

**COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION**

In the Matter of:

ELECTRONIC APPLICATION OF BIG SANDY)	
WATER DISTRICT FOR A CERTIFICATE OF)	
PUBLIC CONVENIENCE AND NECESSITY TO)	CASE NO. 2023-00163
DEPLOY AN ADVANCED METERING)	
INFRASTRUCTURE AND GEOGRAPHIC)	
INFORMATION SYSTEM, ISSUANCE OF)	
EVIDENCE OF INDEBTEDNESS, AND REQUEST)	
FOR EXPEDITED RELIEF)	

**BIG SANDY WATER DISTRICT’S
RESPONSES TO COMMISSION STAFF’S SECOND
REQUEST FOR INFORMATION**

Big Sandy Water District, (“Big Sandy” or the “Company”) by counsel, files its responses to Commission Staff’s First Request for Information, issued in the above-captioned case on August 7, 2023.

FILED: August 15, 2023

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-1: Refer to the Application, page 6, paragraph 24. Explain how Big Sandy District defines Advanced Meter Readings (AMR) as compared to Advanced Meter Infrastructure (AMI).

RESPONSE: Big Sandy's current AMR system is an Automatic Meter Reading system which only provides a reading when Big Sandy drives by a customer's water meter. This is currently done only once a month, meaning Big Sandy has only one data point and must incur labor charges to have an employee drive by each meter. The Advanced Metering Infrastructure system that is proposed in the Leak Reduction Project will allow Big Sandy to read meter information in real time and to produce a bill at the push of a button for the guaranteed coverage area, which is 80% of the system. (Please also see Big Sandy's Response to PSC No. 2-8.) This AMI system will progress the utility forward in its efforts to minimize its water loss by allowing Big Sandy to better understand where leaks are occurring and when leaks begin. The AMR system does not provide this benefit as it would be cost prohibitive for Big Sandy to drive past every customer's meter every day, which is what would be required to achieve the same information provided by the proposed AMI infrastructure (subject to the guaranteed 80% coverage area).

Witness: Jessica Sexton
 Brandon Marcum

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-2: Refer to the Application, paragraph 40, and Exhibit 2, page 24 of 52.

Confirm the total cost to Big Sandy District for the products and services contained in the proposal is \$3,991,369, and that amount is payable over 14 months following execution of the contract.

RESPONSE: Big Sandy District confirms that the total cost to Big Sandy District for the products and services contained in the proposal is \$3,991,369 and that amount is payable over 14 months following execution of the contract. As noted in the Application and Response to PSC 1-4, Integrity has expressed concern with its ability to continue to honor the price in the proposal due to price increases that may be incurred if the project is significantly delayed. Please also see Response to PSC No. 2-3 and PSC No. 2-10.

Witness: Brandon Marcum
Jessica Sexton

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-3: Refer to the Application, Exhibit 2, page 22 of 52. Explain what costs are included in "AMI Services above AMR" and provide those costs for AMR.

RESPONSE: In the Application, Exhibit 2, page 22 of 52 the column labeled "AMI Services above AMR" is referring to the annual cost of using AMI above the current AMR annual fee that is currently being paid by Big Sandy District. The AMR annual fee that the District currently pays is \$5,372.00.

The costs included within the AMI Services will include the costs for software, software maintenance, and use of the AMI. The cost of AMI Services are not included in the proposal submitted by Integrity.

Witness: **Jessica Sexton**
 Brandon Marcum

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-4: Refer to the Application, Exhibit 2, page 27 of 52.

a. Provide a detailed list of the leak detection equipment that will be used in Phase 1, including how many of each item will be used.

b. State who will own the leak detection equipment referenced in "Phase 1 Leak Detection."

c. If ownership of this equipment will transfer at any point during the project, explain when and under what circumstances transfer will occur.

RESPONSE: (a) In Phase 1, Integrity Water and Energy will utilize acoustical listening devices to perform the level one audit. These are tools owned by Integrity Water and Energy to provide their services and is inclusive of a ground mic, a listening stick, correlation equipment (a pair of two correlators), potable water sample testing, and a set of tools for line surveying and location.

(b) Integrity Water and Energy owns the equipment referenced in "Phase 1 Leak Detection," but is contractually providing Big Sandy Water District with the same equipment. Integrity Water and Energy has committed (post contract award) to demonstrate multiple manufacturers products for Big Sandy to select the final system. The equipment provided by Integrity is in addition to the equipment Big Sandy District was authorized to purchase in Case No. 2022-00301, which will prevent only having one piece of the relevant equipment to be utilized across the entire Big Sandy District service area.

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

(c) Following final execution of the contract with Integrity, transfer of the equipment will be made at Big Sandy District's request. It is anticipated this will occur within the first fourteen months of the Leak Reduction Project, following training of the Big Sandy District employees on use of the equipment.

Witness: Brandon Marcum

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-5: Refer to the Application, Exhibit 2, page 28 of 52.

a. Provide a detailed list of the leak detection equipment that will be used in Phase 2, including how many of each item will be used.

b. State who will own the leak detection equipment referenced in "Phase 2 Leak Detection."

c. If ownership of this equipment will transfer at any point during the project, explain when and under what circumstances transfer will occur.

RESPONSE: (a) **The equipment used in Phase 2 will primarily consist of Integrity Water and Energy's Water Bug, which is proprietary equipment developed and owned by Integrity. Additionally, Integrity may utilize additional leak detection technologies and approaches that are determined to be needed to find or pinpoint the source of leaks. However, any additional specific technologies that may be used will not be known until deemed necessary.**

(b) **Integrity Water and Energy will own all equipment and technology used in Phase 2.**

(c) **There will be no transfer of ownership.**

Witness: Brandon Marcum

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-6: Refer to the Application, Exhibit 2, page 29-30 of 52.

a. State how the “monthly NRW” report will be generated and by whom, include all necessary tools, system components, and software needed to generate the report.

b. State who will own the tools, equipment and software necessary to generate the monthly NRW report.

c. If ownership of the tools, equipment or software will transfer at any point during the project, explain when and under what circumstances transfer will occur.

RESPONSE: (a) The monthly NRW tool will be generated and maintained by Integrity Water and Energy. Data automation will be built using cloud-based analytics tools: Microsoft Power Automate and Microsoft Data Factory. The data will be extracted daily from the AMI system, and will then reside in a SQL database in Microsoft Azure, which is firewall and password protected. The user-facing tool will be built in Tableau, and will require multi-factor authentication for all end users. Software license costs and user/account administration is the responsibility of Integrity Water and Energy. The cost of these services are included in the cost of the M&V Services. Please also see Response to PSC No. 2-10(a).

Big Sandy District will own all historical use data, which will be accessible to Big Sandy District following termination or expiration of the agreement with Integrity. Further, following termination or execution, Big Sandy District could choose to subscribe to the software tools even after the termination or expiration of the proposed contract.

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

(b) Integrity Water and Energy will own the tools, equipment, and software necessary to generate the monthly NRW report.

(c) No transfer of ownership of the tools, equipment, or software necessary to generate the reports will occur.

Witness: Brandon Marcum

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-7: Refer to the Application, Exhibit 2, page 32 of 52.

a. Provide a detailed list of the “Additional Leak Detection Tools” referenced in this section of the proposal, including how many of each item will be used.

b. State who will own the leak detection equipment referenced in “Additional Leak Detection Tools.”

c. If ownership of the tools will transfer at any point during the project, explain when and under what circumstances transfer will occur.

RESPONSE: (a) Integrity Water and Energy will contractually supply Big Sandy Water District with the Phase 1 Leak Detection Tools, which are referred to as the “Additional Leak Detection Tools” in the proposal. This includes listening sticks, ground microphones, correlator, and includes manufacturer-led training. Big Sandy Water District will be allowed to select their preferred manufacturer, as there are slight differences between manufacturers, so it’s important for the end user to make the selection. Integrity Water and Energy will provide the new equipment to Big Sandy Water District during the project implementation.

(b) Big Sandy Water District will own the equipment.

(c) Integrity Water and Energy will provide to Big Sandy Water District and Big Sandy Water District will own the equipment. Transfer of the equipment will be made at Big Sandy District’s request. It is anticipated this will occur within the first fourteen months of

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

**the Leak Reduction Project, following training of the Big Sandy District employees on use of
the equipment.**

Witness: Brandon Marcum

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-8: Refer to the Application, Exhibit 2, page 33 of 52.

