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March 7, 2022

VIA E-MAIL AND FIRST CLASS MAIL

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, Rhode Island 02888

Re: *In Re: Providence Water Supply Board*, PUC Docket No. 4994

Dear Ms. Massaro:

On behalf of the Greenville Water District and the Lincoln Water Commission, enclosed please find an original plus nine copies of their Post-Hearing Brief to be filed in the above-entitled docket.

Thank you for your attention to this matter.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Adam M. Ramos".

Adam M. Ramos

AMR:cw
Enclosures

cc: Docket No. 4994 Service List

STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISSION

IN RE: PROVIDENCE WATER SUPPLY BOARD : Docket No. 4994
:

**GREENVILLE WATER DISTRICT AND LINCOLN WATER COMMISSION'S
POST-HEARING BRIEF**

I. INTRODUCTION

For decades, the Providence Water Supply Board (“Providence”) charged a single wholesale rate to all its wholesale customers. Everyone understood that the single wholesale rate was not a perfect representation of the cost of service for each wholesale customer, but all parties and the Public Utilities Commission (the “PUC”) recognized that it was fair, just, and reasonable. When Providence again proposed a single wholesale rate in the original proceedings in this docket, most of the parties agreed that the single wholesale rate was fair and reasonable. In fact, Providence, the Division of Public Utilities and Carriers (the “Division”), the Kent County Water Authority (“Kent County”), and the City of Warwick (“Warwick”) entered into an initial Settlement Agreement that included a single wholesale rate.

The PUC determined, however, that moving to individual wholesale rates would be a better reflection of actual cost-of-service based rates and directed Providence to implement individual wholesale rates as part of an approved Amended Settlement Agreement. The PUC’s order, however, as well as the Amended Settlement Agreement, recognized that the information available to establish the cost-of-service-based, individual wholesale rates did not fully account for all the factors that should impact what an individual wholesale rate should be. Accordingly, the PUC directed Providence to conduct a new allocated cost of service study (“COSS”) “to inform the Commission’s decision-making for wholesale class rate allocations for rate years two

and three” and to “takes into account all factors[.]” *See* Amended Settlement Agreement, August 18, 2020 at p. 8. The PUC directed Providence to address numerous specific issues in the new COSS to ensure that it considered all relevant factors when setting individual wholesale rates.

To perform that new COSS, Providence performed hydraulic modeling and applied it in a way that has never before been used to set rates. *See* Feb. 15, 2022 Tr. at 126:24-127:3. The results of that hydraulic model led to proposed individual wholesale rates that fail to take into account numerous factors regarding cost causation within the system and fail to recognize benefits that accrue to all customers from the system as a whole. Further, Providence used a flawed approach to the hydraulic model itself, rendering the results unreliable. Finally, by employing the hydraulic model to determine peaking factors used to allocate costs to wholesale customers for some costs and different peaking factors for other costs, as well as declining to use the hydraulic model at all to establish cost allocations for individual customers, Providence deployed disparate and incongruent ratemaking methodologies both within customer classes and across customer classes.

Thus, although rate setting is not an exact science, the PUC should not find the proposed rates resulting from the new COSS, the PUC to be fair, just, and reasonable. Rather than answering all the questions and addressing all the nuances that go into individual wholesale rates to provide more accurate cost-of-service based rates, the new COSS creates only the illusion of precision. Its calculations are based on incomplete and unreliable data. Rather than moving toward a better, more accurate approximation of rates that reflect the costs to serve each individual wholesale customer, the new COSS raises more questions than it answers.

Therefore, Greenville Water District (“Greenville”) and Lincoln Water Commission (“Lincoln”) recommend that the PUC press pause on the transition to individual wholesale rates

and, for the time being, return to a single wholesale rate as proposed in the initial Settlement Agreement, as set forth on Schedule HJS Settlement-22: Proposed Rates. Additionally, the PUC should delay transitioning to individual wholesale rates until it has better and more complete data on the factors that go into determining individual wholesale rates that fairly capture all the benefits of the system and treat similarly situated customers equitably.

