

IN RE: PROVIDENCE WATER SUPPLY BOARD
MULTI-YEAR RATE FILING – RATE YEAR 2
Docket No. 4994
Witness: Dr. Ivor Ellul

GREENVILLE WATER DISTRICT and LINCOLN WATER COMMISSION'S
SUR-REBUTTAL TESTIMONY
OF
DR. IVOR ELLUL

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1 **I. Introduction**

2 **Q. Please state your full name and business address.**

3 A. Dr. Ivor Ellul, 4265 San Felipe Street, Suite 1100, Houston, Texas 77027.

4 **Q. Are you the same Ivor Ellul who submitted pre-filed direct testimony in these**
5 **proceedings?**

6 A. Yes, I am.

7 **Q. Have you reviewed testimony and rebuttal testimony delivered in this case?**

8 A. Yes, I have reviewed the rebuttal testimony of Gregg M. Giasson for Providence
9 Water Authority.

10

11 **II. Analysis of Hydraulic Modeling**

12 **Q. In your opinion is the hydraulic model sufficiently accurate for the task of**
13 **delineating system usage by the wholesale and retail customers?**

14 A. Mr. Giasson claims that the hydraulic model is utilized frequently to verify
15 system operations. He further claims that the hydraulic model is often field
16 verified to ensure accuracy. It is encouraging to see that such use is made of the
17 hydraulic model and underscores the importance of hydraulic modeling in the
18 operations management process deployed by Providence Water Authority.

19 Be that as it may, Mr. Giasson's description of how the hydraulic model is used in
20 meeting the operational and planning needs of Providence Water mostly addresses
21 analysis focused on determining capacity under predominantly steady-state
22 conditions.

1 The task at hand is different in that it requires the analysis of the pipeline network
2 under conditions that are changing, often rapidly.

3 I am, therefore, of the opinion that the task of delineating system usage by the
4 wholesale and retail customers should be undertaken with a model that is closer to
5 dynamic in nature which, in this case, would be an Extended Period Simulation
6 (EPS) model.

7 **Q. Would the EPS approach be one that would be tractable for Providence**
8 **Water?**

9 A. Yes, indeed. In fact, Mr. Giasson confirms that their consultant (Pare) has utilized
10 EPS many times in the past.

11 **Q. Yet, Providence Water does not feel that EPS is necessary for the analysis**
12 **that they have conducted. Do you agree with this statement?**

13 A. Mr. Giasson maintains that the three steady-state scenarios that have been
14 modeled by Providence Water adequately capture the wide range of system
15 demand. Whether this is an accurate statement is unclear without a review of the
16 system operational data. In general, pipeline systems tend to behave in a highly
17 dynamic manner over any twenty-four-hour period as has been seen in the
18 information that Pare has provided.

19

20 Furthermore, Mr. Giasson claims that if one were to adopt an EPS approach, it
21 would add significant effort and expense without adding much value to the COSS.

22 In fact, he estimates an additional effort of as much as three to four person-years

1 taking 12 to 18 calendar months and costing between \$700,000 and \$800,000.

2 These estimates seem to be extraordinarily high given that the model is already in
3 hand and that the primary task will relate to the input of data into the model and
4 analysis of the output results once the model has been run multiple times. Data
5 analytics tools are nowadays available to perform such an automated analysis
6 which need not be carried out manually.

7

8 **III. Conclusion**

9 **Q. Does this conclude your testimony?**

10 A. Yes.