- a. Provide a reliability assessment of the Neptune AMI meters proposed in this project.
- b. State whether the AMI meters are cellular and can be accessed remotely or whether Big Sandy District would still need to perform manual or drive-by meter reads for these meters.
- c. Explain whether Big Sandy District would realize savings from the AMI meters in regard to the alleged increased accuracy of the proposed water meters.

RESPONSE: **(a)** **Due to Big Sandy's relationship with Neptune, Integrity Water and Energy reviewed Neptune water meters and met with Local Representatives of Neptune prior to including Neptune meters in its RFP response. This included testing a Mach-10 meter and business analysis of Neptune's financial strength and viability. The results gave Integrity the confidence in the Mach-10 meter's reliability necessary to provide a 20-year accuracy guarantee of the Neptune Mach-10 meter proposed for use in the Leak Reduction Project.**

(b) **The Neptune Mach-10 meters can be accessed remotely. Integrity Water and Energy guarantees that at least 80% of the meters will read via a cellular connection and the remaining meters will be read in drive-by mode. While all of the meters are capable of cellular connectivity, it is anticipated that some of the meters will be unable to reliably provide remote communications due to a lack of reliable cellular service in portions of Big Sandy District's service area. This will necessitate the need for drive-by reads of those meters that do not provide cellular reads due to a lack of reliable cellular coverage.**

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

(c) It is projected that Big Sandy District will realize savings from the AMI meters in the form of reduced labor costs, as the amount of meters requiring a drive-by meter read will be significantly reduced due to cellular connectivity of the AMI meters. In addition to the cost savings, Big Sandy District projects additional revenue due to the increased accuracy provided by the AMI meters.

Witness: Brandon Marcum

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-9: Refer to the Application, Exhibit 2, page 37 of 52. State whether a cost benefit analysis was completed for the AMI. If so, provide it. If not, explain why not.

RESPONSE: A cost benefit analysis was not completed for the AMI because Integrity Water and Energy would be unwilling to enter into a guaranteed energy savings contract if AMI is not in place. AMR meters require a Big Sandy District laborer to drive-by each customer's meter to get a read of the meter. Given the size of Big Sandy District's service territory, it is infeasible and cost-prohibitive to perform a meter read of an AMR meter in such a way that generates the same data as AMI generates from the push of a button. Thus, AMR meters cannot be used to quickly and effectively identify the sources of current leaks and it cannot be used to identify new leaks in the same way AMI can be used. As a result, the only way Integrity Water can guarantee a reduction in Big Sandy District's water loss from 42% to 29% is through the use of the benefits provided by AMI.

Witness: Brandon Marcum

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-10: Refer to the Application, Exhibit 3, page 1.

a. Provide the net present value (NPV) that Big Sandy District is using to calculate the annual costs of the AMI.

b. Explain how Big Sandy District plans on limiting the amount of capital costs associated with AMI.

c. Explain whether Big Sandy District's labor costs for meter readers will decrease if the Commission grants a certificate of public convenience and necessity (CPCN) for AMI.

RESPONSE: (a) **Big Sandy District is not using a net present value to calculate the annual costs of the AMI Services. Following installation of the AMI meters, Big Sandy District will need to pay for software to utilize the benefits of the AMI meters. Thus, the costs of "AMI Services above AMR" are estimated costs of those services, which are not part of the proposal. Similarly, the M&V Services are not part of the costs of the proposal, and the costs for M&V are the estimated costs of those services over the course of 20 years.**

(b) **Big Sandy intends to limit the amount of capital costs associated with AMI through implementation of the guaranteed energy savings project. The proposal submitted by Integrity Water and Energy is for a fixed price, as confirmed in Response to PSC No. 2-2, and the final contract will include a written annual guarantee that "either the energy or operational cost savings plus capital cost avoidance will meet or exceed the costs of the energy conservation measures within the term of the contract." KRS 45A.352(7). Big Sandy believes it has mitigated its risk of additional capital costs associated with the Leak Reduction Project**

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

as additional capital costs necessary to achieve the energy savings could trigger the annual guarantee, shifting risks of necessary capital expenditures from implementation of AMI to Integrity Water.

(c) Yes, if the Commission were to grant a certificate of public convenience and necessity for AMI, it is anticipated to greatly reduce the costs of labor attributable to meter reading. Please also see Response to PSC No. 2-1. This will free up time that the laborers would usually spend each month getting monthly reads, and rechecks and allow them to use that time productively doing other responsibilities and maintenance required each month.

**Witness: Brandon Marcum (subpart (a))
Jessica Sexton (subparts (b) and (c))**

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-11: Refer to Big Sandy District's response to Commission Staff's First Request for Information (Staff's First Request), Item 1(b). Confirm that Big Sandy District is not requesting to include labor costs from the proposed Leak Reduction Project in the Water Loss Detection and Control Program Surcharge in this proceeding.

RESPONSE: Confirmed. Big Sandy District is not requesting to include labor cost from the proposed Leak Reduction Project to be paid out of the Water Loss Detection and Control Program Surcharge. In Case No. 2022-00301, Big Sandy District was granted authority to use surcharge proceeds to fund one full-time employee to work exclusively on leak detection and repair. The District plans to hire this employee to continue its efforts to decrease non-revenue water, which is distinct from the costs of the Leak Reduction Project. Please also see Big Sandy District's Response to PSC No. 1-21.

Witness: Jessica Sexton

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-12: Refer to Big Sandy District's response to Staff's First Request, Items 2(b) and 2(c).

a. State how many of the 21 malfunctioning meters were replaced and how many were repaired. Provide the total cost to repair the meters that were not covered under warranty.

b. For meters removed from service for reading outside of acceptable limits, provide the accuracy at testing.

c. Provide the failure and error rate that Big Sandy District would consider to be reliable for recently purchased meters.

RESPONSE: (a) **Of the 21 malfunctioning meters, 14 were repaired due to debris clogging the meter, and 7 have been replaced or are in the process of being replaced by the manufacturer. The total cost to repair the 14 meters not covered under warranty was \$370.58 (\$26.47 per meter).**

(b) **Please see Exhibit PSC 2-12(b).**

(c) **A failure and error rate that the District would consider to be reliable for recently purchased meters would be less than 1%. It is expected that this level of reliability can be achieved with the Mach-10 AMI meters because reliability issues with current meters are frequently caused by debris clogging the meters. Because the Mach-10 AMI meters are solid-state meters, debris will not cause the same reliability concerns.**