Alternatively, if the PUC declines to delay implementing individual wholesale rates, then it should, at a minimum, correct the inequity that results from using one set of peaking factors derived from the base-extra capacity method for some cost allocations and another set of peaking factors derived from the hydraulic model for other allocations. Thus, if the PUC accepts the hydraulic model as a reliable method to establish a COSS, then it should apply the peaking factors that result from the hydraulic model and direct Providence to develop rates using those peaking factors across all allocations. The individual rates that would result from the process are set forth in Greenville/Lincoln Exhibit 5, Response to BCWA's First Set of Data Requests. If the PUC accepts this alternative recommendation, Greenville and Lincoln further urge the PUC to adopt the 1/3 phase in approach and apply the rate increases through gradualism.

II. THE PUC SHOULD RETURN TO A SINGLE WHOLESALE RATE

In its original filing on December 2, 2019 Providence proposed a single wholesale rate increase. Greenville and Lincoln did not intervene at that time, as they typically have not in prior proceedings, because that proposal was fair and reasonable – and consistent with the history of setting wholesale rates for Providence customers. Throughout the initial proceeding, Providence Water acknowledged that it wanted to keep a single wholesale rate for the time being so that it could further study the issue of individual wholesale rates in its next general rate filing. *See* Feb. 15, 2022 Tr. at 80:1-7. In fact, in its response to PUC Data Request 2-1 in the original rate filing

case, Providence Water responded that it is “unable to calculate individual wholesale rates which are just and reasonable because it does not have sufficient information at this time to reflect all the nuances involved in serving each wholesale customer individually.” *See* Providence Water’s Response to PUC Data Request 2-1, June 26, 2020 at p. 1. Providence Water admitted at the public hearing on the new COSS, it still believes that the fairest way to charge wholesale customers is with a uniform rate. *See* Feb. 15, 2022 Tr. at 46:16-21. Nevertheless, Providence has worked to comply with the PUC’s directive to transition to individual wholesale rates through the development of a new COSS. To do so, Providence performed hydraulic modeling, and the new COSS resulted in significant, unexpected rate increases for Greenville and Lincoln.

Faced with this new paradigm, and in fulfilling their obligations to their customers to ensure that the wholesale rates they pay will be fair, just and reasonable, Greenville and Lincoln engaged experts and closely analyzed the new COSS and the hydraulic model. That analysis revealed significant shortcomings.

Pare performed its hydraulic modeling in a steady-state, meaning that it performed simulations of Providence Water’s transmission and distribution (“T&D”) network using static data from a particular moment in time to calculate the flow of water in each leg of the network. *See* Greenville/Lincoln Exhibit 1, Testimony and Exhibits of Dr. Ivor Ellul (“Greenville/Lincoln Exhibit 1”) at 2:20-22. Providence performed this modeling on three static scenarios, Average Day Demand, Maximum Day Demand, and Peak Hour Demand. *Id.* at 3:1-4. The issue with this approach is that it does not accurately capture the way in which the pipeline network behaves. *Id.* at 3:10-11. At best, it is an approximation based on a snapshot taken from a moment in time on a pipeline network that operates in a highly dynamic manner. *Id.* at 3:7-12.

Providence's back-tracing approach also depends on the faulty assumption that the pipeline network operates in a steady state. *Id.* at 4:18-22. And, Providence's inch-mile analysis creates a bias toward higher rates for customers using longer and larger pipes. *Id.* at 5:11-12. Further, the inch-mile value for each pipe segment is pro-rated by the percentage of flow that can be attributed to each wholesale customer. However, because this attribution is based on the back-tracing work, the inch-mile analysis does not accurately portray the actual T&D costs. *Id.* at 5:13-19. Moreover, the use of Draw Rate as opposed to Average Demand rate results in a significant overestimate of flows through the system. *Id.* at 6:17-18.

