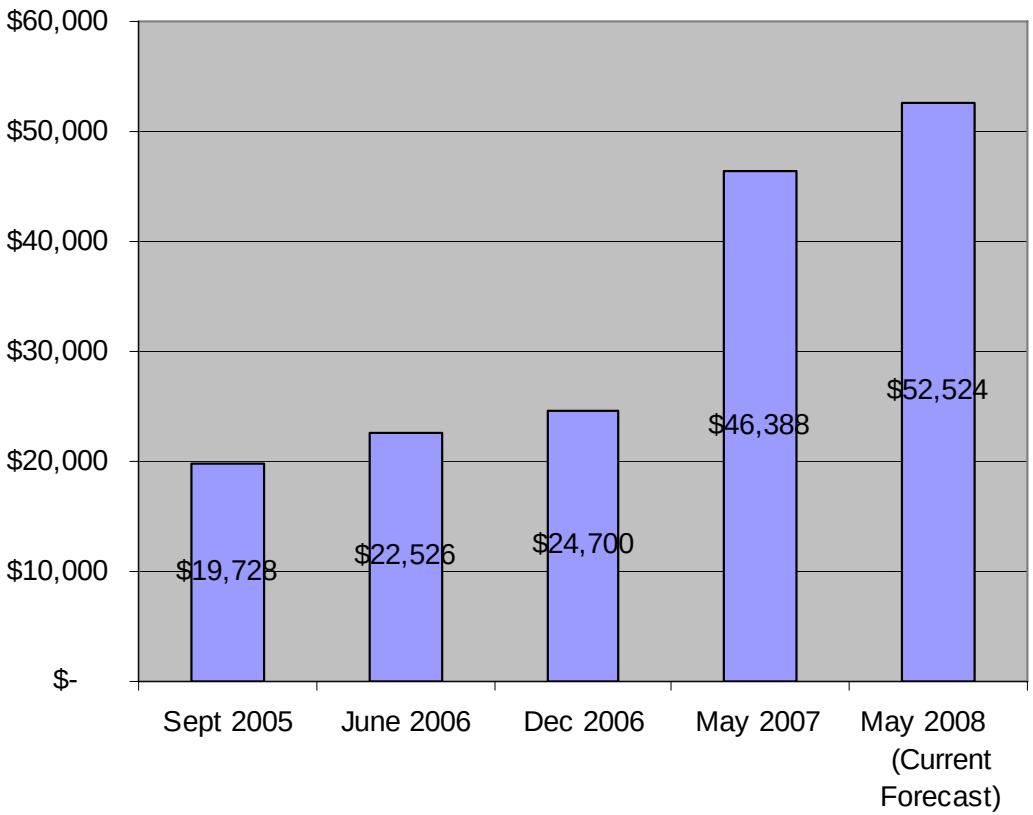
Sioux FGD Project
History of AFUDC Cost Portion of Estimate



- Major change in AFUDC in May 2007 estimate reflecting movement of in-service date from 2008 to 2009.
- Increase in May 2008 estimate is associated with the shift of the Unit 2 in-service date to the spring of 2010.
- Interest rate decreased from 8.84% to 7.98%.