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

Witness: **James Blanton**
 Jessica Sexton

Meter Number	39692581				WT Water					Meter Constant	0.00				
09/02/2020	Neptune	Periodic		Before		0	Found	99.00	Normal	0.00	100.90	Normal	0.00	98.60	Normal
				After		0	Left	99.00	Normal	0.00	100.90	Normal	0.00	98.60	Normal
05/11/2023	bswd	Periodic	bn	Before		2,020	Found	0.00	Slow	0.00	0.00	Slow	0.00	0.00	Slow
				After		2,020	Left	0.00	Normal	0.00	0.00	Normal	0.00	0.00	Normal
Meter Number	39692736				WT Water					Meter Constant	0.00				
03/25/2020	Neptune	New		Before		0	Found	98.90	Normal	0.00	100.40	Normal	0.00	97.20	Normal
				After		0	Left	98.90	Normal	0.00	100.40	Normal	0.00	97.20	Normal
06/13/2023	IWE	Periodic	bn	Before		1,847	Found	0.00	Slow	0.00	97.60	Slow	0.00	98.15	Slow
fail				After		1,848	Left	0.00	Normal	0.00	0.00	Normal	0.00	0.00	Normal
Meter Number	39692778				WT Water					Meter Constant	0.00				
09/03/2020	Neptune	New		Before		0	Found	99.10	Normal	0.00	100.80	Normal	0.00	98.30	Normal
ERT #1566078190				After		0	Left	99.10	Normal	0.00	100.80	Normal	0.00	98.30	Normal
06/13/2023	IWE	Periodic	bn	Before		806	Found	97.20	Normal	0.00	100.10	Normal	0.00	98.42	Slow
fail				After		808	Left	0.00	Normal	0.00	0.00	Normal	0.00	0.00	Normal
Meter Number	39692797				WT Water					Meter Constant	0.00				
03/10/2020	Neptune	New		Before		0	Found	98.80	Normal	0.00	100.90	Normal	0.00	98.10	Normal
ERT #1566080920				After		0	Left	98.80	Normal	0.00	100.90	Normal	0.00	98.10	Normal
04/01/2021	bswd	Periodic	bn	Before		1,675	Found	98.00	Normal	0.00	100.00	Normal	0.00	100.00	Normal
bad head				After		1,676	Left	0.00	Normal	0.00	0.00	Normal	0.00	0.00	Normal
Meter Number	39693151				WT Water					Meter Constant	0.00				
04/28/2020	Neptune	New		Before		0	Found	99.50	Normal	0.00	101.20	Normal	0.00	99.10	Normal
ERT #1566052822				After		0	Left	99.50	Normal	0.00	101.20	Normal	0.00	99.10	Normal
09/15/2021	bswd	Periodic	bn	Before		0	Found	0.00	slow	0.00	0.00	slow	0.00	0.00	slow
New head				After		1	Left	97.00	Normal	0.00	100.00	Normal	0.00	99.50	Normal
Meter Number	39693306				WT Water					Meter Constant	0.00				
05/18/2020	Neptune	New		Before		0	Found	99.30	Normal	0.00	101.10	Normal	0.00	98.50	Normal
ERT #1565962860				After		0	Left	99.30	Normal	0.00	101.10	Normal	0.00	98.50	Normal
06/13/2023	IWE	Periodic	bn	Before		1,011	Found	96.10	Normal	0.00	101.70	Normal	0.00	99.43	Normal
fail				After		1,013	Left	0.00	Normal	0.00	0.00	Normal	0.00	0.00	Normal
Meter Number	39692650				WT Water					Meter Constant	0.00				
03/05/2020	Neptune	New		Before		0	Found	99.40	Normal	0.00	101.00	Normal	0.00	99.10	Normal
				After		0	Left	99.40	Normal	0.00	101.00	Normal	0.00	99.10	Normal
07/27/2022	bswd	Periodic	bn	Before		80	Found	0.00	Slow	0.00	0.00	Slow	0.00	0.00	Slow
Head OK -bad chamber/ Head OK - new chamber				After		81	Left	98.00	Normal	0.00	100.00	Normal	0.00	99.20	Normal

* For every yellow highlighted meter number, you will find the first row shows how a meter test before going into the ground by Neptune.

*Under the same highlighted meter number, the row highlighted in blue shows how the meter tested when found.

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-13: Refer to Big Sandy District's response to Staff's First Request, Item 3(c). Provide the same information for in-service meters purchased before 2014, or explain the discrepancy between the meters purchased and Big Sandy District's customer count.

RESPONSE: The discrepancy between the 2,272 meters purchased from November 7, 2014 to December 20, 2019 (1,172 meters purchased) and in 2020 (1,100 meters purchased) and Big Sandy District's customer count in its 2022 Annual Report (4,822 customers) is due to the fact that Big Sandy District has not replaced all meters for every customer. Due to a lack of financial resources, Big Sandy District has not been able to change-out meters as often as it would like. Further, when the new meters were purchased, Big Sandy District would have ideally used those new meters to replace meters that are 10 years or older and have not been tested. However, out of necessity, the new meters were frequently used for new taps or to replace meters that were known to be malfunctioning beyond reasonable repair. The Leak Reduction Projection is expected to solve this issue, as not only will all of Big Sandy District's oldest meters be replaced, all customers will be served by an AMI meter allowing the benefits explained throughout this proceeding.

Witness: James Blanton

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-14: Refer to Big Sandy District's response to Staff's First Request, Item 5(c). Refer also the Application, Exhibit 1 and KRS 45A.352(1). Explain how Big Sandy District complied with each item listed in KRS 45A.352(1), with regards to its request for proposals (RFP).

RESPONSE: **Big Sandy District complied with each item listed in KRS 45A.352(1) as follows:**

a.) **The name and address of Big Sandy District was included within the bid publication. *See Application, Exhibit 1.***

b.) **The contact information and contact person at Big Sandy District was included within the bid advertisement. *See Application, Exhibit 1.***

c.) **The bid publication and corresponding RFP packet provided notice that Big Sandy District was seeking proposals for a guaranteed energy savings contract. *See id.; see also Exhibit PSC 1-6(b).***

d.) **The RFP packet included the evaluation criteria for submitted bids, which evaluation criteria was designed to elicit the information set forth in KRS 45A.352(1)(d). *See Exhibit PSC 1-6(b).* Specifically, (1) to the extent construction was included within any proposed project, construction capabilities were requires to be submitted through explanation of achieving the stated Goals (“Must be able to analyze, design, implement and measure improvements for the utility system”), and through an explanation of prior project experience required under the “Project Team” section; (2) the technical approach to facilities is listed under “Project Technical Solutions”; (3) the financial attributes of the proposal was**

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

required under “Project Financial Approach; and (4) the proposer’s capability, personnel, track record, and demonstrated ability to complete the project was required under “Executive Summary,” “Description of Company,” and “Project Team.”

e.) The public notice of bid included the date, time, and location for timely submitting a bid. *See Application, Exhibit 1.*

f.) Any additional stipulations or clarifications required by Big Sandy District were included in the RFP Packet. Exhibit PSC 1-6(b).

g.) The Goals and Objectives of the project are stated under Goals in the RFP Packet. *See Exhibit PSC 1-6(b).*

Witness: Jessica Sexton

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-15: Refer to Big Sandy District's response to Staff's First Request,
Items 6(a) and 6(b). State the number of RFP packets that were requested.

RESPONSE: Big Sandy District received two requests for an RFP packet, one of
which requests was from Integrity Water and Energy.

Witness: **Jessica Sexton**

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-16: Refer to Big Sandy District's response to Staff's First Request, Item 14 and the Application, Exhibit 2, page 1 of 52, Figure 1, "Expected reduction in % NRW over time." Reconcile the statement that savings are guaranteed for the 20-year contract period and the use of "Project guarantee" for the first two years of the project. Include in the response what level of water loss reduction is guaranteed for the contract term.

RESPONSE: Integrity Water and Energy is guaranteeing to reduce Big Sandy District's NRW from 42% to 29%. This will be achieved during the implementation period of approximately 14 months, which is the reference to the "Project guarantee" for the first two years. Integrity Water and Energy also guarantees the AMI meter accuracy for 20 years via ongoing meter sample testing. The final contract negotiated and executed will also contain the written guarantee in compliance with KRS 45A.352(7). *See also* Response to PSC 1-14.

Witness: Brandon Marcum

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-17: Refer to Big Sandy District's response to Staff's First Request, Item 14(b). Confirm that water loss reductions are also guaranteed for 20 years. If this cannot be confirmed, explain.

RESPONSE: Water loss reduction is guaranteed to reduce the non-revenue water from 42% to 29% and be sustained by the utilization of the Integrity Water and Energy non-revenue water tool for the full 20 years of the contract. It is further expected that Big Sandy District will not only maintain the reduction in water loss, but that the new tools provided under the contract will allow Big Sandy District to further reduce its non-revenue water.

Witness: Brandon Marcum

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-18: Refer to Big Sandy District's response to Staff's First Request, Item 25. Provide any analyses Big Sandy District performed to determine the appropriate meter for the replacement project.

RESPONSE: Integrity Water and Energy has worked with Neptune and its local representative in the Big Sandy District service area to determine an appropriate meter for the project that would allow Integrity to provide a 20-year meter accuracy guarantee. This included testing a Mach-10 meter, as well as an analysis of Neptune Technology Group's financial strength and viability. Based upon this analysis, the Neptune Mach-10 meter was determined to be an appropriate meter for the project that would allow Integrity to provide the meter accuracy guarantee.

Witness: Brandon Marcum

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-19: State how many customer meters that are currently in service in Big Sandy District's distribution system, and of that number how many meters have been in service for ten years or more without being tested.

RESPONSE: There are currently 4,883 meters that are in service in Big Sandy District's distribution system. Of that number, there are 1,329 meters that have been in service for ten years or more without being tested. In the last Audit performed by the Commission, Big Sandy District was written up for this deficiency. Please see attached Exhibit PSC 2-19, for a copy of the audit report performed by the Commission, the Response from Big Sandy District, and the acceptance letter.

