



# Comanche 3

**Tim Farmer**

**Comanche 3 Project Director**



## Comanche 3 Highlights

- **750 MW coal-fired electric generating unit with advanced supercritical technology**
- **\$1.3 billion total projected cost**
  - **\$250 million labor costs**
- **Up to 1,400 construction jobs at peak**
  - **Colorado Building Trades Council agreement**
- **Electricity more than doubles while SO<sub>2</sub> and NO<sub>x</sub> are significantly reduced**
- **Mercury monitoring, testing and controls for all units; emissions will be lower than new federal standards**



# Emission Controls

*Existing and New:*

	Unit 1	Unit 2	Unit 3
Nitrogen Oxide (NOx)	Advanced Low-NOx Burner	Advanced Low-NOx Burner	Advanced Low-NOx Burner & SCR
Sulfur Dioxide (SO <sub>2</sub> )	Lime Spray Dryer	Lime Spray Dryer	Lime Spray Dryer
Particulate	Baghouse	Baghouse	Baghouse
Mercury	Sorbent Injection	Sorbent Injection	Sorbent Injection



<b><i>UNIT 3 SUBMITTED TOTAL PROJECT COST</i></b>					<b><i>\$1,072,900,000</i></b>
<b><i>Unit 1 &amp; 2 Air Quality Control Area (Pre-Settlement Agreement)</i></b>					
Z01	Unit 1 SO2 Control				<b><i>\$47,662,500</i></b>
Z02	Unit 1 NOX Control				<b><i>\$14,300,000</i></b>
Z03	Unit 2 NOX Control				<b><i>\$14,300,000</i></b>
	<b><i>Total</i></b>				<b><i>\$76,262,500</i></b>
<b><i>Unit 1 &amp; 2 Air Quality Control Area (Settlement Agreement Additions)</i></b>					
Z04	Unit 2 SO2 Control				<b><i>\$47,662,500</i></b>
Z05	Unit 1 Mercury Control				<b><i>\$1,500,000</i></b>
Z06	Unit 2 Mercury Control				<b><i>\$1,500,000</i></b>
Z07	Unit 1 Mercury Monitor				<b><i>\$150,000</i></b>
Z08	Unit 2 Mercury Monitor				<b><i>\$150,000</i></b>
	<b><i>Total</i></b>				<b><i>\$50,962,500</i></b>
<b><i>TOTAL UNIT 1 &amp; 2 EMISSION CONTROLS</i></b>					<b><i>\$127,225,000</i></b>
<b><i>TOTAL PROJECT COST (W/O TRANSMISSION)</i></b>					<b><i>\$1,200,125,000</i></b>
	<b>TRANSMISSION</b>				<b><i>\$150,000,000</i></b>
<b><i>TOTAL PROJECT COST</i></b>					<b><i>\$1,350,125,000</i></b>

