

6/2/2015

EXHIBIT B Detailed Events Relating to Kemper Plant Cost Increases

MPC: Five Years after Kemper Economic Justification, "Discover" \$3.6 Billion More Needed.

Incompetent project management or a bad problem well managed?

Word Plant as used by PSC and MPC, includes the gasifier and power turbines but excludes the mine, carbon dioxide pipeline and non-mine AFUDC
As used here, Project includes all costs of the project including the plant

Cost Summary 5/9/2016	
Project Cost, Billions	\$6.960
Less DOE Grant	(0.380)
Less MPC Write offs	(2.470)
For Prudency	\$4.11 Bil

- 11/7/2006 File w/PSC to study need for capacity by MPC to PSC. \$12M to study
- 12/13/2006 AP and Clarion Ledger. Gov. Haley Barbour announces proposed construction of a lignite power plant in Kemper County.MPC announcement say day.
- 12/21/2006 PSC Order approves study of need for new capacity
- 11/24/2007 **Duke receives Certificate of Public Convenience and Necessity for Edwardsport Duke est. cost of \$1.985B up from \$1.3-1.6B when filed**
- 12/11/2007 MPC can't eliminate alternatives. Need more time, study cost rises to \$23.8M First mention details of lignite mine and buying a dragline. Seek permission to recover \$66M to secure & upgrade used dragline. Money for lignite dryer.
- 5/xx/2008 DOE Grant transferred from FL to MS, \$245M construction, \$50M operating
- 5/1/2008 **Duke cost increase of \$365M, now \$2.35 B**
- 5/9/2008 Mississippi Baseload Act signed by Governor
- 6/1/2008 **Broke Ground for Edwardsport. Two years to the month ahead of Kemper**
- 12/29/2008 MPC to PSC, expect until mid-2009 to complete study of need for capacity.
- 1/14-16/2009 File for petition for a Certificate of Public Convenience and Necessity for Kemper authorizing Company to construct, acquire, operate and maintain Kemper project By 1/16/2009 MPC owned 750 acres and options for remainder of land per MPC
- 6/5/2009 Commission initiates evaluation ar Supplemental and rebuttal hearings
- 11/9/2009 **PSC Finds Need and Necessity for generating capacity. End Phase I, Phase II begins to select type plant for capacity. PSC request low NG price scenarios**
- 11/17/2009 MPC files, low NG gas analysis too difficult, not needed. PSC does not force
- 11/24/2009 **Duke Energy announces \$150M increase in their gasification plant Internal emails show Duke executives knew costs would go higher**
- 12/7/2009 **Cap on "plant" cost at \$2.4 billion, Independent Evaluator recommendation**
- 1/25/2010 MPC files legal brief that cap on construction costs not legal. AG disagrees.
- 3/12/2010 **Request by MPC to increase cap for "plant" to \$2.4 X 1.33 = \$3.2 B along with a rate payer risk mitigation proposal, CWIP Order. Attorney General files testimony cautioning risk protection for rate payers**
- 4/1/2010 **Duke Energy announces \$400M increase in their gasification plant**
- 4/29/2010 April Order approved request to raise cap. MPC to assume more risks, MPC appeal
- 5/26/2010 **PSC approval a 20% cost cap increase for "plant" or \$2.88 B, adj. MPC risks**

Projected Plant Billions \$	Projected Project Billions \$	Plant CAP Billions \$	Write off DOEGrant Billions \$	Who Pays TBD Billions \$
\$1.80	\$2.20	\$0		
			(\$0.245)	
\$2.20	\$2.80	\$0		\$2.55
\$2.40	\$3.10	\$0		\$2.85
Cap introduced, MPC agrees		\$2.40		
MPC Proposes new Cap		\$3.20		
Coincides with Duke cost problems at Edwardsport				
\$2.40	\$3.10	\$2.88		\$2.85

5/14/2010 PSC rules, costs capped even if higher costs are determined to be prudent
Construction activities started week 6/14 per the Cost Status Report of August 2010
Spending through August, 2010 was \$151.7 M on the plant