Cost Factors

Labor Demand

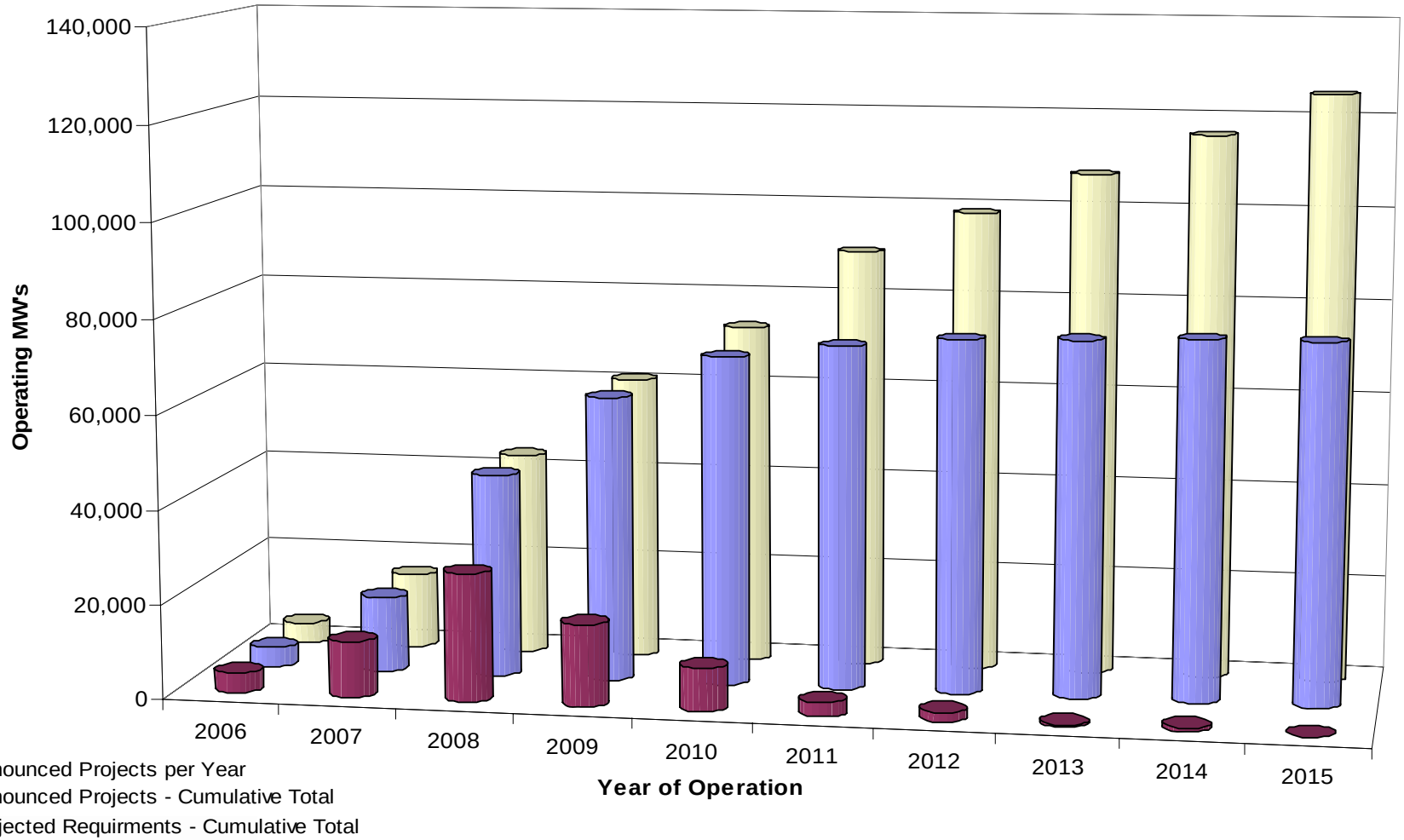
Material Escalation

Labor Demand

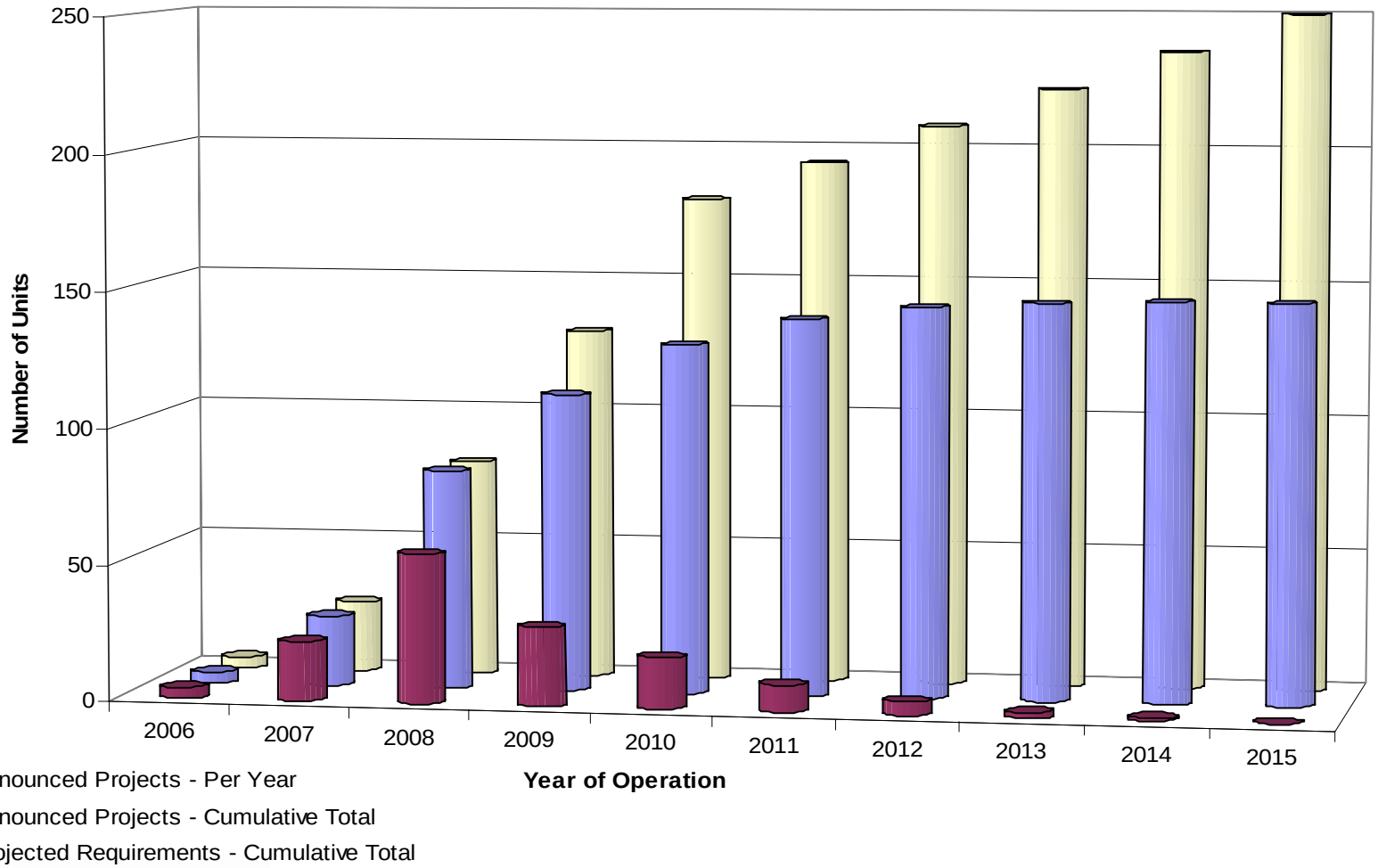
FGD Projects

Midwest Projects

Known FGD Systems Scheduled for Operation and Projected Requirements
MW's Per Year of Operation and Cumulative Totals



Announced FGD Systems Scheduled for Operation and Projected Requirments
Units Per Year and Cumulative Total



Current Industry FGD Programs Summary

- About 77,000 MW (~146 units) of FGD systems are underway.
- 2008 is a peak year when about 27,500 MW (55 units) of FGD systems will go into operation.
- Approximately 73,000 MW of FGD systems are needed by 2010.
- Approximately 125,000 MW of FGD systems are needed by 2015.

