

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF GRAVES COUNTY WATER )  
DISTRICT FOR APPROVAL OF CONSTRUCTION )  
AND ISSUANCE OF A CERTIFICATE OF ) CASE NO. 2011-00233  
CONVENIENCE AND NECESSITY FOR THE )  
PURCHASE AND INSTALLATION OF )  
AUTOMATED METER READING EQUIPMENT )

APPLICATION OF GRAVES COUNTY WATER )  
DISTRICT FOR AUTHORITY TO ENTER INTO A ) CASE NO. 2011-00390  
LOAN AGREEMENT WITH THE KENTUCKY )  
INFRASTRUCTURE AUTHORITY )

ORDER

Graves County Water District ("Graves District") has applied for a Certificate of Public Convenience and Necessity ("Certificate") to purchase and install electromagnetic water meters and advanced meter infrastructure throughout its water distribution system and for authority to borrow an amount not to exceed \$1,000,000 from the Kentucky Infrastructure Authority ("KIA") to fund this purchase and installation.<sup>1</sup>

Having considered the evidence of record and being otherwise sufficiently advised, the Commission finds that:

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<sup>1</sup> On July 1, 2011, Graves District filed its application for a Certificate. On September 28, 2011, it applied by separate application for authority to borrow funds from KIA. Finding these cases have common questions of law and fact, the Commission consolidated the cases on October 25, 2011. There are no intervening parties in these proceedings. To expedite review of Graves District's applications, Commission Staff conducted discovery by correspondence and the use of telephone conferences.

1. Graves District is a water district that provides water service to approximately 3,196 customers in Carlisle, Graves, and Hickman Counties, Kentucky.<sup>2</sup>

2. Graves District is the result of the voluntary merger of Consumers Water District, Fancy Farm Water District, Hardeman Water District, and South Graves County Water District, which occurred on September 1, 2008.<sup>3</sup>

3. Graves District operates water wells and treatment facilities that supplied 53.9 percent of its total water requirements in 2010. It purchased its remaining water requirements from Mayfield Electric and Water Systems (“MEWS”), an agency of the Mayfield Electric Plant Board.<sup>4</sup>

4. For the year ending December 31, 2010, Graves District reported line loss of 21.2 percent and non-revenue water of 22.2 percent.<sup>5</sup>

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<sup>2</sup> The record indicates some confusion regarding the number of customers that Graves District serves. In its 2010 Annual Report, Graves District reported 4,525 customers. *Report of Graves County Water District to the Public Service Commission for the Calendar Year Ended December 31, 2010* at 27 [hereinafter *Graves District 2010 Annual Report*]. In its report for the prior year, Graves District reported only 3,179 customers. *Report of Graves County Water District to the Public Service Commission for the Calendar Year Ended December 31, 2009* at 27. Water Resource Information System reports Graves District as having only 3,196 customers as of March 31, 2011. See <http://wris.ky.gov/Portal/SysData.aspx> (last visited Oct. 18, 2011). We suspect that Graves District has included the customers of Hickory Water District in its customer count.

<sup>3</sup> Case No. 2007-00496, *Joint Application of Consumers Water District, Fancy Farm Water District, Hardeman Water District, and South Graves Water District for Approval of Merger and Formation of the Graves County Water District* (Ky. PSC May 21, 2008). See also Letter from John N. Hughes, counsel for Graves County Water District, to Stephanie Stumbo (Sept. 8, 2008) (filed on Sept. 8, 2008 in Case No. 2007-00496); Resolution Related to the Effective Merger Date of Water Districts in Graves County, Kentucky (July 27, 2009) (filed on Aug. 3, 2009 in Case No. 2007-00496).

<sup>4</sup> *Graves District 2010 Annual Report*, *supra* note 2, at 29.