6/3/2010 Certificate of Public Convenience and Need (CPCN) Order approving Kemper
 Chancery Court ruling reversing the CPNC of June, 2010. This process
 ended in the Supreme Court ruling of 3/15/2012 clearing the way for PSC to rule

9/1/2010 **Duke announces another \$200M cost increase at Edwardsport**
 10/1/2011 **Duke announces another \$300M cost increase at Edwardsport**

10/18/2011 Kemper Project Team visit Edwardsport, issue report of "lessons learned"
 During 2012 Problems with refractory ceramics for gasifier, exact timing unknown

4/30/2012 **Duke initiates settlement talks with Indiana PSC, eventual \$1 B write offs**
 3/8/2012 MPC meets with both independent monitors and informs them of a cost increase
 Verbal, cost to increase to \$2.76 B plant

4/24/2012 **PSC grants CPCN on remand, Plant cost \$2.88 B, \$1.38B spent through April, 2012**
 5/7/2012 Public announcement by MPC of cost increase to \$2.88 B for plant
 8/7/2012 MPC fires KBR and Yates, 8 and 9 mos later fires Anderson and Day

10/31/2012 **Duke announces another \$250M cost increase for Edwardsport**
 1/24/2013 MPUS and MPC announce the Agreement setting out the outlines of a
 2013-UN-039 7 Year Rate Plan, a Prudency schedule and the SPE bond

2/26/2013 **Legislation for the SPE bond up to \$1 B** **SPE Bond**

3/12/2013 CWIP, a rate increase for 2013 and until commercial operation in 2014
 4/23/2013 MPC announcement of \$540 M cost increase and write off

4/xx/2013 Announcement of Tommy Anderson, VP Operations, departing MPC
 5/20/2013 Holland appointed CEO of MPC, Ed Day "retires"
 7/29/2013 MPC \$450 M cost increase and write off

10/28/2013 MPC \$150M cost increase and write off AND STARTUP Change to Q4, 2014
 Q4, 2013 Power turbines fired on natural gas, 8/28/13 and 9/4/13
 Q1, 2014 MPC Update: Chip Speaker, "...Work on Kemper Project began March, 2006"

2/27/2014 Southern 2013 Annual, data thru 2013

4/2/2014 MPC Q1, 2014 write off \$380M cost increase and write off

8/14/2014 MPC & SoCo: natural gas fired commercial operation of Combined Cycle

9/5/10/2/14 MPC addition cost increases of \$30M plus \$59M

7/21/2014 both competence and timely disclosure by SoCo/MPC

10/28/2014 MPC writes off additional \$330M

2/3/2015 MPC writes off additional \$70M

2/19/2014 Southern files suite in Alabama against former manager gasifier construction

3/31/2015 MPC increases cost est and takes write-off pof \$9 million

1-Apr-15 Power Burns and Roe terminates Independent Monitor contract with MPUS
 effective April 30, 2015

5/15/2015 MPC files 3 rate plans with MS PSC.

Note mismatch of cap and stated cost of plant. This mismatch lasts about 2 yrs while the Sierra Club court case blocks a CPCN. Immediately after the CPCN is Ordered on remand, 2012, MPC announces a plant cost increase to the cap. Breaching the cap occurs shortly after CWIP, SPE, infamous January 24, 2012 Agreement.

	\$2.40	\$3.10	\$2.88		\$2.85
Verbal	\$2.76	\$3.50	\$2.88		
Official	\$2.40	\$3.10	\$2.88		
Official	\$2.88	\$3.65	\$2.88		\$3.40
Over 15 months, May, 2012 to end July, 2013, estimated costs for the gasifier are increased by \$1.5 billion					
\$1 B				\$2.40	\$3.40
	\$3.45	\$4.55		(\$0.54)	\$3.75
	\$3.90	\$5.00		(\$0.45)	\$3.75
	\$4.02	\$5.20		(\$0.115)	\$3.85
	\$4.06	\$5.29	ex DOE	(\$1.18)	
	\$4.44	\$5.78	Inc. DOE	(\$0.38)	\$3.96
	\$4.53	\$5.87	Inc. DOE	(\$0.09)	\$3.96
	\$4.86	\$6.30		(\$0.33)	\$4.13
	\$4.93	\$6.37		(\$0.70)	\$4.13
	\$4.94	\$6.47		(\$0.01)	\$4.16