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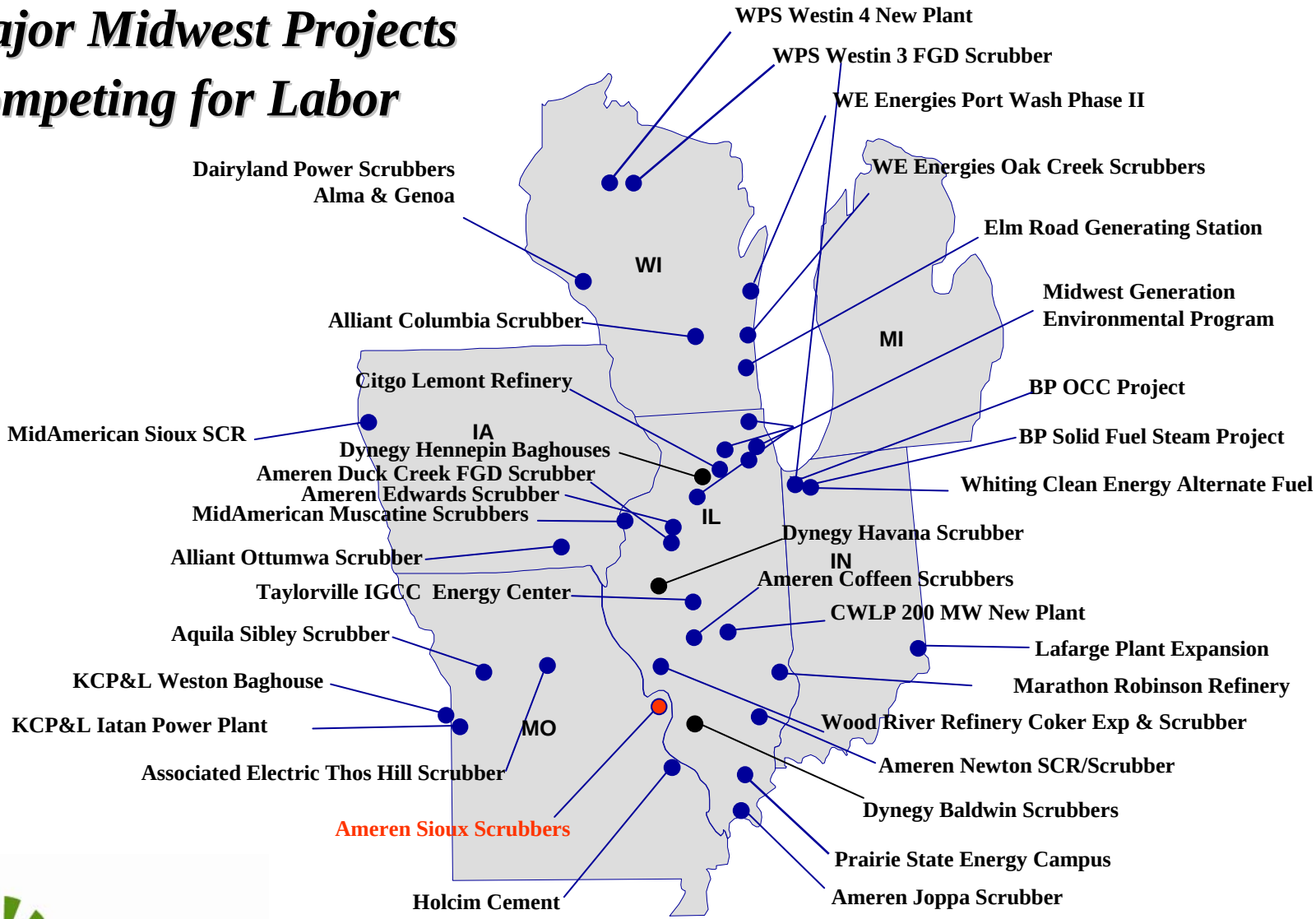
Other Industries

- Conoco/Phillips Refinery Expansion
  - Project Cost of $4 Billion
  - Construction from 2008 to 2011
- Holcim Cement Plant
  - Project Cost of $1 Billion
  - Construction from 2006 to 2009
- Marathon Robinson Refinery
- Lafarge Plant Expansion
- Whiting Refinery