<sup>5</sup> *Id.* at 30. According to the Commission’s annual financial and statistical report form, “line loss” is the total amount of water lost as a result of tank overflows, line breaks, line leaks, and other causes. “Non-revenue water” is defined as “those components of system input volume that are not billed and produce no revenue; equal to unbilled authorized consumption plus apparent losses plus real losses.” American Water Works Association, *Water Audits and Loss Control Programs* (3d ed. 2009) at 271. 807 KAR 5:066, Section 6(3), provides that “for rate making purposes a utility’s unaccounted-for water loss shall not exceed fifteen (15) percent of total water produced and purchased, excluding water used by a utility in its own operations.” “Unaccounted-for water loss” equals the difference of the total amount of water produced and purchased and the sum of water sold, water used for fire protection purposes, and water used in treatment and distribution operations (e.g., backwashing filters, line flushing).

5. Hickory Water District is a water district that provides water service to approximately 1,364 customers in Graves County, Kentucky.

6. Hickory Water District operates water wells and treatment facilities that supplied 95 percent of its total water requirements in 2010. It purchased its remaining water requirements from MEWS.<sup>6</sup>

7. For the year ending December 31, 2010, Hickory Water District reported line loss of 20.1 percent and non-revenue water of 21.2 percent.<sup>7</sup>

8. On August 23, 2011, Graves District and Hickory Water District entered a written agreement for the voluntary merger of the water districts. This merger agreement is subject to Commission review and approval. A formal application to the Commission for such approval is pending.

9. Graves District and Hickory Water District have contracted with MEWS to operate, maintain and manage their water distribution systems. Under the provisions of Graves District's contract with MEWS, MEWS is "responsible for all aspects of the day-to-day operations, maintenance and management of the water treatment plant, waste water plant, water distribution system, customer service, billing, collection, accounting and reporting in compliance with regulatory requirements and District policy."<sup>8</sup>

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<sup>6</sup> *Report of Hickory Water District to the Public Service Commission for the Calendar Year Ended December 31, 2010* at 27 and 29.

<sup>7</sup> *Id.* at 30.

<sup>8</sup> Contract Agreement For Operations, Maintenance and Management Services at § 3.3 (filed on Oct. 10, 2011).

10. Graves District reports that, with the exception of the meters in the areas that the Hardeman Water District previously served, its existing meters have been in use beyond their expected service life and should be retired.<sup>9</sup>

11. Graves District proposes to replace 4,250 existing 5/8-inch x 3/4-inch meters and 30 existing 1-inch meters with Sensus iPERL water meters that use electromagnetic flow technology.<sup>10</sup> It further proposes to replace 68 existing meters whose sizes range from 1.5-inches to 6-inches with new mechanical meters.

12. The proposed Sensus iPERL replacement meters have the following characteristics:

a. Each has no moving parts and uses solid state electromagnetic flow technology.

b. Each has a thermal plastic external housing. The measuring device is comprised of a polyphenylene sulfide alloy flow tube with externally-threaded spud ends. Embedded in the flow tube are magnetic flow sensors and a replaceable strainer screen. It is lead-free.

c. Each meets the most recent revision of ANSI/AWWA Standard C-700 and C-710 for accuracy and pressure loss requirements. Under normal flow conditions (0.11 to 25 gallons per minute), it has accuracy limits between 98.5 and 101.5 percent of throughput. Under low flow conditions (0.03 gallons per minute), it has accuracy limits between 95 and 101.5 percent of throughput.

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<sup>9</sup> Memorandum to Case File from Gerald Wuetcher, Commission Staff Counsel (Oct. 7, 2011) at 2.

<sup>10</sup> This number of meters will allow Graves District to replace all its residential water meters, with the exception of those installed in the area that the Hardeman Water District previously served, and to also replace all residential meters currently serving Hickory Water District customers. Graves District anticipates the completion of the merger of Hickory Water District into Graves District while the meter replacement is occurring.

d. Each meter is powered by an internal battery that the manufacturer warrants for a 20-year period.

e. Each meter's accuracy is warranted by its manufacturer for a 20-year period.

f. Each meter has magnetic tamper and low field alarms that indicate any attempt to tamper with the meter's magnetic field.

g. The meter can store consumption data for a 45-day period.

13. Graves District further proposes to purchase and install advanced metering infrastructure to enable each meter to communicate with MEWS central office. It proposes to install a radio transmitter unit at each metering point that would transmit consumption, status, and diagnostic data to the MEWS central office several times each day and that is capable of being queried upon demand by MEWS's central office.

