

**BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION  
COMMISSION**

KIMBERLY-CLARK TISSUE COMPANY

Complainant

v.

Docket No. UG-990619

PUGET SOUND ENERGY, INC.

Respondent;

DIRECT TESTIMONY OF PAUL A. RILEY

ON BEHALF OF PUGET SOUND ENERGY, INC.

October 4, 1999

## DIRECT TESTIMONY OF PAUL A. RILEY

**Q. Please state your name, business address and position.**

A. My name is Paul A. Riley. My address is 13635 NE 80 Street, Redmond, Washington. I am a System Manager for Puget Sound Energy, Inc. ("PSE") in the 24-Hour Operations Group.

**Q. Please describe your responsibilities in that position.**

A. I directly supervise personnel in the following groups: Electric Distribution and Transmission Operations, Gas Control and after-hours supervision of Gas Dispatch. This organization is part of the 24-Hour Operations Group. 24-Hour Operations monitors and directs operational responses to events occurring on the gas and electric delivery systems. With input from others, I am responsible for initiating curtailment planning, when either gas supply or distribution system capacity constraints could result in loss of service to firm customers.

**Q. Would you describe your prior relevant employment experience?**

A. I was employed by Washington Natural Gas Company ("WNG") from 1976 until the merger between WNG and Puget Sound Power and Light in February 1997. During my employment with WNG, I held the following positions: Meter Reader, Engineering Aide, Gas Dispatch Analyst, Supervisor--Gas Measurement. After the merger I was employed by Puget Sound Energy, Inc. ("PSE") as Day System Manager--Gas. My employment history is provided as Exhibit \_\_\_ (PAR-1).

**Q. Please summarize your testimony.**

A. The following is a summary of the main points of my testimony:

- I followed the parameters approved by Mr. Hogan to ensure that no interruptible service resumption would occur unless firm service would not be jeopardized.
- PSE had a sound basis for continuing the curtailment of interruptible customers until after the peak hour conditions on December 28, 1998.

- It was appropriate for the System Manager in the 24 Hour Operations Group to monitor the curtailment and begin resuming service to interruptible customers under the parameters approved by Mr. Hogan.

## **INVOLVEMENT AND RESPONSIBILITIES**

### **DURING THE CURTAILMENT**

**Q. Were you involved with the decision to curtail interruptible customers between December 19 and December 28, 1998?**

A. Yes.

**Q. Please provide an overview of your responsibilities and involvement during the December 1998 curtailment.**

A. At the time I was the Day System Manager-Gas, which included managing the gas distribution system. As part of managing the gas distribution system, I managed personnel in three groups: Gas Control, Gas Dispatch, and Gas Measurement. My responsibilities included performing monitoring of system performance. This responsibility also included implementation of the curtailment process and participation in curtailment-related decisions. I was expected to, and did, confer with other PSE personnel regarding all aspects of managing the curtailment process. I also provided a portion of the input required to make the decision to curtail, and to resume service, based on my background and experience.

During this time, I was also serving as the Emergency Response Planning Supervisor ("ERPS"). While acting as the ERPS, my responsibilities included technical assistance to the districts, Gas Control, Gas Operations Dispatch, and evaluation of emergency situations and mobilization of resources to respond to emergency situations.

**Q. As System Manager, could you authorize a curtailment decision without input from PSE's senior management?**

A. No, only in the event of an emergency situation was I authorized to make a curtailment decision without review by senior management.

**Q. How does PSE monitor its distribution system and the effects of such actions as curtailments to ensure that appropriate operational actions are being taken?**

A. PSE uses many different measures to ensure proper actions are being executed. Our prime concern is continuity of service to firm customers, yet we also attempt to maintain as much system throughput as possible, to serve interruptible customers. The coordination which exists between Operations Planning and 24-Hour Operations ensures this goal. 24-Hour Operations reviews such data as PSE's SCADA (Supervisory Control and Data Acquisition) System, pressure recording gauges ("pen gauges"), historical system flows, historical temperatures, forecast temperatures, customer complaint calls, information from public sources and any other factors which provide real-time understanding of the distribution system performance. Operations Planning prepares sophisticated Stoner system models (as described in Ms. Caswell's testimony), which we also review to establish an understanding of the weaknesses and strengths within the distribution system.