Major Midwest Projects Competing for Labor



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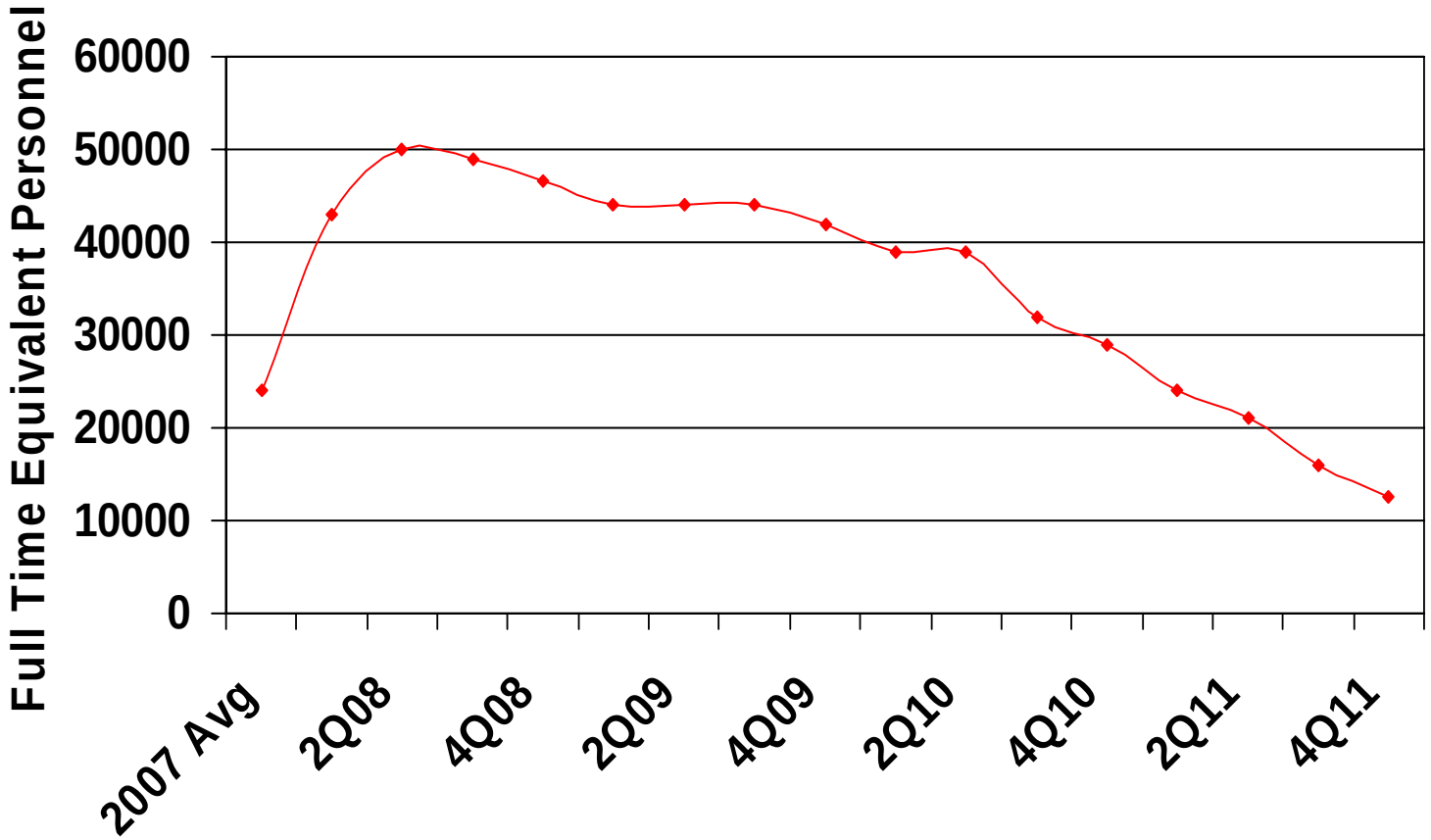
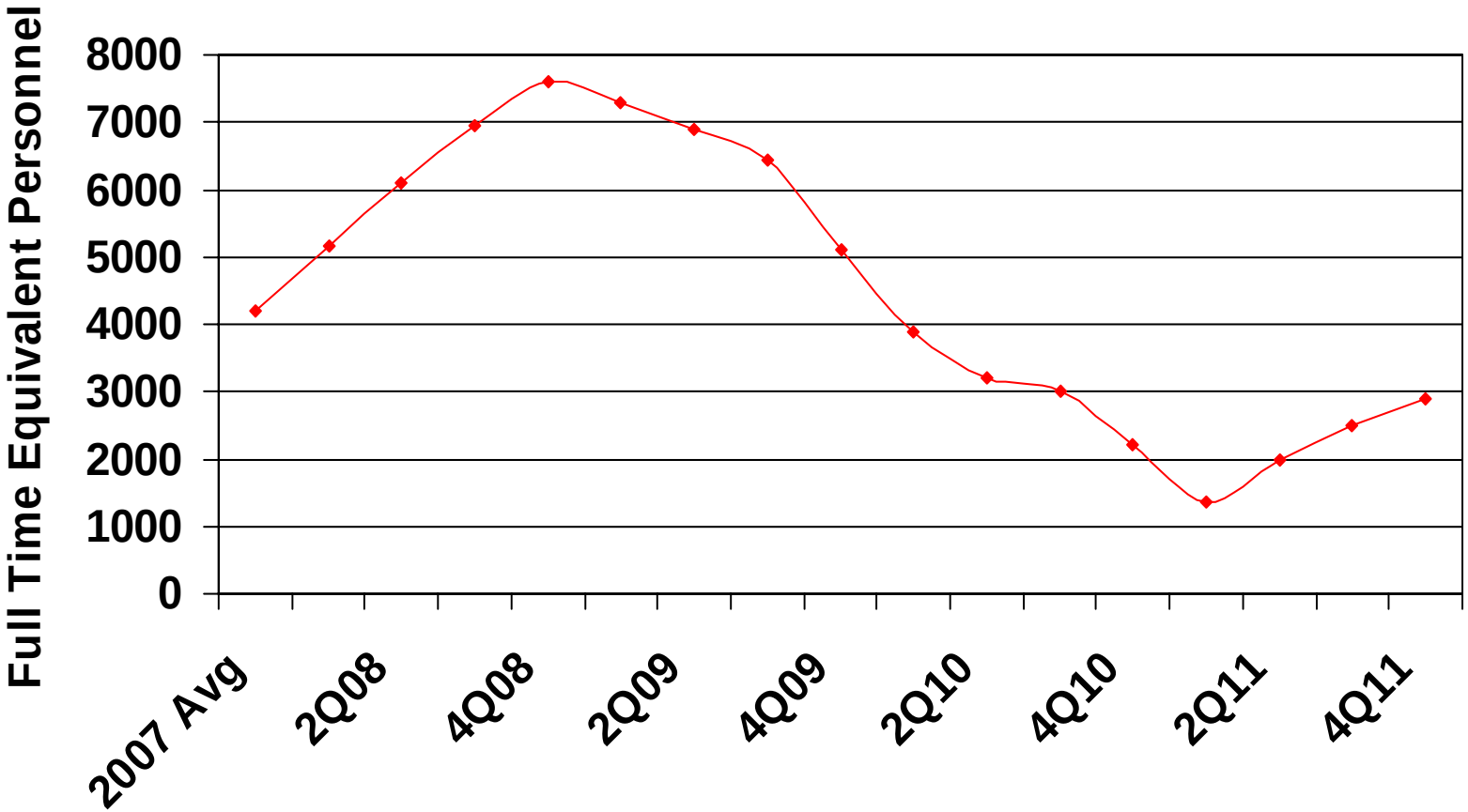
Midwest Labor Supply/Demand