The hydraulic modeling, back-tracing, and inch-mile calculations thus purport to precisely calculate the percentage of each pipe that should be assigned to each wholesale customer. This alleged precision, however, is illusory. It results from data derived from an estimate (of the operation of the system) multiplied by an estimate (of the specific pipes used), and then multiplied by yet another estimate (of the inch-miles of pipe) to develop these "precise" assignments of cost responsibility. And, this process does not account for benefits like redundancy and resiliency at all, much less all the other system-wide benefits that result from the network being built to deliver service at scale.

This methodology treats similarly situated customers differently – and inequitably. There are Providence customers who could be right next door to Smithfield retail customers, but Smithfield would pay rates based on the increased costs that result from the hydraulic model allocations, but the Providence retail customers would not. As the Division's expert, Jerome Mierzwa testified the proposed methodology does not distinguish between similarly situated retail and wholesale customers. *See* Feb. 17, 2022 Tr. at 20:12-21:2. Mr. Mierzwa further acknowledged that Pare's assignment of responsibility for pipeline segments does not capture the

resiliency and redundancy benefits that the entire system provides to all customers. *Id.* at 22:6-14. Even, Bristol County Water Authority (“BCWA”), which vigorously advocated for individual wholesale rates, agreed that the hydraulic modeling did not yield reliable and accurate results. *See* Feb. 16, 2022 Tr. at 27-35.

Although Greenville and Lincoln are not opposed in principle to setting individual wholesale rates – and using hydraulic modeling to do so – the method and manner Providence employed in creating the new COSS does not result in fair, just and reasonable individual wholesale rates that are an improvement over the single wholesale rate that has been the standard for decades. The operation of a water system is dynamic and the use of pipes changes from day-to-day, hour-to-hour, and sometimes minute-to-minute.¹ Providence’s inch-mile analysis did not give any consideration to the inherent resiliency and redundancy that this complex system provides to all customers. *See* Greenville/Lincoln Exhibit 2, Testimony and Exhibits of Jason Mumm (“Greenville/Lincoln Exhibit 2”) at 11:12-17. For example, when parts of a network like Providence’s are down, customers can most often still receive water through the alternate paths that the network provides. *Id.* at 11:19-22. The inch-mile analysis looks only at which customers use which segment of pipe and they share its cost based on the draw rates. *Id.* at 12: 16-19. But this analysis is based entirely on which customer uses which segment under normal conditions, assuming a steady state rather than a dynamic state and does not include those customers who benefit from the pipe segment even if they may not use it under normal operations. *Id.* at 12:19-

¹ If Providence Water is going to rely on hydraulic modeling, then it needs to take its modeling a step further. As Dr. Ellul testified, the pipeline system is dynamic and complex. *See* Feb. 16th Tr. at 85:1-5. Instead of running a steady-state hydraulic model, Pare should have run an extended period simulation (“EPS”) that captures data continuously for twenty-four hours. *Id.* at 85:16-24. The time and expense of running an extended period simulation should be relatively low. There are programs available to Pare that can complete a back-tracing analysis and automate it without the need for any manual input. *Id.* at 86:1-23. Although the EPS will generate more data than a steady-state model, there are also programs that can run data analytics at “the press of a button.” *Id.*

22. Therefore, the costs of a given segment are being shared by fewer customers than they would have had Providence applied a more customary approach. *Id.* at 13:1-3.

Rather than allocate T&D costs using the inch-mile analysis, Providence could have created cost-sharing groups to recognize obvious “used-and-useful” characteristics, that is the shared benefits of the system to all customers, in the same way it did with the pumping and treatment components. *Id.* at 14:2-5. Providence could have used the hydraulic analysis to identify those portions of the network used only to distribute water to retail customers to create separate transmission and distribution cost functions. *Id.* at 14:8-11. It could have then created a cost-sharing group called “CTA-Transmission” for the transmission functions, while assigning the rest of the network (the distribution function) to “Retail Only”. *Id.* at 14:11-13. The network of lines making up the transmission function would have then been easily allocated among all customers based on their total demands rather than the inch-mile analysis. *Id.* at 14:17-20. This approach, rather than the inch-mile analysis, would have resulted in all customers sharing in the costs of transmission function proportionately with their demand. *Id.* at 15:1-4. Instead, Providence deployed an approach that compounded the imprecision in the process resulting in an incomplete analysis of how costs should be allocated.