Witness: Jessica Sexton



Andy Beshear
Governor

Rebecca W. Goodman
Secretary
Energy and Environment Cabinet

Commonwealth of Kentucky
Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602-0615
Telephone: (502) 564-3940
psc.ky.gov

Kent A. Chandler
Chairman

Angie Halton
Vice Chairman

Mary Pat Regan
Commissioner

May 17, 2023

Jimmy Blanton
Big Sandy Water District
18200 KY Route 3
Catlettsburg, KY 41129

Re: Periodic Water Inspection
Big Sandy Water District Water System
Boyd County, KY

Dear Jimmy Blanton:

Public Service Commission staff performed a periodic inspection of the Big Sandy Water District water system on April 11, 2023, reviewing utility operations and management practices pursuant to Commission regulations. The report of this inspection is enclosed with this letter.

Based on the inspector's observation, three deficiencies were noted at time of inspection.

1. Utility is not instructing employees who, in the course of their work, are subject to the hazard of electrical shock, asphyxiation, or drowning, in accepted methods of artificial respiration. (exp cpr)
2. Utility has customers with one inch and smaller meters that have been in service for 10 years without being tested as required in 807 KAR 5:066, Section 16(1). (1500 meters)
3. Utility is failing to operate its facilities so as to provide adequate and safe service to its customers as required 807 KAR 5:066, Section 7, due to water loss exceeding 15 percent. (2021- 39.21%)

According to the 2021 annual report for Big Sandy Water District, unaccounted-for water loss equaled approximately 39.21% of the District's total water purchased. Big Sandy Water District purchased \$285,217 of water that cannot be recovered for rate making purposes.

For the three deficiencies listed above, an explanation of how these deficiencies occurred and how they will be remedied in the future shall be submitted by June 17, 2023.

May 11, 2023
Big Sandy Water District
Page 2

Please review the enclosed inspection report in its entirety as you will find further information noted in regard to the inspection. If you have any questions regarding this inspection, feel free to contact Erin Donges at 502-330-5970 or via email at erin.donges@ky.gov.

Sincerely,

Erin Donges

Erin Donges
Utility Regulatory & Safety Investigator
Public Service Commission

Enclosure(s)

Copy: Paul Thomas, Chairman
Eric Chaney, County Judge/Executive
Jeremy Holbrook, County Commissioner
James Salisbury II, County Commissioner
Randy Stapleton, County Commissioner

TEAM
KENTUCKY.

Big Sandy Water District
18211 State Route 3
Catlettsburg, KY 41129
(606) 928-2075 or (606) 928-0524
Fax (606) 928-8454
bdistrict@windstream.net

May 25, 2023

Erin Donges
Utility Regulatory and Safety Investigator
Kentucky Public Services Commission
P.O. Box 615
Frankfort, KY 40602-0615

RE: Periodic Water Inspection
Big Sandy Water District Water System
Boyd County, KY

Dear Ms. Donges:

On April 11, 2023, the Public Service Commission staff performed a periodic inspection of our systems utility operations and management practices pursuant to Commission regulations. Based on the inspector's observations, three deficiencies were noted at the time of inspection. Big Sandy Water District is working to remedy these deficiencies as listed below.

1. The District's management was unaware that all personnel had to be CPR Certified. To become compliant, the District is scheduling a CPR training class in June 2023 for all its employees. All personnel will renew their certification before the expiration date to prevent alike deficiencies in the future.
2. The District currently has meters being used that have not been tested in over ten years due to a shortage of trained employees who can complete such testing. The District is currently working to certify new employees to properly test meters. Furthermore, Big Sandy Water has partnered with Integrity Water and Energy, LLC to start a new project on meter replacement and reducing non-revenue water. An application was submitted to PSC on May 24, 2023 for a Certificate of Public Convenience and Necessity to deploy an advance metering Infrastructure and Geographic Information system as well as Issuance of Evidence of Indebtedness. If this is approved by PSC, the District will replace all meters in its system.
3. The District's water loss currently exceeds 15 percent which is higher than permitted. The District continuously works on decreasing its water loss, yet these attempts have not met the standards of 807 KAR 5:006, section 7. As noted above, the District is partnering with Integrity Water and Energy, LLC to reduce non-revenue water by at least 13% guaranteed. Integrity will also train the Districts employees on water loss techniques and supply them with the needed

tools to continue the decrease of water loss in its future. Integrity plans to partner with the District for at least 20 years to continually train and implement new water loss techniques. Details of this project are in the application to PSC Case No. 2023-00163. The District has also implemented a monthly surcharge to its customers that will allow the District to purchase needed equipment to minimize the water loss and hire a full time employee who will solely work on water loss. An Infrastructure Improvement plan has been submitted to PSC from the District for approval of using these funds.

It is the District's hope that the remedies stated above are satisfactory to the Commission. If you have any questions or comments, please contact me at your earliest convenience.

Sincerely,



James Blanton
Big Sandy Water District
General Manager
C (606) 831-1223
O (606) 928-2075

Big Sandy Water District is an equal Opportunity provider and employer\



Andy Beshear
Governor

Rebecca W. Goodman
Secretary
Energy and Environment Cabinet

Commonwealth of Kentucky
Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602-0615
Telephone: (502) 564-3940
Fax: (502) 564-3460
psc.ky.gov

Kent A. Chandler
Chairman

Amy D. Cabbage
Vice Chairman

Marianne T. Butler
Commissioner

July 10, 2023

Jimmy Blanton
Big Sandy Water District
18211 State Route 3
Catlettsburg, KY41129

Re: Periodic Water Inspection
Big Sandy Water District Water System
Boyd County, KY

Dear Mr. Blanton:

Public Service Commission (Commission) staff sent you a cover letter with an inspection report regarding a review of your operations and management practices citing a deficiency on April 25, 2023. Big Sandy Water District responded to the request for a response with a correspondence to the Commission on May 25, 2023

Based on the Commission's review of the utility's response, Big Sandy Water District has provided a satisfactory plan to address the cited deficiencies. The Commission will verify compliance with all statutory and regulatory requirements at the next inspection.

If you have any questions regarding this inspection, feel free to contact Erin Donges at 502-330-5970 or via email at erin.donges@ky.gov.

Sincerely,

Erin Donges
Utility Regulatory & Safety Investigator
Public Service Commission

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-20: Refer to Big Sandy District's response to Staff's First Request, Item 16, 20- year table on response page 2 of 2.

a. Provide the table excluding "Annual Rate Increase" of 2.50 percent as well as Consumer Price Index (CPI) Increase, which is currently stated as 0.0 percent in the table.

b. Provide the table excluding the recently installed 1,100 meters that Big Sandy District proposes to replace, excluding the investment cost associated with new AMI meters to replace the 1,100 meters, and excluding "Annual Rate Increase" of 2.50 percent as well as CPI Increase, which is currently stated as 0.0 percent in the table.

RESPONSE: (a) **Big Sandy District has requested that Integrity prepare the financial models requested; however, Integrity has declined to provide the requested models to the District. As was indicated in Response to PSC No. 1-11, the financial models were created utilizing proprietary software developed by Integrity, and the financial models cannot be replicated by Big Sandy District utilizing Excel. While Big Sandy District does not anticipate that the Leak Reduction Project itself will necessitate a rate increase (see Response to PSC No. 1-1), as was previously directed by the Commission, Big Sandy District does anticipate that it will seek rate increases during the proposed life of the contract with Integrity to ensure it has the revenues to safely and reliably provide services to its customers. Big Sandy District remains optimistic that the Leak Reduction Project will assist in keeping Big Sandy District's rates and Water Loss Detection and Control Surcharge as low as possible.**

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

(b) Big Sandy District has requested that Integrity prepare the financial models requested; however, Integrity has declined to provide the requested models to the District. Big Sandy District does not believe the Leak Reduction Project is viable without the installation of AMI meters, including the replacement of the 1,100 meters purchased in 2020. As explained in Response to PSC No. 2-1 and PSC No. 2-9, AMI meters with cellular capability are necessary for Integrity to enter into a guaranteed energy savings contract because the additional data points provided by AMI meters are needed to ensure the guaranteed water loss reduction can be achieved.

Witness: Jessica Sexton

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-21: Refer to Big Sandy District's response to Staff's First Request, Item 8 which states "Refer to the Application, Exhibit 2, page 3 which states, "The extended team also includes many of your staff that are invested in our team by assisting us with site surveys, data acquisition, question and answers, etc."

a. By quarter from inception of the project, quantify the estimated hours that will be required for Big Sandy District's Staff participation. This information was not provided in Big Sandy District's response to Staff's First Request, Item 8, and the information provided in the response is inadequate.

b. State how many distinct laborers / meter readers will be involved in the project.

c. Big Sandy District stated, "it is not expected that this will require an employee to work outside of the 40 hour work week." Describe the work functions that will be displaced if overtime is not required.