5/20/2015 MPC informed SMEPA terminating agreement to purchase 15% of Kemper
Who picks up the \$600-620 million SMEPA was to pay?
6/2/2015 Southern announces \$4 million cost increase
5/9/2016 Update

	\$4.95	\$6.48	(\$0.00)	\$4.16
		\$6.95	(\$2.85)	\$4.11
Projected Plant Billions \$	Projected Project Billions \$	Plant CAP Billions \$	Write off MPC/SO Billions \$	Who Pays TBD Billions \$

The combined cost increases of 5/7/2012 and 4/23/2013 raised the plant cost estimate to \$3.4 B versus the request cap increase to \$3.2 B in March-May, 2010. Coincidence that 3 years earlier MPC requested a cap matching what the original MPC management team raised estimates to when legal and regulatory hurdles were cleared? Note, the \$3.2B cost cap filing by MPC was shortly before the hearing for the CPCN, a sensitive and crucial time. The cost increases of \$450M in July, \$115M Oct., 2013 and \$177M April, 2014 were under new management.

* (\$2.85B) at 5/9/2016 made up of \$0.38B DOE Grants plus \$2.47B written off by Southern Co.

Burns and Roe (BREI) report filed with Mississippi Public Service Commission, file 2013-UA- 189, July 21, 2014

Page 11. Since there was little contingency in the \$2.4 billion number and only a very high-level Basis of Estimate, the resulting basis for planning, scheduling, and earned value measurement was insufficient

Page 12. BREI reviewed the Basis of Estimate in the August 2009 FEED package to establish whether it served this purpose and need. It did not. The Basis of Estimate was a ½ page, high-level summary of the basis of the cost estimate. Given the magnitude of the Kemper Project, better documentation was not only desirable but was necessary.

Page 13. The lack of appropriate contingency in the \$2.4billion estimate had a negative effect on the up-front planning of the Kemper Project and the development of reasonable baseline project plans which should have included an "allowance for indeterminates." An example of this is commodity growth, which should have been recognized by the Project Team from the Edwardsport lessons learned.

Page 19. ..., the team ...reported that, "[a]ccording to Duke, 90% of their issues were design related" relative to commodity growth. The lessons learned from Edwardsport, as well as the very nature of a FOAK [first of a kind] project, should have alerted the Project Team of the need to be very aware and conservative when forecasting and planning for the potential growth of commodities....

Page 22. ...the Kemper Project was placed on a fast track schedule, but industry standard practices to reduce the risk of a fast track project were not implemented

Page 27. Despite these facts, the overall cost and schedule projections continued to predict no overruns in schedule and no overruns in cost until the first cost overrun was acknowledged in May 2012, two years in to the Kemper Project. ..., only ten months prior to the targeted COD of May 1, 2014.

Page 37. In its November 26, 2012, Independent Monitor's Project Schedule and Cost Evaluation Report, BREI predicted that the May 2014 COD [commercial operation date] was not achievable. Finally, in October 2013, MPC recognized and acknowledged that the original schedule was not achievable ...