14. Graves District also proposes to purchase four tower gateway base stations that would be installed on the water district's water storage tanks and would boost and relay radio communications from the meters and the central station.

15. The proposed advanced metering infrastructure is compatible with the equipment that MEWS currently uses.

16. Graves District proposes to deploy the meters and advanced metering infrastructure over the next two years.

17. Total cost of the replacement project is \$1,749,795.<sup>11</sup> A breakdown of estimated costs is set forth in the Appendix to this Order.

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<sup>11</sup> Memorandum to Case File from Gerald Wuetcher, Commission Staff Counsel (Nov. 1, 2011), Attachment 5. This estimate does not provide for any contingencies. Assuming a 15 percent contingency, the total estimated cost is \$2,012,263.

18. Graves District expects to obtain the following benefits from installation and operation of the proposed meters and advanced metering infrastructure:

a. It will significantly reduce or eliminate labor costs associated with meter reading.

b. It will significantly reduce the number of vehicles that the water district needs and the maintenance costs associated with such vehicles.

c. It permits more frequent meter reading, including daily meter readings, and allows the water district to develop a more accurate picture of a customer's usage.

d. It permits the water district to ascertain its hourly and daily maximum demands and thus more accurately design rates based upon the actual cost of service.

e. It will reduce non-revenue water by enabling the water district to quickly identify water leaks, meter tampering, and theft of service.

f. It will reduce employee injuries by eliminating meter reader visits to areas with fenced yards, animals and hazardous landscaping.

g. It will eliminate the need for service visits for service disconnections or customer changes.

h. It more accurately registers customer water usage, especially at low water flows.<sup>12</sup>

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<sup>12</sup> The meter's manufacturer contends that the meters register with 100 percent accuracy at flows as low as .03 gallons per minute. In contrast, most mechanical meters fail to register any flows at .03 gallons per minute and only 50 percent of flows at 0.05 gallons per minute. See Gregory L. Richards, Michael C. Johnson, and Steven L. Barfuss, *Apparent Losses Caused By Water Meter Inaccuracies at Ultralow Levels*, J. AWWA 123 (May 2010).

19. Based upon the elimination of labor costs associated with monthly meter reading, Graves District estimates an immediate annual savings of \$56,700 from the installation of advanced metering infrastructure.<sup>13</sup>

20. The proposed installation of the meters and advanced metering infrastructure is likely to produce additional savings over their expected useful service life in the form of additional labor savings and reduction of non-revenue water. The extent of this savings is presently difficult to quantify.<sup>14</sup>

21. The proposed installation of the meters and advanced metering infrastructure will likely improve the quality of service that Graves District provides to its customers. This improved service quality, however, cannot be readily quantified.

22. A need exists for the proposed installation of the meters and advanced metering infrastructure.

23. The proposed purchase and implementation of the meters and advanced metering infrastructure will not result in the wasteful duplication of facilities.

24. Public convenience and necessity require the proposed purchase and implementation of the meters and advanced metering infrastructure.

25. Commission regulations currently do not prescribe standards for meters using electromagnetic technology. Given that the deployment of electromagnetic

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<sup>13</sup> This calculation assumes 4,500 meters are read monthly and a labor cost of \$1.05 to read each meter. ( $\$1.05 \text{ per meter} \times 4,500 \text{ meters} \times 12 \text{ months} = \$56,700$ .) As the actual savings accrues to MEWS, whose employees currently read Graves District's meters, the calculation also assumes that MEWS will reduce its fees to Graves District to reflect these savings. Graves District and MEWS are currently negotiating revisions to their Contract Agreement For Operations, Maintenance and Management Services. Memorandum to Case File from Gerald Wuetcher, Commission Staff Counsel (Oct. 7, 2011) at 2. No final agreement, however, has been reached as of the date of this Order.