This monitoring, coupled with PSE's experience in operating the distribution system enables us to ensure firm service is maintained, while interruptible service is served a significant portion of the time.

**Q. At what point did you realize that curtailment of interruptible customers might be necessary?**

A. As part of my responsibilities in managing the gas distribution system, I monitor weather forecasts. Weather conditions can have significant effects on the gas distribution system. During

the week of December 14, 1998, I began to see weather forecasts that were of concern. PSE receives a 72-hour, 48-hour and 24-hour advance weather forecast from Weather Net ("WNET") for each day.<sup>1</sup> PSE also receives hourly forecasts from WNET. PSE maintains certain WNET forecast data by gas day, in addition to actual temperatures measured at SeaTac Airport. Attached to my testimony are the WNET 72-hour, 48-hour and 24-hour forecasted high and low temperatures and the 48-hour and 24-hour forecasted hourly temperatures that PSE received for gas days beginning December 15, 1999 to December 27, 1998 as well as actual temperatures measured at SeaTac. See Exhibit \_\_\_\_ (PAR-2). Gas Control also receives WNET forecasts on other areas within our gas distribution system service territory, as well as longer-range forecasts. See Exhibit \_\_\_\_ (PAR-3). While this information is reviewed to evaluate prevailing weather conditions, PSE does not retain this data for subsequent analytical activities. In addition, my staff and I monitor weather reports on local and national television stations and forecasts from the National Weather Service.

**Q. Did you create the initial curtailment plan?**

A. Yes. By Thursday December 17, most of the weather services were predicting an unusual cold front arriving by the early hours of December 21, 1998. By Thursday, I was discussing operational plans and curtailment planning, with my direct supervisor, Virgil Hofkamp, Director of 24-Hour Operations, and with individuals in the Operations Planning Group. Operations Planning prepares Stoner models to simulate the effect of various events on distribution system capacity. With input from the Operations Planning group, I developed a proposed curtailment list of interruptible customers.

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<sup>1</sup> Although the 72-hour advance forecast would actually be received by PSE approximately two days and eight hours prior to the applicable gas day, the 48-hour forecast would be available approximately one day and eight hours in advance, and the 24-hour forecast would be available approximately eight hours in advance.

**Q. How was the initial curtailment plan created?**

A. The initial curtailment plan was created by estimating temperatures based on weather forecasts and estimating system loads. Using the Stoner modeling system, individuals in Operations Planning evaluate system models based on customer load, peak factors and expected temperatures. Additional criteria to be considered when reviewing system simulations include day of the week (which affects peak factors and estimated usage), the type of weather pattern predicted, the likelihood of snow, and the duration of the cold event.

**Q. Was the start of the curtailment adjusted?**

A. Yes. The weather forecasts proved to be inaccurate and the cold front moved in sooner and was colder than expected. The temperatures and conditions had a greater than expected impact on the gas distribution system. Gas Dispatch started receiving numerous customer service calls on Friday, December 18, 1998 and continuing on Saturday morning, December 19, 1998.

**Q. What is the relevance of customer service calls?**

**A. These calls indicate that customers had no heat, that their equipment was unable to sustain a pilot light or that the pilot light was flickering, that the furnace or hot water heater was not working, or that the furnace was continuously cycling on and off but unable to reach the thermostat set point. Calls such as these often indicate pressure problems and stress on areas of the distribution system where real-time monitoring does not exist. This information is a valuable supplement to the system pressures being monitored by Gas Control on the SCADA system. Analysis of the location and concentration of customer calls can identify areas where distribution system capacity is constrained.**

**Q. Who made the decision to move up the curtailment?**

A. I recall that Ms. Caswell and I spoke by telephone Saturday, when I was in Eastside Operations. Ms. Caswell and I reviewed the experiences of the morning and evaluated the degree to which the system had not rebounded. We agreed that the curtailment should begin earlier and include all interruptible customers. It is my understanding that Ms. Caswell made the recommendation to senior management that the curtailment begin earlier and include all interruptible customers. Ms. Caswell communicated senior management's decision to accept this recommendation to me on Saturday and the previously developed curtailment plans were adjusted accordingly.