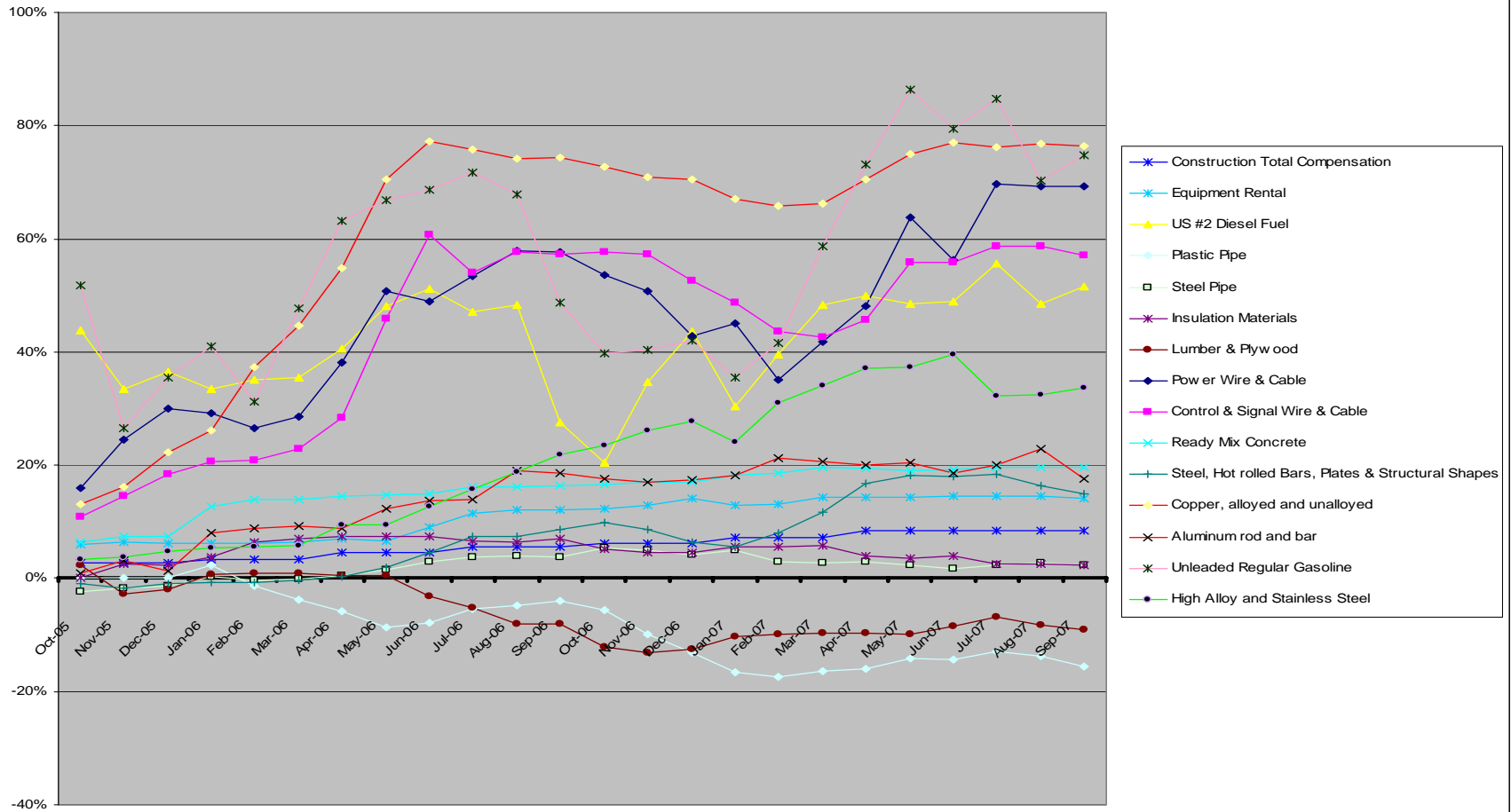


# Risks

- Labor availability & productivity
- U1&2 Scrubber additions (retrofit around operating units)
- Ahead of wave of new plants – but wave is coming fast
- Commodity availability limitations and extreme price volatility
- Manufacturing capacity limitations
- Construction equipment availability
- Global Sourcing



# 24 Month Commodity Price Comparison





## Project Timeline

<b>Construction Begins</b>	<b>January 2006</b>
<b>Boiler Foundation Complete</b>	<b>December 2006</b>
<b>Turbine Generator Stator Set</b>	<b>July 2007</b>
<b>Boiler Steel Completed</b>	<b>September 2007</b>
<b>Unit 2 Low NOx burners in-service</b>	<b>November 2007</b>
<b>Units 1&amp;2 emission controls installed</b>	<b>November 2008</b>
<b>Transmission line in-service</b>	<b>May 2009</b>
<b>Unit 3 complete and in-service</b>	<b>Fall 2009</b>



# Comanche Expansion Project

- **Engineering: 92% Complete**
- **Procurement: 70% Complete**
- **Construction: 36% Complete**
- Construction workforce at over 1,260 personnel
- Over 2,360,000 craft hours – OSHA RIR 3.2
- On Schedule
- Closely tracking Budget