<sup>14</sup> For an attempt at quantifying the expected reduction in non-revenue water, see Arthur Burns, Advancements in Residential Water Metering Technology, Presentation to Eighth Annual Water Conservation Showcase (Mar. 22, 2011) (available at [http://www.usgbc-ncc.org/storage/usgbcnccdev/documents/Presentations/SF/wcs\\_2011\\_presentations/sensus-arthurburns.pdf](http://www.usgbc-ncc.org/storage/usgbcnccdev/documents/Presentations/SF/wcs_2011_presentations/sensus-arthurburns.pdf)) (last visited Oct. 19, 2011).

technology is relatively recent,<sup>15</sup> Graves District should develop a sample testing program to test the proposed metering equipment after its deployment to ensure it is operating within acceptable limits and accurately registering water usage.

26. 807 KAR 5:006, Section 16, requires a water utility to test its meters and ensure they are in good order prior to installing them for use by any customer. Testing may only be performed by an entity that the Commission has approved for that purpose.

27. Graves District should provide the Commission with periodic written reports on the status of its negotiations with MEWS to amend the existing "Contract Agreement for Operations, Maintenance and Management Services."

28. In the event that Graves District is unable to reach agreement with MEWS to pass through the labor cost savings resulting from the installation of the proposed metering equipment, the Commission will consider disallowing for ratemaking purposes a portion of fees that Graves District pays to MEWS under "Contract Agreement For Operations, Maintenance and Management Services" to ensure that Graves District's customers are not required to bear the cost of the proposed metering equipment without also sharing the benefits from that equipment.

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<sup>15</sup> The iPERL was introduced in 2010. See Susan Forsgard, *Go With the Flow of Advanced Water Meter Technology*, *Water Technology* 1 (Oct. 2010) (available at <http://www.watertechonline.com/filtration/article/go-with-the-flow-of-advanced-water-meter-technology>.) Approximately 288,000 of these meters have been deployed since then. Public water suppliers that have deployed these meters include: the city of Winsor, Ontario; city of Kewanee, Illinois; city of Farmington, Missouri; Easton Suburban Water Authority; and Public Service Water District No. 1 of Stoddard County, Missouri. See electronic mail message from Brent Shultz, MEWS, to Gerald Wuetcher, Public Service Commission (Oct. 17, 2011).



29. Graves District proposes to finance a portion of the cost of the proposed project with the proceeds of a loan from KIA in the amount of \$1,000,000. It has yet to determine the exact means of financing the remaining portion of the project costs.<sup>16</sup>

30. The loan agreement provides for principal forgiveness in the amount of 80 percent of the loan amount or \$220,000, whichever is less. The loan will have an interest rate of two percent per annum, which shall commence with the first draw of funds, and has a repayment period of 20 years. As a requirement of the loan agreement, Graves District will grant a security interest in its assets to KIA.

31. Graves District's proposed loan is for a lawful object within its corporate purpose, is necessary, and is appropriate for and consistent with the proper performance of its service to the public, will not impair Graves District's ability to perform that service, and is reasonably necessary and appropriate for such purpose.

32. To ensure that Graves District is capable of meeting the financial demands created by its proposed purchase, Graves District should be required to submit to the Commission in writing within 90 days of this Order a proposed plan for obtaining the remaining funds necessary for the purchase and installation of meters and advanced metering infrastructure.

Having considered the evidence of record and being otherwise sufficiently advised, IT IS HEREBY ORDERED that:

1. Graves District is granted a Certificate to proceed with the proposed purchase of water meters and advanced meter infrastructure as listed in Appendix A to this Order.

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<sup>16</sup> Graves District representatives indicated that the remaining portion of the project cost would be financed through additional loans or grants and that the water district was actively pursuing additional funds from other governmental sources. They further indicated that the water district would fund a portion of the cost through general service rates if necessary.

2. Graves District shall notify the Commission prior to installing any equipment or facilities not expressly authorized by this Order.

3. Any deviation from the installation of equipment or facilities approved shall be undertaken only with the prior approval of the Commission.

4. None of the meters in question may be placed in service until they are tested by an entity that the Commission has approved for that purpose and are shown to be in good order and within required tolerance standards.

