COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF HARDIN COUNTY WATER DISTRICT NO. 1, A WATER DISTRICT ORGANIZED PURSUANT TO CHAPTER 74 OF THE KENTUCKY REVISED STATUTES, IN HARDIN COUNTY, KENTUCKY, FOR (1) A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY AUTHORIZING AND PERMITTING SAID WATER DISTRICT TO CONSTRUCT WATER STORAGE AND DISTRIBUTION SYSTEM IMPROVEMENTS, CONSISTING OF ELEVATED STORAGE TANKS, AND WATER TRANSMISSION LINES (THE PROJECT); (2) APPROVAL OF THE PROPOSED PLAN OF FINANCING OF SAID PROJECT; AND (3) APPROVAL OF INCREASED WATER RATES PROPOSED TO BE CHARGED BY THE DISTRICT TO ITS RETAIL AND WHOLESALE CUSTOMERS	)	CASE NO. 10189

O R D E R

Before the Commission is a motion for dismissal of that portion of Hardin County Water District No. 1's ("Hardin County No. 1") application which deals with construction and related financing of new facilities. The Attorney General ("AG"), joined by Hardin County Water District No. 2 ("Hardin County No. 2") and Joseph Janes, made this motion at the close of Hardin County No. 1's presentation of its case at the hearing on April 17, 1989. All argue that Hardin County Water District No. 1 has failed to meet its burden of proof as required by KRS 278.020. The Commission agrees and grants their motion.

Hardin County No. 1's application seeks, in part, a Certificate of Public Convenience and Necessity to construct $3.6 million worth of new facilities, including 1,000,000 gallon and 250,000 gallon water storage tanks and approximately 53,000 linear feet of

water main line. Hardin County No. 1 also requests authority to issue $5.5 million of revenue bonds, which will be used in part to finance the construction project.

The standard for obtaining a Certificate of Public Convenience and Necessity "requires a determination that a proposal is feasible and will not result in wasteful duplication (footnote omitted)." Re Inter- and IntraLATA Competition, 60 PUR4th 24, at 27 (Ky. PSC 1984). The applicant for the certificate bears the burden of proof in this respect. Energy Regulatory Commission v. Kentucky Power Co., 605 SW2d 46 (Ky. 1980).

The sole evidence offered by Hardin County No. 1 to demonstrate the feasibility of its proposed project are two computer hydraulic analyses of its existing and proposed water distribution system.[1] A properly constructed hydraulic analysis creates a computer model of the system and its operation. It

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[1] The record contains a third hydraulic analysis which had originally been submitted to the Commission in Case No. 9985, Application of Hardin County Water District No. 1 for Commission Authorization of a Certificate of Public Convenience and Necessity and Approval for Construction. In that case, Hardin County No. 1 sought a Certificate of Public Convenience and Necessity to construct the 1.25 million gallon Longview water storage tank. Upon the motion of Hardin County No. 1, the record of Case No. 9985 has been incorporated into the record of this case. As the hydraulic analysis submitted therein did not address any of the proposed improvements in Hardin County No. 1's current application, the Commission does not consider this analysis as relevant. The Commission further notes that at the time of this analysis' submission, Hardin County No. 1's engineering consultant, Brad Montgomery, informed the Commission that "it was understood that further hydraulic analysis will have to be made." Commission Staff Exhibit 7, page 3. The water district's own consultant did not believe this hydraulic analysis was adequate to cover the projects proposed in its current application.

mirrors the actual operation of the system - the operation of the pumping stations, the emptying and filling of the storage tanks, and the flow of water as it passes through various points within the distribution system. Using such a model, proposed design changes can be added and their effect evaluated.

The Commission's review of the hydraulic analyses indicates that they are unreliable. To ensure the accuracy and reliability of a hydraulic analysis, the model's results are matched, or "calibrated," against actual field data. Since a computer model is only as good as its assumptions, the calibration process is necessary to ensure that the model depicts, as closely as possible, the distribution system's actual operations. Neither analysis presented by Hardin County No. 1 is calibrated.

On February 10, 1989, Hardin County No. 1 submitted with its revised Engineering Study a hydraulic analysis of its existing and proposed water distribution system. Also included in the study were the hydrant flow tests performed by Hardin County No. 1 and, according to its engineering consultant, Brad Montgomery, used to calibrate the hydraulic analysis.[2] Under a hydrant flow test, a fire hydrant is opened and the pressure of the outflow is measured. After close review of these tests, the Commission finds that the use of these tests to calibrate the analysis is not in accordance with accepted engineering practice. The analysis is a steady-state analysis - "a snapshot of the system's operation at

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2 Engineering Study Update, February 10, 1989, Appendix B.

an instantaneous situation."[3] Accordingly, the field data used to calibrate the analysis would have to be taken simultaneously to ensure all data relates to the same instantaneous situation. The 11 hydrant flow tests contained in the engineering report, however, were not simultaneous or within close proximity of each other. Tests were taken several hours apart. Two tests were taken more than 24 hours after the first tests. They do not support Mr. Montgomery's claims that the analysis is calibrated and, therefore, reliable.[4]

At the Commission's request, a second hydraulic analysis was prepared in late March 1989. The results of this analysis were compared to recordings of pressure readings taken at 13 representative points on Hardin County No. 1's distribution system for periods not less than 24-hours. According to the calibration standard suggested by Mr. Montgomery, the second analysis was not calibrated. Mr. Montgomery testified that the computer generated data and the field data should be considered calibrated if the data at each point was within 5 pound per square inch (psi).[5] Mr. Montgomery asserted that in 9 of the 13 instances the computer generated data was within 5 psi of the field data and,

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3 Testimony of Brad Montgomery, Transcript, Vol. IV, page 84.

