8005020 [illegible]

DISTRIBUTION:
~~DOCKET~~ Files
TERA
CBAB R/F
NPR R/F
DNash
Midland-CBAB
WPaton, ELD

APR 10 1980

Docket Nos.: 50-329
and 50-330

MEMORANDUM FOR: Dino Scaletti, Project Manager
Environmental Projects Branch 2, DSE

FROM: Darrel A. Nash, Leader
Technology Assessment Section
Cost-Benefit Analysis Branch, DSE

SUBJECT: REEVALUATION OF COSTS OF MIDLAND, UNITS 1 & 2

The attached is our estimate of the life-time costs of continuing with Midland compared to constructing a coal-fired plant instead, using the recent applicant estimates of completion cost and completion date. We estimate that continuing with Midland will be about 10 percent less costly than a coal alternative.

ORIGINAL SIGNED BY

Darrel A. Nash, Leader
Technology Assessment Section
Cost-Benefit Analysis Branch, DSE

Attachment

cc: D. Sells
B. Youngblood
J. Roberts

OFFICE	DSE:ET:CBAB	DSE:ET:CBAB				
SURNAME	JCRoberts/ls	DANash				
DATE	4/10/80	4/10/80				

NRC FORM 318 (9-76) NRCM 0240 8005020288 OFFICIAL RECORD COPY USGPO: 1978 - 265-769

The following assumes a total cost of 3.1×10^9 for the completed Midland Units 1 & 2 with an assumed completion time of 1985. It is assumed the 2 Units produce 1600 MWe and that no steam will be supplied to Dow chemical. It is further assumed that the units will operate for 30 years. The analysis is done on the basis of 1985 present value. Further assumptions in doing the comparison are in Coal and Nuclear: A Comparison of the Cost of Generating Baseload Electricity By Region, Office of Nuclear Reactor Regulation, U.S.N.R.C., NURFG-0480, and Treatment of Inflation in the Development of Discount Rates and Levelized Costs in NEPA Analyses for the Electric Utility Industry, ONRR, U.S.N.R.C., NUREG-0607.

The costs of continuing construction and operation of Midland are reflected in the fixed charge rate on capital, fuel, and operation and maintenance costs.

The Alternative is a 1600 MWe coal plant beginning operation in 1990, the earliest a coal plant could be available. The cost for this alternative include replacement power cost for the period 1985-1990, plus fixed charges, fuel and O&M for the coal plant over 25 years plus the fixed charges (interest plus depreciation) on the sunk cost in Midland (1.3×10^9).

Continue Midland

Fixed charge rate on capital
17 percent; 3% real discount rate;

$3.1 \times 10^9 \times .17 \times 19.6 =$ 10.33×10^9

Fuel*

$\frac{14.76}{(1.05)^5}$ $/MWe 1600 MWe (8760)(.65)(25.88) = 2.73×10^9

O&M

$\frac{3.03}{(1.05)^5}$ $/MWe x 1600 MWe (8760)(.65)(19.6) = $.42 \times 10^9$

Total 30 year present value

cost of Midland 13.48×10^9

*Based on 2% real escalation

Build and Operate Coal Plant

Interim (1985 to 1990) Replacement Fuel and Operation

With the current fuel mix of Consumers Power Company it is assumed that it will use one-half coal and one-half oil to replacement energy supplied to generate electricity which Midland would have. The current average price of this mix of fuel is about $\$2.40/10^6$ Btu. This results in a cost of about \$.024/kWh. There is an additional cost of variable O&M of about \$.002/kWh. At 8% annual escalation in these costs to 1985 and 2% escalation greater than general inflation from 1985 to 1990 this cost is:

Interim Fuel and Operation:	
38.2 \$/MWh x 1600 x 8760 x .65 x 4.86[a] =	1.69×10^9
Fixed Charges on Capital for 25 years:	
1204 \$/KWe x .17 x 1600 x 10^3 x 17.41/$(1.03)^5$=	4.92×10^9
Fuel, From NUREG-0480, pg. 3	
26.55 \$/MWh x 1600 x 8760 x .65 x 22.08[b]/$(1.03)^5$=	4.61×10^9
O&M From NUREG-0480, pg. 3	
6.23 \$/MWh x 1600 x 8760 x .65 x 17.41/$(1.03)^5$=	0.85×10^9
Fixed charges on Midland which would still have to be paid	
10% F.C.R.[c] x \$1.3 x 10^9 x 19.6 =	2.55×10^9
Total	14.62×10^9
Cost if all oil used as replacement	
56 \$/MWh x 1600 x 8760 x .65 x 4.86 =	2.48×10^9
Total cost would be =	15.41×10^9

[a] based on 2% real escalation and 5 years of replacement fuel

[b] based on 2% real escalation and 25 years service

[c] NUREG-0480, Page A-3, Interest plus depreciation (9.57 + .66≈10)