- Page 42. ... it was reported in the September 2011 monthly Independent Monitor's report that MPC was projecting an overrun of its certification estimate for early construction work ... These were all trends reported as early as September 2011, however, it was not until May 2012 that SCS/MPC MPC acknowledged and reported that the Project would not be completed within the \$2.4billion certified estimate.
- Page 43. BREI has broken out the reported cost of the Project,... June 2010 through May 2014. While the chart clearly shows an upward trend in engineered procured materials, it shows a corresponding decreasing trend in construction costs. These trends are illogical and should have been examined by SCS and MPC management. In fact, MPC/SCS did not report a growth in total project cost until May 2012
- Pages 55-56 Huggins and Owen state that the Process Development Allowance items, including the Sour Water Stripper Corrosion Stress Cracking Protection, were done to optimize the design and make the plant more economic and thus should be eligible for Process Development Allowance (p. 104). Do you agree?
No. SCS learned during detailed design that oxygen could be introduced into the sour water/wastewater system, especially , during startup and that the materials specified for the sour water strippers were inappropriate and subject to stress corrosion cracking, a phenomenon that can lead to unexpected, undetected and catastrophic failure of the vessels. SCS presented its justification for changing the materials within the sour water system to the Independent Monitors in a presentation dated March 19, 2013, titled "Review of Metallurgy in Sour/Wastewater Service." SCS elaborates on the concerns stating:
Some failures can be sudden and catastrophic. Of most concern are the syngas scrubbers which are directly coupled to the gasifier and syngas system at over 600 psig. Major loss of containment on the syngas scrubbers would likely result in explosion due to large release of toxic syngas and could cause rapid depressurization of the gasifier, causing ash to inflate/expand and violently push its way through the syngas coolers, PCD and syngas scrubbers, creating steam explosion and uncontrolled ejection of 1,800 deg. F ash into the gasifier structure and onto the plant site.
The design changes were made out of necessity and were required to assure the safe operation of the facility. not driven by future operation and maintenance (O&M) cost savings. BREI does not consider this to be a Process Development Allowance modification that was needed due to unknowns inherent in the FOAK nature of the process that were identified during detailed design and that should have been addressed by contingency.
- Pages 14-15 Yes, FOAK and First Movers refer essentially to the same type of project where a new technology that has not been applied before at a commercial scale is executed for the first time. One of the more significant FOAK risks is that of commodity growth, which has occurred on the Kemper Project. Technology Risk is usually referred to on FOAK projects and is a measure of whether or not the technology being applied actually achieves the desired performance, availability, etc., which is typically extrapolated first from test results at a pilot facility (PSDF) and then at an intermediate-sized demonstration facility. The Kemper Project issues, to date, are the result of the FOAK application of the TRIG technology on a commercial scale.
The Technology Risk (i.e., Will it work?) cannot be determined until the facility enters startup and testing, since in the case of the Kemper Project, there was no intermediately-sized demonstration facility to first verify the performance of the pilot facility.

Kemper Fiasco: Wrong Decision, Incompetently Managed, Cover Up

The Kemper lignite plant was:

- a political decision in 2006,
- guesses presented to the Mississippi Public Service Commission (10% engineering),
- guesswork approved by 2 if 3 Public Service Commissioners in 2009-2010,
- incompetently managed construction by Southern Co. and Mississippi Power Co., and
- mistakes and cost overruns delayed up to a year or more until after major legal and regulatory approvals .

Where does incompetence stop and coverup begin in this process?

<----- BREI pgs 14-15
Cannot know if Kemper Project will work
since a first of a kind commercial plant.
BREI pg 42 Lack of Disclosure

<----- September 2011 MPC projecting cost overruns
but not reported until May 2012

BREI pg 22 Poor project management

<----- Fast track without risk practices

BREI pgs 11, 12, 13, 19 Poor management

11. Only very high-level Basis for Estimate

<----- 12. Letter documentation was necessary

13, 19. Commodity growth should have been recognized-Edwardsport lessons

<----- BREI pg. 27 Lack of Disclosure

Cost & Schedule held 2 years

BREI pg. 37 Lack of Disclosure

<----- November 2012 BREI predicts won't meet schedule

BREI pg. 43 Poor management and non-disclosure

June 2010 through May 2014

<----- Clear upward trend in material costs,
corresponding decrease in construction costs.

Trends are illogical but without

SCS or MPC management examination.

<----- BREI pgs 55-56, SAFETY

Changes required to assure safe operation