RESPONSE: (a) **The District's Response to PSC No. 1-8 was less than 5% of the system because an accurate estimate of how many meters will need to be located if the project is approved is difficult to discern. Big Sandy District serves a very large rural area in four different counties and the system has yet to be GIS mapped, which can sometimes present challenges in locating a residential tap by a third-party contractor. In the event Integrity were unable to locate a tap, Big Sandy District would have an employee mark the tap when notified that the tap could not be located. However, based upon the best estimates Big Sandy District can provide based upon the current information, it is estimated that Big**

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

Sandy District will provide an employee to spend approximately two hours per week during Phase One and Phase Two to assist Integrity with this task.

(b) Big Sandy District currently employs three Laborers/Meter Readers, who are assigned dedicated routes within the Big Sandy District system. In the event Integrity cannot locate a tap as described in subpart (a), the Laborer/Meter Reader assigned to the route in which the tap cannot be found would be asked to assist in locating the tap. Accordingly, all three Laborers/Meter Readers are anticipated to assist with the project, as each Laborer/Meter Reader is expected to provide the necessary assistance along his or her assigned route.

(c) It is not anticipated that any work functions will be displaced as a result of this project. Each laborer/meter reader is assigned a dedicated route, and it is anticipated the employee will assist Integrity in an efficient matter as moving along the dedicated route as part of normal, daily work functions. Normal work functions of Big Sandy District will take precedence over any needs of Integrity; in the event Integrity needs assistance when an employee is occupied, a work order will be established so that the employee can complete the task needed by Integrity when time allows.

Witness: Jessica Sexton

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

REQUEST NO. 2-22: State the expected useful life of the Neptune Mach 10 meters and provide documentation from the manufacturer or from Liberty to support this.

RESPONSE: The Neptune Mach-10 meters that are 2" and below have an expected useful life of 20 years, which coincides with the battery life of those meters.

The Neptune Mach-10 meters 3" and above have an expected useful life of 10 years, which also coincides with the battery life of those meters. For documentation from Neptune, please see the Company's FAQ's on commercial meters available at: <https://www.neptunetg.com/globalassets/products/literature/faq-ci-mach-10-ultrasonic-06.21.pdf>. Please see Exhibit PSC 2-22 for additional documentation from Neptune related to the Mach-10 meter, including warranty related information.

Witness: Jessica Sexton

MACH 10[®] Ultrasonic Meter Warranty Statement



1. Terms of Limited Warranty

With respect to its Neptune MACH 10[®] water meter ("MACH 10"), Neptune Technology Group Inc. ("Neptune") warrants that for meters sold for potable water or combined potable water and residential fire service applications, the MACH 10 lead free bronze maincase, electronics, and battery will be warranted to be free from manufacturing defects in workmanship and material as follows:

- a) **Lead Free Bronze Maincase** Neptune warrants that the MACH 10 lead free bronze maincase will be free from manufacturing defects in workmanship and material for the life of the meter.
- b) **Electronics (PCB, Transducers, LCD, and Battery)** Neptune warrants that the fully integrated MACH 10 meter electronics and battery shall be free from defects in manufacture and design for a period of twenty (20) years from the "date of shipment" (such period being the "Warranty Period"). Neptune shall not be responsible for any defects in the MACH 10 (whether due to design, materials, manufacture, or otherwise) which manifest themselves after the expiration of the Warranty Period. Neptune will repair or replace a non-performing MACH 10 meter free of charge for the first ten (10) years and at a discount off of the then-current contract price, or the then-current list price, whichever is less, during the remaining ten (10) years per the table at right. The MACH 10 warranty does not include the external housing that encapsulates the electronics.

2. MACH 10 Meter Accuracy

Neptune MACH 10 meters are warranted to meet or exceed meter accuracy of $\pm 1.5\%$ for the published ranges set forth in Neptune's current product sheet in existence at the time of the date of shipment of the MACH 10 meter for 20 years from date of shipment. Neptune further warrants the MACH 10 to meet or exceed extended low-flow accuracy of $\pm 3\%$ for the published ranges set forth in Neptune's current product sheet in existence at the time of the date of shipment of the MACH 10 meter for 20 years from date of shipment.

3. Warranty Returns

If a Neptune MACH 10 meter fails an accuracy test during an applicable warranty period, it may be returned to Neptune for evaluation. Any MACH 10 meter proved to the satisfaction of Neptune to have failed the warranties set forth in this certificate will, at the option of Neptune, be repaired or replaced at no cost to the customer. An accuracy test shall be conducted by the customer according to then-current AWWA testing standards. Any meter being returned for repair to Neptune under this performance warranty must be returned with a copy of the customer's test results. If the meter is returned to Neptune without a copy of the test results or if Neptune's factory test shows the meter to meet Neptune's published accuracy specifications, then the customer will be charged a nominal testing fee by Neptune in such cases. If, after the meter has been tested by Neptune, Neptune determines that the meter has failed the warranties set forth in this certificate, then Neptune will repair or replace the meter at Neptune's option.

Year of Failure	MACH 10 [®] Replacement Price Discount*
1-10	Full replacement: 100%
11	50%
12	50%
13	40%
14	40%
15	30%
16	30%
17	20%
18	20%
19	10%
20	10%

**Replacement price discount percentages will be applied towards then-current contract prices or then-current list prices, whichever is less, in effect for the year product is accepted by Neptune under warranty conditions. Replacement MACH 10 meters are warranted for one (1) year after date of shipment or balance of original MACH 10 meters warranty, whichever is greater.*



4. Responsibility Limited to Costs of Replacement and Repair

If the MACH 10 fails to meet the warranties set forth in Sections 1 and 2 of this Certificate of Warranty, then Neptune, at its option, shall repair or replace the MACH 10 or part thereof, provided that (a) the MACH 10 is delivered to a Neptune representative, (b) the MACH 10 is accompanied by a Return Material Authorization (RMA), and (c) all costs of delivery to Neptune are assumed by the purchaser of the MACH 10. Neptune's liability is limited to its costs of replacement and repair of the non-conforming MACH 10, and without limitation, this warranty does not include field replacement, labor, or materials costs, which are the responsibility of the customer. Damages resulting from miscalculation of water usage or lost revenue or profit are not recoverable from Neptune. It is the responsibility of the customer to periodically verify the operation and accuracy of its meters.

5. Warranties are Inapplicable under Certain Conditions

The warranties set forth in this Certificate of Warranty do not apply to any MACH 10 meter that has been damaged by, or subjected to, conditions which, in the opinion of Neptune, have affected the ability of the MACH 10 to perform, including but not limited to: misuse; improper handling, application, or installation; excessive operating conditions; foreign materials in the water; aggressive water conditions; tampering or unauthorized repairs or modifications; accidental or intentional damage; and acts of God. This Certificate of Warranty shall not apply if product is placed in non-recommended installation, is connected or altered by other than Neptune recommended procedures, or is read by equipment not approved or licensed by Neptune. Neptune makes no claims concerning operability and/or compatibility or third-party reading systems. In addition, this Certificate of Warranty shall not apply if third-party reading equipment is believed to have caused damage to the MACH 10. In order to determine its liability, if any, under this Certificate of Warranty, Neptune shall have the right to inspect any MACH 10 meter or part thereof that is claimed to be defective at Neptune or other location designated by Neptune.

THE ABOVE WARRANTY FOR THE MACH 10 WATER METER IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY NEPTUNE WITH RESPECT TO THE MACH 10. ALL OTHER WARRANTIES, CONDITIONS, TERMS, REPRESENTATIONS, OR OTHER LEGALLY OPERATIVE PROVISIONS CONCERNING THE MACH 10 ARE HEREBY EXPRESSLY EXCLUDED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY, CONDITION, TERM, AND REPRESENTATION OR OTHER LEGALLY OPERATIVE PROVISION AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS PARAGRAPH IS EXPRESSLY INTENDED TO EXCLUDE FROM THIS CONTRACT ALL STATUTORY AND COMMON LAW WARRANTIES TO THE MAXIMUM EXTENT PERMITTED BY LAW. TO AVOID ANY AMBIGUITY OR MISUNDERSTANDING, ALL PROBLEMS ARISING WITH A MACH 10 WATER METER AFTER THIS POINT SHALL BE BUYER'S RESPONSIBILITY. NEPTUNE'S LIABILITY SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE MACH 10 WATER METER. NEPTUNE SHALL NOT BE SUBJECT TO AND DISCLAIMS THE FOLLOWING: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY, (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY NEPTUNE, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATING THERETO, AND (3) ALL CONSEQUENTIAL, INCIDENTAL, SPECIAL, MULTIPLE, EXEMPLARY, AND PUNITIVE DAMAGES WHATSOEVER.

