

LMFS-7 (RFP-92-4)
LIGNITE GENERATION TRANSMISSION STUDY

CONTRACTOR: ABB Power T & D Company

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CONTRACT AMOUNT: \$32,000

Project Schedule – 3 Months

Contract Date – 8/27/92
Start Date – 8/27/92
Completion Date – 11/15/92 (delayed)

Project Deliverables

Draft Final Report – 12/22/92 ✓
Final Report – 5/12/93 ✓

OBJECTIVE / STATEMENT OF WORK

The objectives of this study are to:

- 1) determine the point (with respect to expansion of generating capacity) at which electricity exports from North Dakota will begin to be limited by transmission capacity, and
- 2) assess the options available for increasing transmission capacity and for reducing costs of such increased capacity.

Work to be accomplished includes a preliminary evaluation of existing and future electrical transmission capacity from the State of North Dakota. Information will be obtained from individual utilities and the Mid-Continent Area Power Pool (MAPP). Maximum use of existing information is to be used in the study to complete the following:

- 1) a summary of existing transmission lines,
- 2) summarize current average and peak loads on existing lines,
- 3) list available options for increasing transmission capacity,
- 4) indicate relative costs of available options,
- 5) assess near-term technology options and costs, and
- 6) make recommendations to ensure growth in lignite-fueled generating capacity in North Dakota is not limited by transmission capacity.

STATUS

This study was delayed initially because the information was difficult to obtain from the MAPP utilities. The draft report was issued based on information provided by the MAPP utilities. The initial method used to determine excess transmission capacity was based on a comparison of North Dakota export limit (NDEX) with a pair of peak and off-peak load flow cases from the MAPP 1992 Summer Operating Models. Since the models do not contain all the actual flows or nonfirm energy transactions, the method gives an inflated value of unused transmission capacity.

The contractor repeated this analysis based on 1992 MAPP hourly North Dakota export scatter diagrams and 1992 North Dakota State Tax Department monthly net generation data. Scatter diagrams included the nonfirm energy transactions that take place on a daily basis between neighboring utilities.

The draft final report identified upgrading of existing lines, estimated costs for upgrading, and the development of the Flexible AC Transmission System concept to allow additional export from North Dakota. Because of stability constraints in the MAPP system, detailed technical studies of the various options were recommended to verify the power transfer increase and ensure proper power system performance. In future long-range generation and transmission studies, consideration should be given to using transmission costs from North Dakota generation sites. They should also reflect the lower cost of line enhancements compared to the cost of new transmission lines.