Based on the evidence in the record, Providence’s hydraulic model produced unreliable and inaccurate data that does not reflect the holistic nature of the system, and therefore does not result in a COSS that fully and fairly addresses all the nuances that go into establishing just and reasonable individual wholesale rates. The PUC, therefore, should, at least temporarily, revert to the fair and reasonable single wholesale rates proposed in the initial Settlement Agreement and direct Providence Water to conduct a more comprehensive COSS in advance of its next rate case

to address all the issues and factors that were not fully, fairly, and accurately addressed by the current proposal.

III. ALTERNATIVE RECOMMENDATION

Alternatively, if the PUC accepts the hydraulic model as a reliable basis for the development of the COSS in this proceeding, it should direct Providence to establish rates based on the peaking factors generated by that hydraulic model. Providence used two different peaking factors in the same COSS: one to allocate T&D costs and another to allocate all other costs. *See* Greenville/Lincoln Exhibit 2 at 8:4-5. Providence asserts that the “draw rate” is more precise but then uses the less precise values measured using noncoincidental peaks to allocate the remaining two-thirds of the system’s costs. *Id.* at 8:7-9. Had Providence used the more precise peaking factors for all cost allocations, the wholesale class would realize a \$1.4 million reduction of costs. *Id.* at 8:11-13.

Providence’s decision to use coincidental peaks to allocate some costs and noncoincidental peaks to allocate others is irrational because wholesale customers do not have two different demands. *Id.* at 8:22-9: 4. As Harold Smith testified, the purpose of calculating peaking factors is to assess how much a particular customer or customer class contributes to the system peak. *See* Feb. 15, 2022 Tr. at 165:20-166:5. The hydraulic model, if it is to be relied upon, revealed that wholesale customers contribute to the system peak less significantly than the base extra capacity method suggested. Accordingly, the better and more accurate method for applying peak factors for cost allocation purposes is to use the coincidental peaks, which the hydraulic model identified. Thus, if the PUC is going to credit the hydraulic analysis and set individual wholesale rates based in its results, it should apply the coincidental peaking factors derived from that analysis across the COSS, which results in the rates set forth on Attachment

Greenville-Lincoln BCWA 1-1-1, which is identified as Exhibit 5 – Restated Schedule HJS-22 with Revised Peaking Factors.

IV. CONCLUSION

For these reasons, the PUC should (i) order Providence to implement the single wholesale rate set forth in the initial Settlement Agreement in this matter, and (ii) direct Providence to complete a more comprehensive new COSS that fully considers all the factors necessary to develop individual wholesale rates, including more comprehensive hydraulic modeling and consideration of system-wide benefits, to be submitted with its next base rate case.

Alternatively, the PUC should order Providence to establish individual wholesale rates using the peaking factors developed from its hydraulic model across all cost allocations, as reflected in Attachment Greenville-Lincoln BCWA 1-1-1, which is identified as Exhibit 5 – Restated Schedule HJS-22 with Revised Peaking Factors.

Respectfully submitted,

GREENVILLE WATER DISTRICT and
LINCOLN WATER COMMISSION

By and through their counsel:

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Dated: March 7, 2022

CERTIFICATE OF SERVICE

I, the undersigned, hereby certify that an original and nine (9) copies of the within document was mailed to the Commission Clerk for filing, and a true copy of the within document was served via electronic mail upon all parties set forth in the Service List on the 7th day of March, 2022.

/s/ *Adam M. Ramos* _____
Adam M. Ramos

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**Docket No. 4994 – Providence Water Supply Board – General Rate Filing
Service List updated 1/4/2022**

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