W MACH 10 05.16





3” to 12” MACH 10® Ultrasonic Meter

1. TERMS OF LIMITED WARRANTY

With respect to its Commercial and Industrial Neptune® MACH 10® water meter (“MACH 10”), Neptune Technology Group Inc. (“Neptune”) warrants that MACH 10 meters sold after 02/01/2020 for potable water or combined potable water and fire service applications will be warranted to be free from manufacturing defects in workmanship and material as follows:

The MACH 10 will be, at the later of (i) the date of original purchase from Neptune or (ii) the date of original shipment from a Neptune-authorized distributor of water meters (that later date is referred to as “the Date of Shipment”), and will remain for a period of 18 months from the Date of Shipment, or 12 months from date of installation, whichever comes first, free from manufacturing defects in workmanship and material. Neptune makes the following additional warranties with respect to certain MACH 10 components.

a) Lead Free Bronze Maincase

Neptune warrants that the MACH 10 lead free bronze maincase will be free from manufacturing defects in workmanship and material for ten (10) years from the Date of Shipment.

b) Electronics (Battery, PCB, Transducers, LCD)

Neptune warrants that the electronics of the MACH 10 will be free from manufacturing defects in workmanship and material for a period of ten (10) years from the Date of Shipment. Neptune will repair or replace a non-performing MACH 10 free of charge for the first five (5) years and at a discount of the then-current contract price, or the then-current list price, whichever is less, during the following five (5) years per the following table. The MACH 10 warranty does not include the external housing that encapsulates the electronics.

Year of Failure	MACH 10®
	Replacement Price Discount
1-5	Full replacement 100%
6	50%
7	40%
8	30%
9	20%
10	10%

With respect to Section 1 and subparts a) and b), the period from the Date of Shipment to the expiration of the specified time period is the “Warranty Period” with respect to each specified component. Neptune shall not be responsible for any defects in the MACH 10 or any specified component (whether due to design, materials, manufacture, or otherwise) that manifest themselves after the expiration of the specified Warranty Period.

2. MACH 10 METER ACCURACY WARRANTY

Provided that the MACH 10 meter and the components specified in Section 1 and subparts a) and b) are functioning properly (regardless of whether the MACH 10 meter and specified components are within or outside an applicable Warranty Period detailed above), Neptune makes the following warranties with respect to meter accuracy:

Neptune MACH 10 meters are warranted to meet or exceed new meter accuracy per AWWA specifications of ±1.5% for the published ranges set forth in Neptune’s current product sheet in existence at the time of the Date of Shipment of the MACH 10 meter for ten (10) years from Date of Shipment. Neptune further warrants the MACH 10 to meet or exceed extended low flow accuracy of ±3% for the published ranges set forth in Neptune’s current product sheet in existence at the time of the Date of Shipment of the MACH 10 meter for ten (10) years from Date of Shipment (that period being the “Accuracy Warranty Period”).

3. WARRANTY RETURNS

If a Neptune MACH 10 meter fails an accuracy test during the Accuracy Warranty Period, it may be returned to Neptune for evaluation. An accuracy test shall be conducted by the customer according to then-current AWWA testing standards. Any meter being returned for repair to Neptune under the accuracy warranty must be returned with a copy of the customer's test results. If the meter is returned to Neptune without a copy of the test results or if Neptune's factory test shows the meter to meet Neptune's published accuracy specifications, then the customer will be charged a nominal testing fee by Neptune in such cases. If after the meter has been tested by Neptune, Neptune determines that the meter has failed the accuracy warranty set forth in this Certificate of Warranty, then Neptune will repair or replace the meter at Neptune's option. Repaired or replacement MACH 10 meters are warranted for one (1) year after Date of Shipment of the repaired or replacement MACH 10 meter or the balance of the applicable original MACH 10 meter warranty (maincase, electronics, or accuracy), whichever is greater.

4. RESPONSIBILITY LIMITED TO COSTS OF REPLACEMENT AND REPAIR

If the MACH 10 fails to meet the warranties set forth in Sections 1 and 2 of this Certificate of Warranty, then Neptune, at its option shall repair or replace the MACH 10 or part thereof, provided that (a) the MACH 10 is delivered to a Neptune representative, (b) the MACH 10 is accompanied by a Return Material Authorization (RMA), and (c) all costs of delivery to Neptune are assumed by the purchaser of the MACH 10. Neptune's liability is limited to its costs of replacement and repair of the non-performing MACH 10, and without limitation, this warranty does not include field replacement, labor, or materials costs, which are the responsibility of the customer. Damages resulting from miscalculation of water usage or lost revenue or profit are not recoverable from Neptune. It is the responsibility of the customer to periodically verify the operation and accuracy of its meters.

5. WARRANTIES ARE INAPPLICABLE UNDER CERTAIN CONDITIONS

The warranties set forth in this Certificate of Warranty do not apply to any MACH 10 meter that has been damaged by, or subjected to, conditions which, in the opinion of Neptune, have affected the ability of the MACH 10 to perform, including but not limited to: misuse; improper handling, application or installation; excessive operating conditions; foreign materials in the water; aggressive water conditions; tampering or unauthorized repairs or modifications; accidental or intentional damage; or acts of God. This Certificate of Warranty shall not apply if the product is placed in a non-recommended installation, is connected or altered by other than Neptune recommended procedures or is read by equipment not approved or licensed by Neptune. Neptune makes no claims concerning operability and/or compatibility or third-party reading systems. In addition, this Certificate of Warranty shall not apply if third-party reading equipment is believed to have caused damage to the MACH 10. In order to determine its liability, if any, under this Certificate of Warranty, Neptune shall have the right to inspect any MACH 10 meter or part thereof that is claimed to be defective at Neptune or other location designated by Neptune.

THE ABOVE WARRANTY FOR THE MACH 10 WATER METER IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY NEPTUNE WITH RESPECT TO THE MACH 10. **ALL OTHER WARRANTIES, CONDITIONS, TERMS, REPRESENTATIONS, OR OTHER LEGALLY OPERATIVE PROVISIONS CONCERNING THE MACH 10 ARE HEREBY EXPRESSLY EXCLUDED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY, CONDITION, TERM, AND REPRESENTATION OR OTHER LEGALLY OPERATIVE PROVISION AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** THIS PARAGRAPH IS EXPRESSLY INTENDED TO EXCLUDE FROM THIS CONTRACT ALL STATUTORY AND COMMON LAW WARRANTIES TO THE MAXIMUM EXTENT PERMITTED BY LAW. TO AVOID ANY AMBIGUITY OR MISUNDERSTANDING, ALL PROBLEMS ARISING WITH A MACH 10 WATER METER AFTER THIS POINT SHALL BE BUYER'S RESPONSIBILITY. NEPTUNE'S LIABILITY SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE MACH 10 WATER METER. NEPTUNE SHALL NOT BE SUBJECT TO AND DISCLAIMS THE FOLLOWING: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY, (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY NEPTUNE, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATING THERETO, AND (3) ALL CONSEQUENTIAL, INCIDENTAL, SPECIAL, MULTIPLE, EXEMPLARY, AND PUNITIVE DAMAGES WHATSOEVER.



Cold Water/Solid State Meters

SIZES: $\frac{5}{8}$ " – 2"

GENERAL

All cold water meters (solid state type $\frac{5}{8}$ " - 2") furnished shall be produced in a manufacturing facility whose QMS is ISO 9001 certified and meets or exceeds the accuracy requirements specified in the "Standard Specifications for Cold Water Meters" C715 latest revision issued by AWWA.

LEAD FREE LEGISLATION

The utility requires that all water meters submitted in this proposal be compliant with NSF/ANSI 61, which exceeds the requirements of NSF/ANSI 372 that became effective January 2014:

- The utility wishes to ensure the safety of its drinking water.
- The utility wishes to safeguard its investment in metering infrastructure.
- Meters shall be made of "lead free" high-copper alloy as defined by NSF/ANSI 61.

TYPE

Only meters featuring solid state metrology will be accepted because of enhanced low-flow accuracy performance and extended accuracy over meter life.