5. Within 180 days of the date of this Order, Graves District shall file with the Commission a written plan for a sample testing program to test the proposed metering equipment after its deployment to ensure it is operating within acceptable limits and accurately registering water usage.<sup>17</sup>

6. Every 90 days from the date of this Order, Graves District shall submit a written report to the Commission on the status of its negotiations with MEWS to amend the existing "Contract Agreement for Operations, Maintenance and Management Services." This reporting obligation shall terminate upon the renegotiation of the Contract Agreement and the submission of such agreement to the Commission.

7. Graves District is authorized to enter into an agreement with KIA for a loan in an amount not to exceed \$1,000,000 at an interest rate of two percent per annum and payable over a 20-year period. This agreement shall provide for principal forgiveness in the amount of 80 percent of the loan amount or \$220,000, whichever is less.

8. The proceeds of the loan agreement with KIA shall be used only for the lawful purposes specified in Graves District's application.

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<sup>17</sup> To the extent that Graves District requires assistance in the development of such plan, the Commission strongly encourages it to consult with Commission Staff.

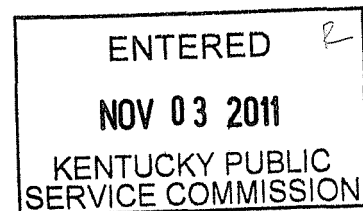
9. Within 90 days of this Order, Graves District shall file with the Commission in writing a plan for obtaining the remaining funds necessary for the purchase and installation of meters and advanced metering infrastructure approved in this Order.

10. If the final cost for the purchase and installation of meters and advanced metering infrastructure approved in this Order exceeds the estimated cost (with contingency included), Graves District shall notify the Commission in writing within 30 days of determining the final cost and shall provide a written explanation for the additional cost.

11. Any documents filed in the future pursuant to this Order shall reference this case number and shall be retained in the utility's general correspondence file.

Nothing contained herein shall be construed as a finding of value for any purpose or as a warranty on the part of the Commonwealth of Kentucky or any agency thereof as to the securities authorized herein.

By the Commission



ATTEST:

  
Executive Director

Case No. 2011-00233  
Case No. 2011-00390

APPENDIX A

APPENDIX TO AN ORDER OF THE KENTUCKY PUBLIC SERVICE  
 COMMISSION IN CASES NO. 2011-00233 AND NO. 2011-00390  
 DATED **NOV 03 2011**

<u>Quantity</u>	<u>Description</u>	<u>Unit Price</u>	<u>Total</u>
4,250	3/4" IPerl Water Meters	100.00	425,000.00
30	1" IPerl Water Meters	149.00	4,470.00
10	1.5" Omni Com. Water Meters	667.23	6,672.30
50	2" Omni Com. Water Meters	751.45	37,572.50
3	3" Omni Com. Water Meters	936.70	2,810.10
5	6" Omni Com. Water Meters	3,283.20	16,416.00
4,250	520M Smartpoints	120.00	510,000.00
4,250	New Lids	30.00	127,500.00
4	S100 TGB	69,750.00	279,000.00
4	TGB Installation Costs	5,000.00	20,000.00
4	Buildings Including Electrical, Heat, & AC	6,000.00	24,000.00
4	Backhauls 3.65	5,000.00	20,000.00
2,882	Labor – 4 Employees	17.62	203,123.36
2,882	Vehicles – 2 Trucks	15.00	43,230.00
1	Upgrade to Existing TGB 2-Way	30,000.00	30,000.00
	Subtotal		\$1,749,794.26
	Add Contingency		262,469.14
	Total Cost		<u>\$2,012,263.40</u>

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2. Graves District is the result of the voluntary merger of Consumers Water District, Fancy Farm Water District, Hardeman Water District, and South Graves County Water District, which occurred on September 1, 2008.<sup>3</sup>

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Johnny Dowdy  
Chairman  
Graves County Water District (Water Division)  
P. O. Box 329  
Mayfield, KY 42066

Kristi McAdoo  
Graves County Water District (Water Division)  
P. O. Box 329  
Mayfield, KY 42066

Sam B Neely, Jr.  
P.O. Box 708  
Mayfield, KENTUCKY 42066