4 The Commission is aware of a method whereby these hydrant flow tests could have been used for purposes of calibration. Under this method, the results of a hydrant test for a specific point are matched to an analysis which assumes the hydrant at that point has been opened. Hardin County No. 1 presented no evidence indicating that this method was used or considered.

5 Transcript, Vol. III, page 221.

therefore, should be considered calibrated.[6] Mr. Montgomery, however, failed to offer an adequate explanation as to the failure of the four points of data to correspond.[7] The Commission's own review of these pressure readings indicates that field data for 6 of the 13 representative points was not within 5 psi of the computer generated data.[8]

The Commission also questions the assumptions upon which the computer models are based. The later model assumes that Hardin County No. 2, the largest purchaser of water from Hardin County No. 1, purchases approximately 1.2 million gallons of water daily. Both models assume that Hardin County No. 2 draws all of its water from one point on Hardin County No. 1's distribution system. According to the testimony of Delbert Parrett, Hardin County No. 2's manager, Hardin County No. 2's average daily usage is

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6 Letter from Brad Montgomery to Forest Skaggs (April 4, 1989) (submission of extended period simulation computer hydraulic analysis).

7 To explain these four discrepancies, Mr. Montgomery offerred mere conjecture and unsubstantiated suspicions. He attributed two discrepancies to malfunctioning pressure recorders. The laboratory technician, who calibrated the pressure recorders before their field use and inspected them after their field use, stated in a sworn affidavit that the pressure recorders were functioning properly at all times. Mr. Montgomery also attributed one discrepancy to a line leak or partially closed valve. Under cross-examination, however, Mr. Montgomery admitted that no leak or closed valve had yet been found.

8 In addition to the four discrepancies mentioned in Mr. Montgomery's letter, supra note 6, field data obtained from node 508 (106 Potomac Court in Whispering Hills) and from Node 416 (the altitude valve vault at the Blue Hill Tank) did not match the computed generated data.

approximately 1.6 gallons.[9] Parrett further testified that Hardin County No. 2 draws its water from two separate points on Hardin County No. 1's distribution system.[10] Not only does it draw 1.2 million gallons daily from a point near the Longview Estates, as the later model shows,[11] but it simultaneously draws approximately 400,000 gallons daily, approximately one-fourth of its average daily usage, from a point located near the Franklin Crossroads.[12] Mr. Montgomery testified at the hearing that he had assumed that Hardin County No. 2 could not withdraw water from both points simultaneously and had, therefore, not allocated any significant demand to the Franklin Crossroads point in the models.

The models also assume that the water district's pumps are operating "as if new." Hardin County No. 1 performed no field tests to determine the current operating characteristics of the pumps. The models gave no consideration to impeller wear or bearing wear or the possibility that the pumps were operating off their original performance curve.[13] Hardin County No. 1 presented no evidence to support this conclusion that the pumps' operating characteristics matched the laboratory data supplied by the manufacturer. Mr. Montgomery, the sponsor of the model, furthermore conceded under cross-examination that he had no

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9 Prefiled Testimony of Delbert Parrett, Exhibits 8-10.

10 Transcript, Vol. IV, page 167.

11 Supra, note 9.

12 Id.

13 Engineering Study Update, February 10, 1989, III-2.

knowledge of the pumps' age, working condition, or repair history. It is generally agreed that under normal operating conditions, pumps will lose efficiency and experience changes in operating characteristics as they age. In light of these facts and the absence of supporting evidence, the Commission cannot accept the model's assumption and can place little faith in its results.

Given the glaring deficiencies in both analyses, the Commission believes that neither can be used to support a finding that the proposed construction project is feasible. As no other evidence has been presented in support of the project's feasibility, the Commission has no alternative but to grant the Intervenors' motion to dismiss. In taking this action, the Commission expresses no opinion on the proposed construction's feasibility. Should Hardin County No. 1 wish to reapply for a Certificate of Public Convenience and Necessity, its application will be based upon the supporting evidence present. Any subsequent application which fails to include a calibrated hydraulic analysis, however, will meet the same fate as the present application.

Having reviewed the evidence of record and being sufficiently advised, the Commission finds that Hardin County No. 1 has failed to meet its burden of proof as required by KRS 278.020 insofar as it has failed to prove that the proposed construction is feasible.

IT IS THEREFORE ORDERED that:

1. The Intervenors' motion is granted.

2. That portion of Hardin County No. 1's application which seeks a Certificate of Public Convenience and Necessity for certain construction projects and related financing is dismissed without prejudice.

Done at Frankfort, Kentucky, this 15th day of May, 1989.

PUBLIC SERVICE COMMISSION

Chairman

Vice Chairman

Commissioner

ATTEST:

Executive Director