MEASUREMENT TECHNOLOGY

The measurement technology shall be based on ultrasonic sensing featuring no moving parts.

SIZE, CAPACITY, LENGTH

The meter's size, capacity, and length shall be as specified in AWWA Standard C715 (latest revision).

MAINCASE

- The meter maincase shall be made cast from NSF/ANSI 61 certified lead free alloy containing a minimum of 85% copper. Plastic maincases or flow tubes are not acceptable as the spuds are susceptible to cross-threading or breaking during installation, or from pipe stress over time.
- The serial number should be displayed in a permanent location on the register.
- Meter markings shall indicate size, model, direction of flow, and NSF 61 certification.
- All lead free maincases shall be guaranteed free from manufacturing defects in workmanship and material for the warranted life of the meter.
- All maincase screws or bolts shall be of 300 series non-magnetic stainless steel to prevent corrosion.

ELECTRONIC REGISTER

The solid state meter electronic enclosure shall be constructed of a durable engineered composite designed to last the life of the meter. The meter shall provide a fully potted wire connection for use with AMR/AMI devices.

ENVIRONMENTAL

The solid state meter must feature fully potted electronics and battery for submersion in flooded meter pits.



REGISTRATION

- The register shall provide at least a 9-digit visual registration at the meter.
- The register shall provide an 8-digit meter reading for transmission through the RF AMR/AMI endpoint.
- The register shall employ a visual LCD leak detection indicator as well as provide remote leak detection through an ASCII format to the RF AMR/AMI endpoint.
- The register shall provide reverse flow detection, communicated as ASCII format data to the RF AMR/AMI endpoint.
- The register shall provide an indication of days of zero consumption, communicated as ASCII format data to the RF AMR/AMI endpoint.
- The register should accumulate and register consumption without connecting to a receptacle or RF AMR/AMI endpoint. The register shall display flow rate information (interleaved with the current meter reading).
- The register shall subtract reverse flow from the total registration.

STRAINERS

Solid state meters shall not require a strainer for accurate operation.

PERFORMANCE

Meter manufacturer's solid state meters shall exceed AWWA C715 accuracy standards and warrant their published accuracy levels for the life of their meters. Each meter shipment must be accompanied by factory test data showing the accuracy of the meter as tested at their factory.

MANUFACTURER

Manufacturers shall be a member of AWWA with a minimum of twenty-five (25) years of field and production experience in water measurement technologies and serving water utilities in the United States.

SYSTEMS GUARANTEE

All solid state meters shall be guaranteed compatible to the following Neptune AMR/AMI systems – R900®, R450™, and cellular endpoints – without special programming of the meter.

TECHNOLOGY PREFERENCE

It is the utility's preference that the solid state meter technology provided be ultrasonic-based technology featuring continuous measurements greater or equal to 4 times per second) to ensure desired accuracy at low-end flows and during typical start/stop conditions.

Acceptable meters shall be Neptune MACH 10® or approved equal.





MACH 10[®] Ultrasonic Meter

Why did Neptune[®] design the MACH 10[®] ultrasonic meter with a bronze maincase?

The corrosion-resistant, lead free, high-copper alloy maincase is built to withstand demanding service conditions; internal water pressure, rough handling, and in-line piping stress. With the MACH 10 there is no concern over the breakage of plastic meter spuds or cross-threading of plastic threads. Neptune believes that if a meter is capable of providing sustained accuracy over its life, the maincase must be designed to last the meter's life as well.

Does the MACH 10 utilize a battery?

Yes. All solid state meter technologies require a battery to operate. The battery powers the metrology and the LCD odometer.

Does MACH 10's LCD remain on when the lid is closed?

No. A photocell senses when the lid is closed and turns off the LCD for battery conservation.

What if the lid is broken off the MACH 10, will the LCD remain on?

No. After a few minutes the LCD will power down for battery conservation. The LCD can be reactivated by temporarily covering the photocell.

Can the MACH 10 be installed in flooded meter pit applications?

Yes. The MACH 10 electronics and battery are fully potted, suitable for submersion in a pit environment.

What happens if an empty pipe condition occurs?

The MACH 10 will display an empty pipe icon.

Can the MACH 10 register reverse flow?

Yes. The MACH 10 is capable of measuring reverse flow accurately. The LCD odometer will run in reverse when reverse flow occurs. A flag is set in the meter firmware to communicate this occurrence to the host software for notification when the meter is read. The MACH 10 communicates reverse flow exactly like the E-CODER[®].

What meter protocol does the MACH 10 output?

MACH 10 outputs standard E-CoderPLUS protocol and is compatible with Neptune R900[®], R450[™], Pocket ProReader, and Advantage Reading System as well as competitive AMR/AMI endpoints.

Is the MACH 10 AMR/AMI capable?

Yes. The MACH 10 is compatible with Neptune and third-party AMR/AMI meter reading systems.

Does the MACH 10 have any internal moving parts?

No. The MACH 10 utilizes "transit time" ultrasonic technology featuring no moving parts.

What is the pressure rating of the MACH 10?

Maximum operating water pressure is 175 psi.

Does the MACH 10 have excessive pressure loss due to the flow conditioner and mirrors inside the maincase?

No. The pressure loss meets AWWA C715.

What sizes are offered in the MACH 10?

The MACH 10 is offered in all the same sizes that are available in our $\frac{5}{8}$ " – 2" T-10®, HP Turbine, and TRU/FLO® product lines.

Can the MACH 10 easily retrofit existing PD, turbine, and compound meter installations?

Yes. The MACH 10 meter lay lengths are the same as common PD, turbine, and compound meter lay lengths for drop-in replacements.

Can the register be replaced on the MACH 10?

No. The electronic register of the MACH 10 is permanently potted and sealed as part of the meter assembly for protection against moisture intrusion.

Can the MACH 10 battery be replaced?

No. The battery in the MACH 10 is permanently potted and sealed as part of the meter assembly for protection against moisture intrusion.

Does accuracy diminish over time with the MACH 10?

No. A benefit of solid state meter technologies is no moving parts, so no wear over time that can diminish meter accuracy.

Is the blue rubber seal a critical sealing point for eliminating moisture intrusion?

No. The meter electronics and battery inside the enclosure are fully potted. The blue rubber seal is primarily installed for aesthetic reasons.

Is a ground strap required for the MACH 10?

No. The maincase is continuous bronze for continuity. Check your local ordinances though to make sure ground straps are not required on (all) inside set meters in your state.

What is the significance of the serial number on the dial face?

This number will be used to identify the meter.

Is the MACH 10 bronze maincase "lead free"?

Yes. Just like all Neptune meters, the MACH 10 meter is lead free and NSF/ANSI 61-G approved.

Does the MACH 10 measure the speed of particles moving with the flow of water?

No. The MACH 10 measures fluid velocity by measuring transit times of upstream and downstream ultrasonic waves; the difference in these times is proportional to flow rate. Volume is determined by the multiplication of the velocity of water, area of the pipe, and elapsed time.

How will I know if a MACH 10 battery is low on power?

The MACH 10 features low battery detection and notification. A low battery icon will flash on the LCD panel. With enhanced R900, the low battery condition will also be reported to the host software for reporting.

How much lower will the $\frac{5}{8}$ " MACH 10 measure flow than a $\frac{5}{8}$ " T-10 with accuracy of 100%+/- 3.0%?

The $\frac{5}{8}$ " MACH 10 is capable of measuring down to 1/20 gpm for the life of the meter.

Does the MACH 10 provide data logging?

Yes, data logging is provided when connected to, or integrated with, an R900 or LoRaWAN® endpoint.



Superior Accuracy. Zero Maintenance.

Neptune® MACH 10® Ultrasonic Meter



The MACH 10® ultrasonic water meter features solid state ultrasonic technology including a factory-calibrated, replaceable unitized measuring element (UME) with no degradation of accuracy over time. Combined with a corrosion-resistant, lead free, high-copper alloy maincase, the MACH 10 is built to withstand demanding service conditions and deliver sustained accuracy over the life of the meter.