# Cooling System

**Combining wet and dry cooling systems to reduce water use by half**

## Wet Cooling

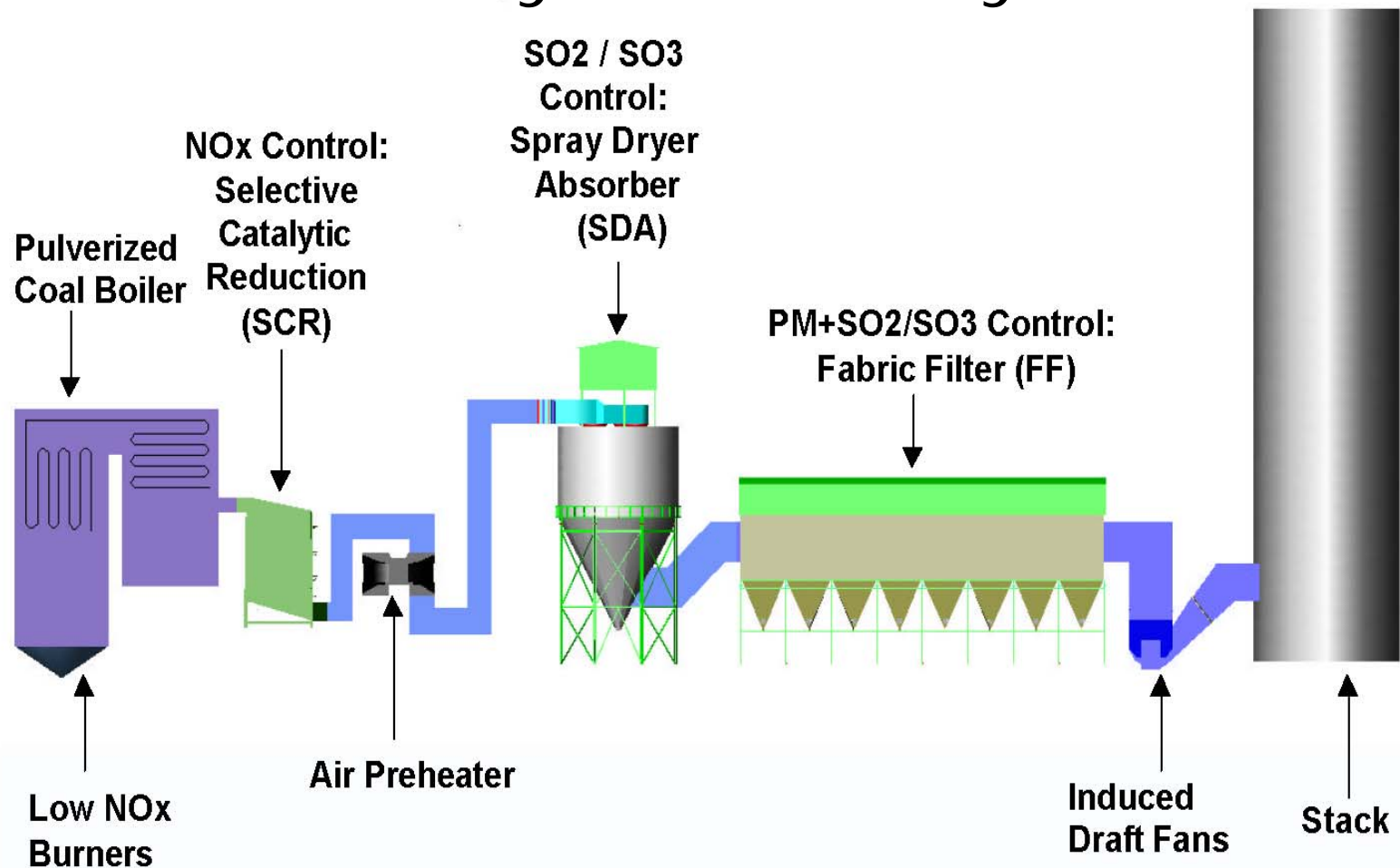


## Dry Cooling





# Air Quality Control System





## Comanche Site Looking South





## Comanche Site Looking East



A large, centered version of the Xcel Energy logo, consisting of a red stylized swirl icon followed by the text "Xcel Energy" in a bold, italicized sans-serif font, with a registered trademark symbol (®) at the end.