(Source: Construction Labor Research Council)



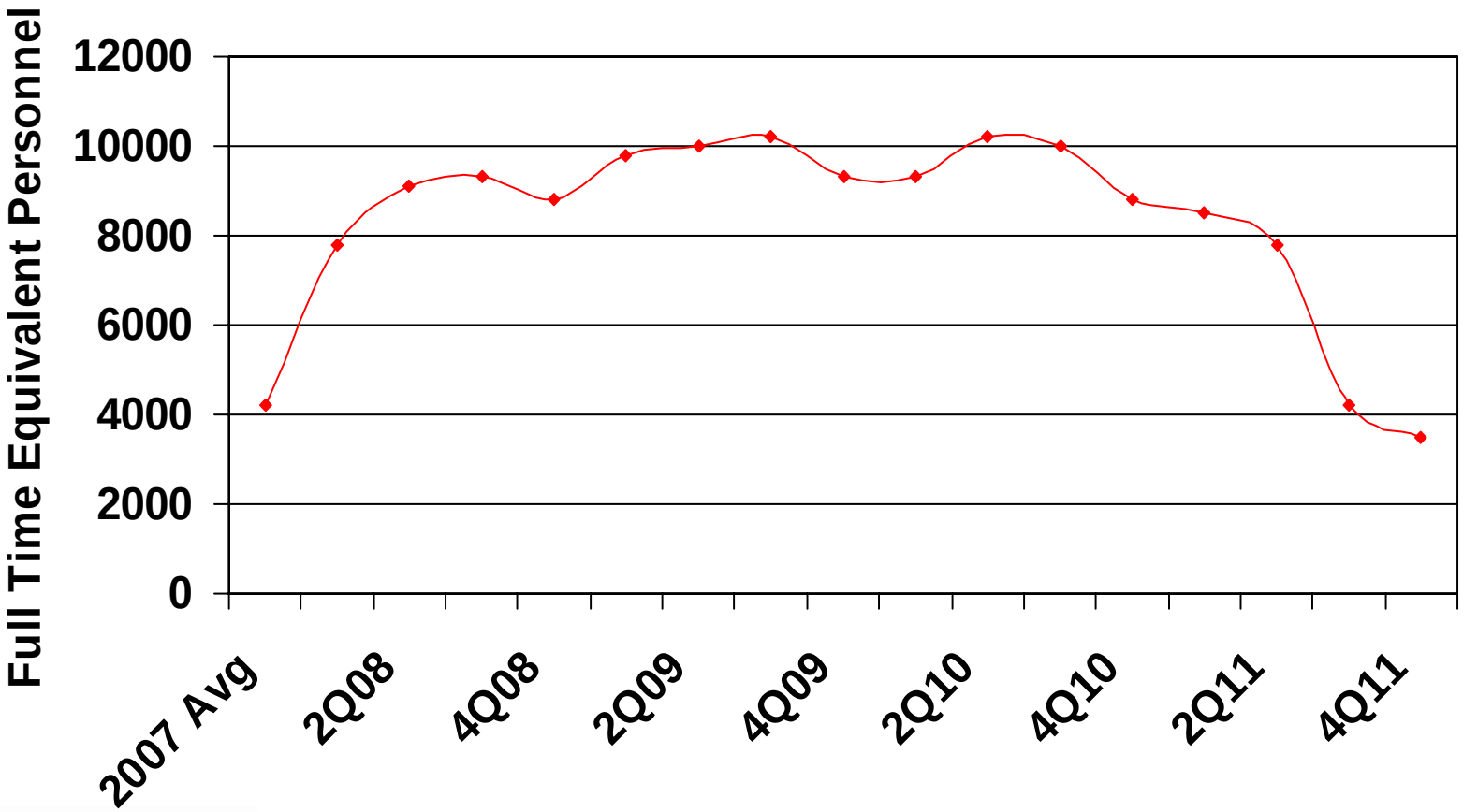
Missouri Labor Supply/Demand

(Source: Construction Labor Research Council)