- Sizes 3" through 12"
- Extended low-flow range for superior leak detection
- Accuracy sustained over meter life
- Can be installed in both horizontal and vertical applications
- Open flow path design with low pressure loss
- Advanced ultrasonic technology with easily replaceable UME design
- Lead free, high-copper alloy maincase
- UL Listed and FM Approved (standard)
- Available in standard turbine and compound lay lengths
- No maintenance



Specifications

AWWA C715 Compliant
NSF/ANSI 61 Certified
UL Listed/FM Approved
(Standard)

Maximum Operating Water Pressure

- 175 psi

Operating Water Temperature Range

- +33°F to +122°F (+0.5°C to +50°C)

Environmental Conditions

- Operating temperature:
+14°F to +149°F (-10°C to +65°C)
- Storage temperature:
-40°F to +158°F (-40°C to +70°C)

Applications

- Potable water
- Fire service
- Reclaim water

Warranty

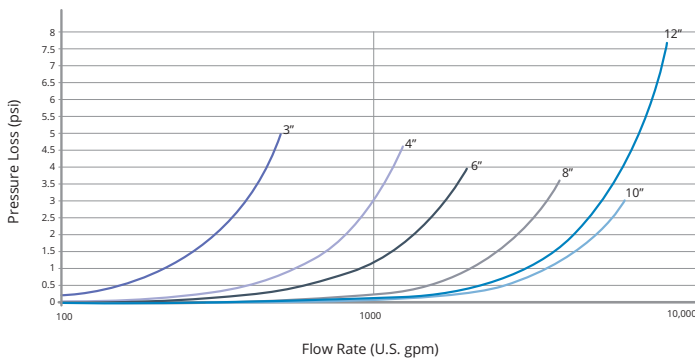
- Neptune provides a limited warranty for performance, materials, and workmanship. See warranty statement for details.

System Compatibility

- Compatible with Neptune R900® System. Also available as MACH 10®)R900i™ for an integrated radio solution and MACH 10®)TC for Sensus Touch Coupler compatibility.

Pressure Loss

This chart shows typical meter performance. Individual results may vary.



© 2021 Neptune Technology Group Inc. All Rights Reserved. The trademarks, logos and service marks displayed in this document herein are the property of Neptune Technology Group Inc., its affiliates or other third parties. Availability and technical specifications are subject to change without notice. 22-007202PS CI MACH 10 3-12 02.22

Operating Characteristics

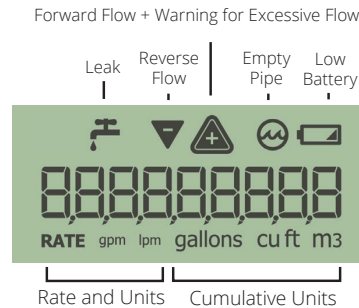
Meter Size	Extended Low Flow @ 100% Accuracy (+/- 3.0%)	Normal Operating Range @ 100% Accuracy (+/- 1.5%)	Safe Maximum Operating Capacity	
			Normal Operation (Non Fire Service)	Fire Service
3"	0.50 U.S. gpm	0.75 to 500 U.S. gpm	500 U.S. gpm	420 U.S. gpm
4"	0.75 U.S. gpm	1.5 to 1250 U.S. gpm	1250 U.S. gpm	1100 U.S. gpm
6"	1.0 U.S. gpm	2.0 to 2000 U.S. gpm	2000 U.S. gpm	1800 U.S. gpm
8"	4.0 U.S. gpm	6.0 to 4000 U.S. gpm	4000 U.S. gpm	4000 U.S. gpm
10"	6.0 U.S. gpm	10.0 to 6500 U.S. gpm	6500 U.S. gpm	6500 U.S. gpm
12"	8.0 U.S. gpm	12.0 to 8000 U.S. gpm	8000 U.S. gpm	8000 U.S. gpm

Registration

High Resolution (8-digit reading)	3"	4"	6" - 12"
1 U.S. Gallons	✓	✓	
10 U.S. Gallons			✓
0.1 Cubic Feet	✓	✓	
1 Cubic Feet			✓
0.01 Cubic Metres	✓	✓	
0.1 Cubic Metres			✓

LCD Display

9-digit display for extra resolution on manual reads.

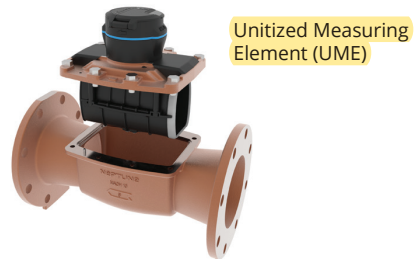


Dimensions

Meter Size	Length	Height	Weight
3"	12"	9½"	39 lbs
	17"	9½"	42 lbs
4"	14"	11"	51 lbs
	20"	11"	57 lbs
6"	18"	12¾"	79 lbs
	24"	12¾"	91 lbs
8"	20"	15 ⅜"	160 lbs
10"	26"	17 ⅞"	264 lbs
12"	19 ⅞"	20"	292 lbs

Available Units of Measure

Consumption	Rate
Gallons	GPM
Cubic Feet	GPM
Cubic Metres	LPM



Neptune Technology Group
1600 Alabama Highway 229
Tallahassee, AL 36078
800-633-8754 f 334-283-7293

ELECTRONIC APPLICATION OF BLUEGRASS WATER UTILITY OPERATING
COMPANY, LLC FOR ADJUSTMENT OF SEWAGE RATES
CASE NO. 2022-00432

BLUEGRASS WATER UTILITY OPERATING COMPANY, LLC'S RESPONSES TO THE
COMMISSION STAFF'S SUPPLEMENTAL REQUEST FOR INFORMATION

REQUEST NO. 2-23: State the expected life of the Neptune Mach 10 meter battery, and state whether the meter must be replaced when the battery is depleted.

RESPONSE: **The expected life of the Neptune Mach 10 meter battery for meters 2" and less is 20 years. Under the warranty, the first 10 years is a full replacement warranty and years 11-20 are a prorated replacement per the warranty. Please see Exhibit PSC 2-22. For these meters, the meter must be replaced when the battery is depleted.**

The expected life of the Neptune Mach 10 meters 3" and above is 10 years. The first 5 years is a full replacement warranty and years 6-10 are a prorated replacement per the warranty. Please see Exhibit PSC 2-22. For these meters, the chambers and other parts may be replaced when the battery is depleted without full replacement of the meter.

Witness: Jessica Sexton

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

VERIFICATION

I, James Blanton, verify, state, and affirm that the information request responses filed with this verification for which I am listed as a witness are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.

James H. Blanton
Name James H. Blanton
Title General Manager
Big Sandy Water District

Date: 8/15/2023

COMMONWEALTH OF KENTUCKY)
) ss:
COUNTY OF BOYD)

SUBSCRIBED AND SWORN TO before me on this the 15 day of August, 2023.

My commission expires: 6/30/2026



Jessica Sexton
Notary Public

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

VERIFICATION

I, Jessica Sexton, verify, state, and affirm that the information request responses filed with this verification for which I am listed as a witness are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.

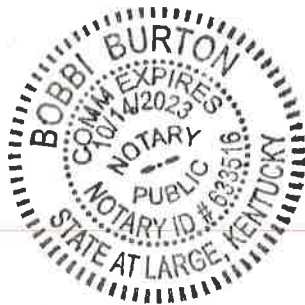
Jessica Sexton
Name Jessica Sexton
Title Office Manager
Big Sandy Water District

Date: 8/10/2023

COMMONWEALTH OF KENTUCKY)
) ss:
COUNTY OF BOYD)

SUBSCRIBED AND SWORN TO before me on this the 10 day of Aug, 2023.

My commission expires: 10/14/2023



Bobbi Burton
Notary Public

ELECTRONIC APPLICATION OF BIG SANDY WATER DISTRICT
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO
DEPLOY AN ADVANCED METERING INFRASTRUCTURE AND GEOGRAPHIC
INFORMATION SYSTEM, ISSUANCE OF EVIDENCE OF INDEBTEDNESS,
AND REQUEST FOR EXPEDITED RELIEF
CASE NO. 2023-00163

BIG SANDY WATER DISTRICT'S RESPONSES TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

VERIFICATION

I, Brandon Marcum, verify, state, and affirm that the information request responses filed with this verification for which I am listed as a witness are true and accurate to the best of my knowledge, information, and belief formed after a reasonable inquiry.

Brandon Marcum

Name

Title Witness

Big Sandy Water District / Integrity water

Date: 8/11/23

COMMONWEALTH OF ~~KENTUCKY~~)

Indiana)

COUNTY OF ~~BOYD~~)

Clark)

ss: Jeffersonville, IN

SUBSCRIBED AND SWORN TO before me on this the 11th day of August, 2023.

My commission expires: 6-8-2030

Carlos Molina

Notary Public