Illinois Labor Supply/Demand

(Source: Construction Labor Research Council)



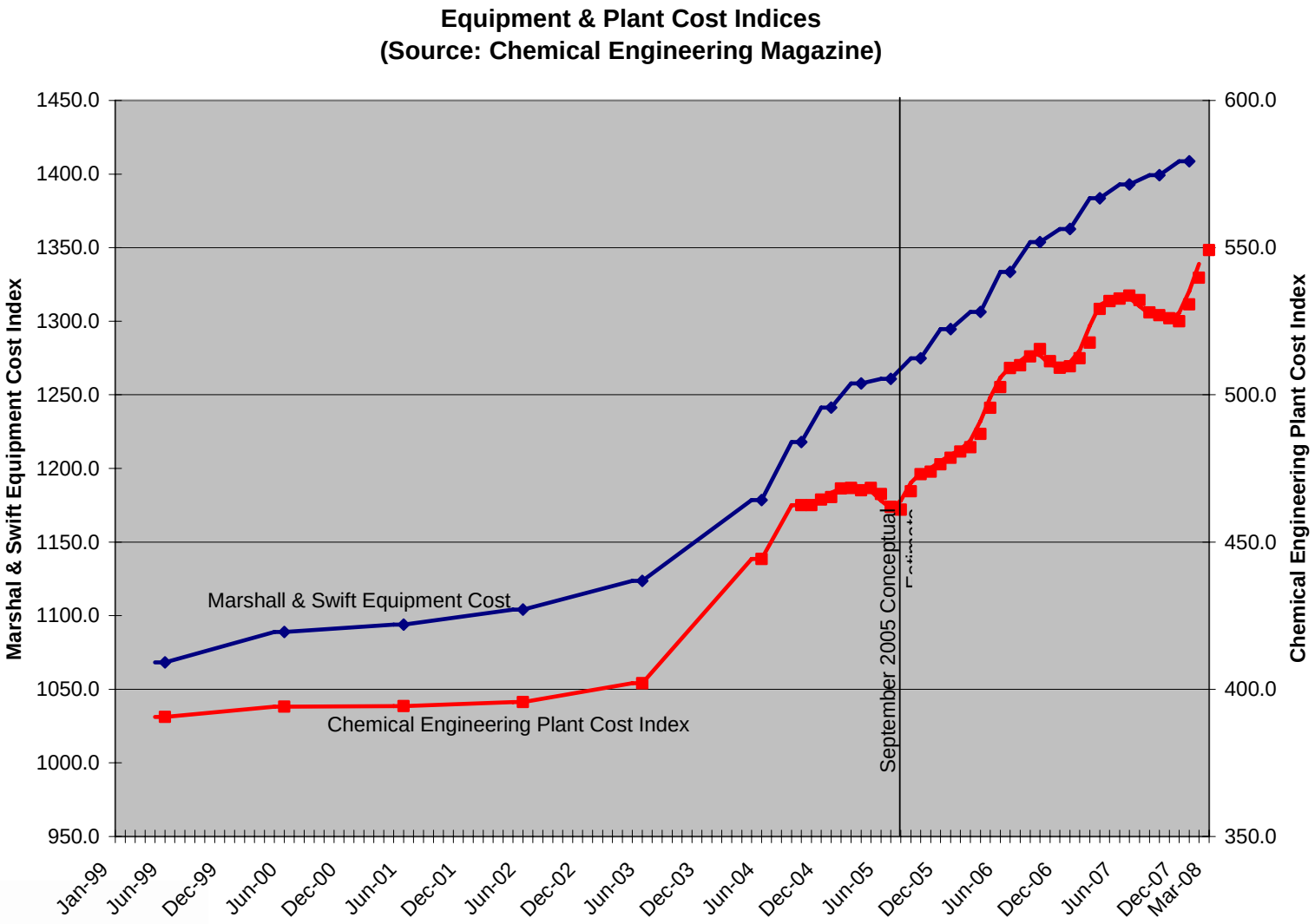
Equipment & Material Escalation

Equipment & Plant Costs

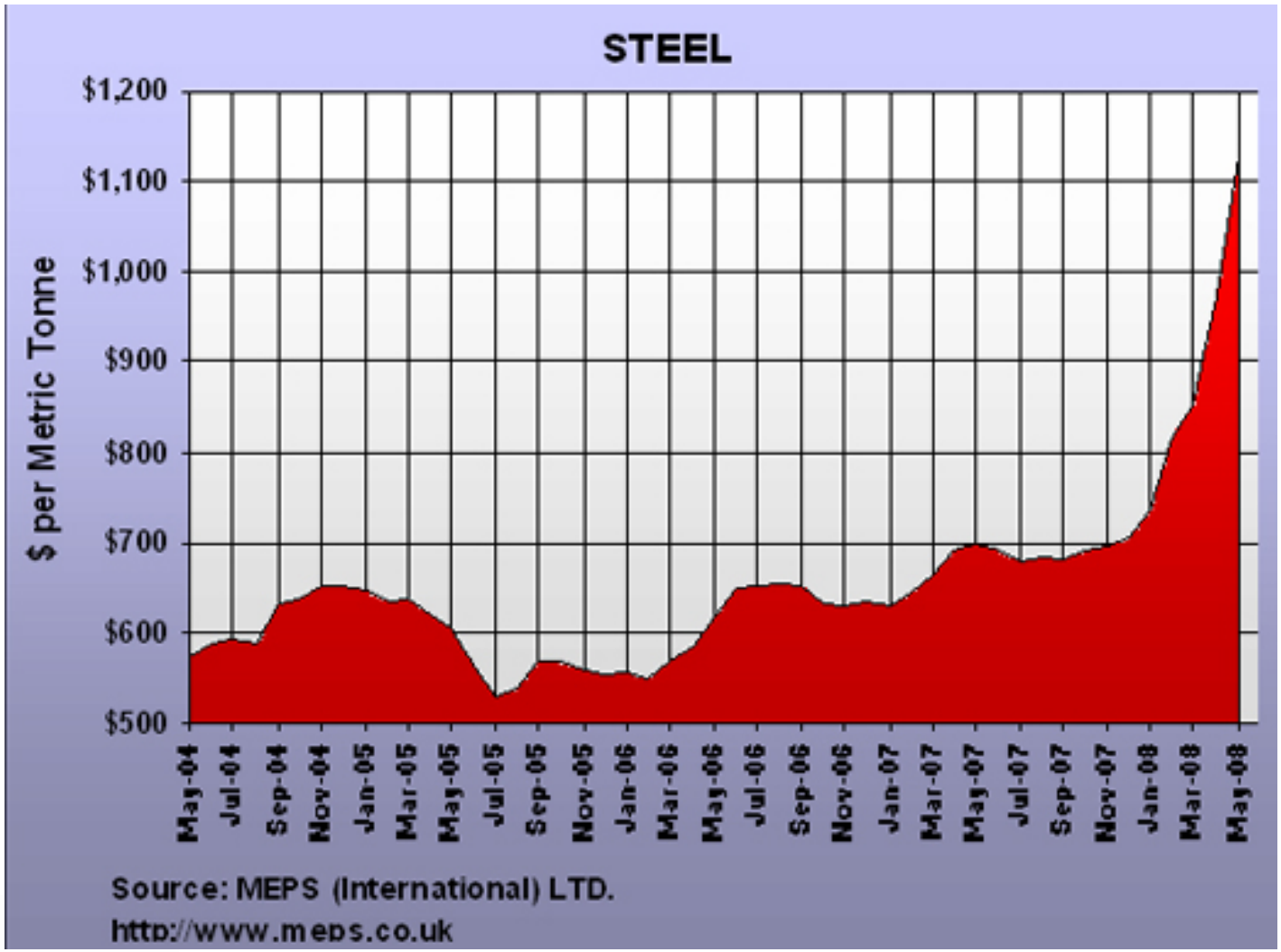
Material Escalation

Other FGD Projects

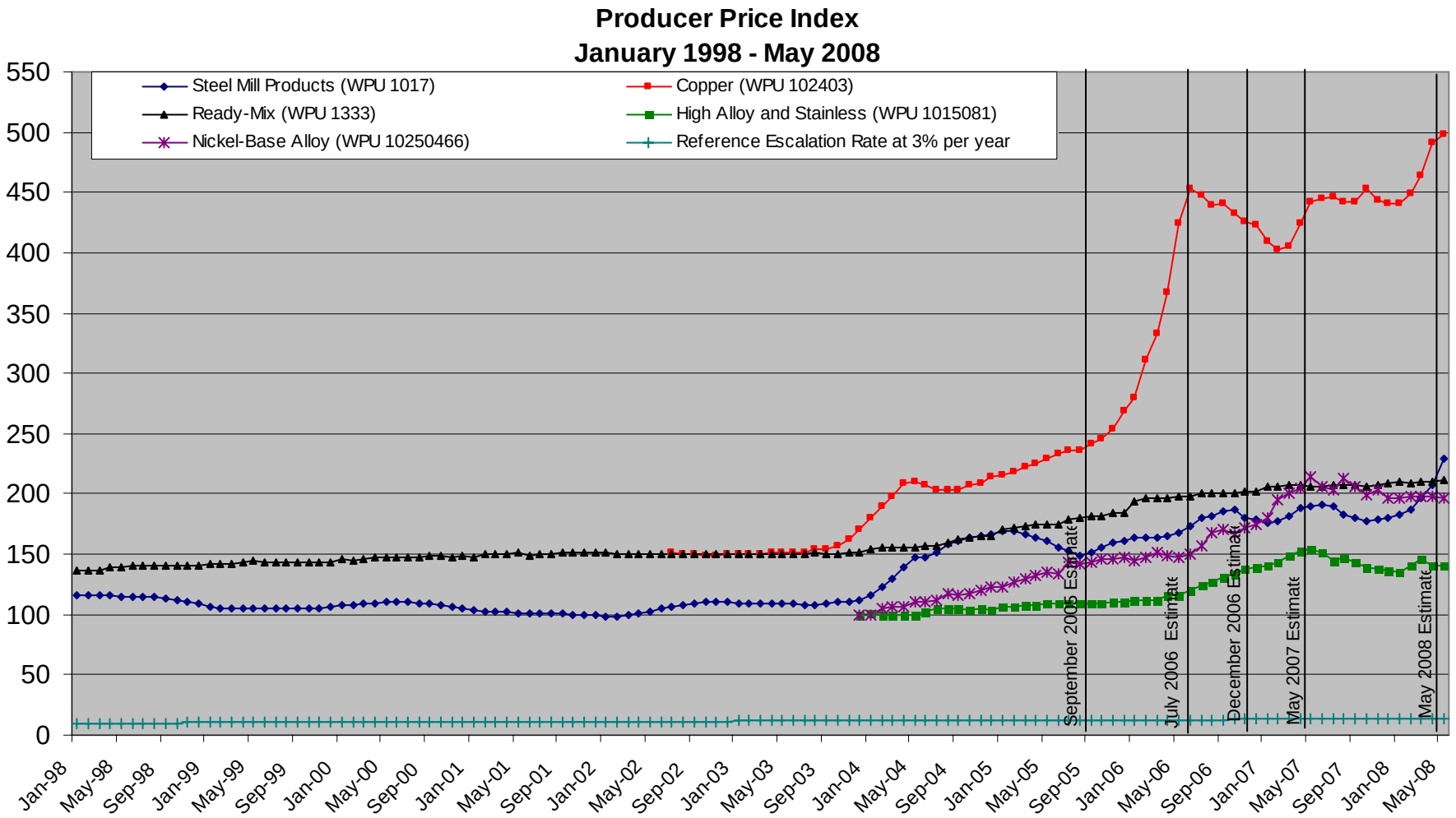
Equipment & Plant Cost Increases



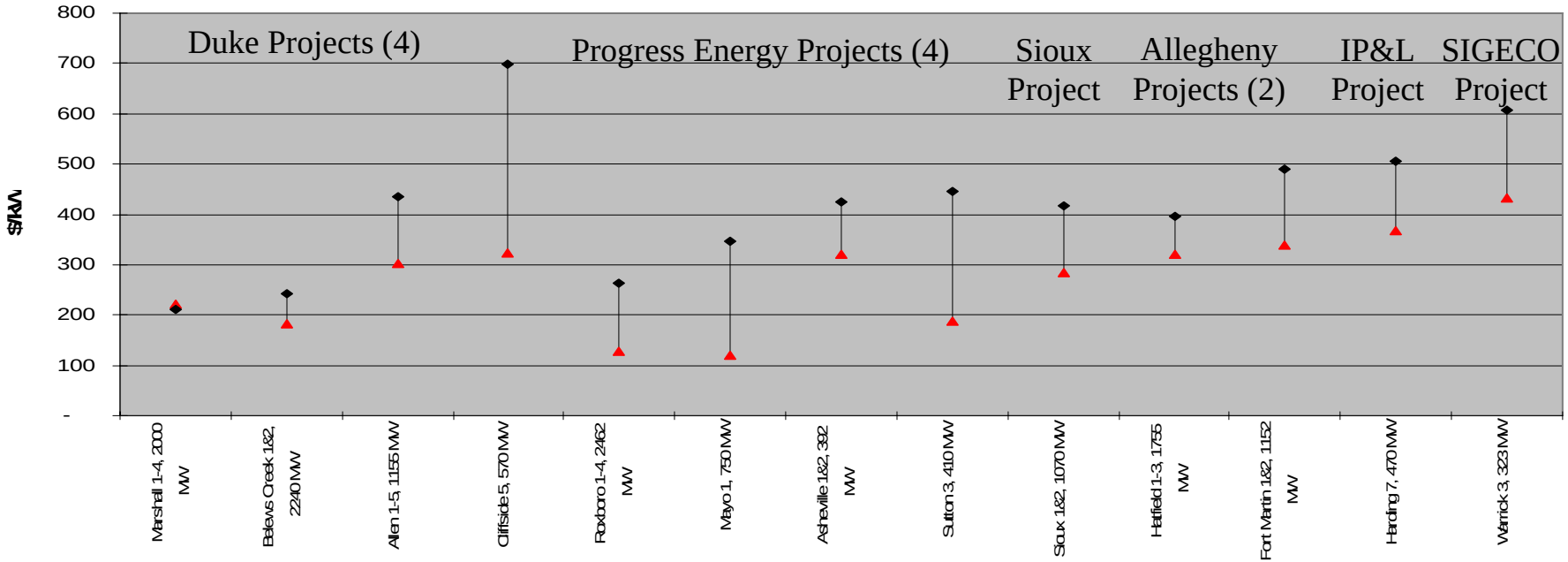
North American Composite Carbon Steel Price Increases



Material Price Increases



FGD Retrofit Cost Experience – July 2008



- Duke
  - Started Procurement in 2002
  - 95% Sulfur Removal
  - Medium Sulfur Coal
  - Spray Towers
- Progress Energy
  - Started Procurement in 2002
  - 95% Sulfur Removal
  - Medium Sulfur Coal
  - Spray Towers
- Sioux Project
  - Started Procurement in 2005
  - 99% Sulfur Removal
  - Medium Sulfur Coal
  - Spray Towers
- Allegheny Projects
  - Started Procurement in 2006
  - 95% Sulfur Removal
  - High Sulfur Coal
  - Spray Towers
- SIGECO
  - Started Procurement in 2003
  - 98% Sulfur Removal
  - High Sulfur Coal
  - Spray Towers
- IP&L
  - Started Procurement in 2003
  - 97% Sulfur Removal
  - High Sulfur Coal
  - Fountain Sprays

Triangle – Original estimate.
Diamond – Most recent estimate.
Costs exclude AFUDC

Source: Various Rate Cases Filings& publications.