**Q. Under the adjusted curtailment plan were all interruptible customers scheduled to be curtailed?**

A. Yes. Rate Schedule 57, 87 and 85 customers were to be curtailed on December 19, 1998 by 10:00 p.m. I believe that by Sunday, December 20, 1998 all but a few Rate Schedule 86 customers had been curtailed.

## CONDITION OF THE DISTRIBUTION SYSTEM

DECEMBER 20-24, 1998

**Q. After curtailment of all interruptible customers was completed what was happening on the distribution system?**

A. We continued to see problems on the distribution system, even with temperatures which no lower than the previous day's. Additional problems occurred as the cold weather continued. Gas Dispatch was keeping track of all customer service calls which could indicate distribution system capacity constraints. See Exhibit \_\_\_\_ (PAR-4). I received updates frequently throughout the day from Gas Dispatch on the calls PSE was receiving, and the areas in which these calls were occurring. A review of Gas Dispatch records reveals that on December 20 there were 433 complaints, on December 21 there were 971 complaints, and on December 22 there were 754 complaints. PSE was receiving these complaints even with all interruptible customers curtailed. On Tuesday, December 22, we had two large firm service outages, one in the Kayak Point area near North Marysville, and another in the Puyallup area. We also continued to observe many smaller outage and low pressure situations. Construction and service crews were working essentially round-the-clock to respond to the distribution system capacity constraints and customer calls.

**Q. What was the condition of the gas distribution system on December 23, 1998?**

A. On December 23, 1998, PSE had received 582 customer service calls that indicated potential distribution system capacity constraints. In addition to the customer service calls, there were other problems, including frozen meters, regulators, mains and service lines--indications of distribution system capacity constraints. These conditions, in addition to SCADA information, indicated that PSE was still experiencing distribution system capacity constraints, impacting service to firm customers. In addition, the weather forecasts were not consistent. Some of the



forecasts suggested that that the cold weather would be below normal through the weekend and into the next week, while others suggested that temperatures might begin to warm up after Christmas Day.

**Q Did you discuss these issues with anyone?**

A. Yes, I was sending out emails to a number of people, in part to keep them apprised of the situation, and I had continuing discussions with individuals in Operations Planning and with Virgil Hofkamp, among others.

**Q. What was the condition of the gas distribution system on December 24, 1998?**

A. On the morning of December 24, 1998, there was snow on the ground, and the forecasts were still inconsistent. The gas distribution system's performance was not significantly different from the day before. Throughout the system there were still frozen meters, regulators, mains and service lines. Gas Dispatch was still reviewing customer service calls that could indicate distribution system capacity constraints. They received 273 customer service calls on December 24, 1998. Exhibit \_\_ (PAR-5), page 1, illustrates that the customer service calls PSE received on December 24, 1998, were located throughout the system in concentrated groups.

#### **BASIS FOR DETERMINATION TO CONTINUE THE CURTAILMENT**

#### **AFTER DECEMBER 24, 1998**

**Q. How was the determination made to continue the curtailment after December 24, 1998?**

A. On the morning of December 24, 1998, I participated in a meeting with Virgil Hofkamp, Carol Wallace, Elaine Kaspar and others regarding the parameters around which curtailment would be extended. We called Tim Hogan to discuss those parameters and to provide our recommendations regarding the curtailment. During this conference, we discussed distribution system conditions, including distribution system problems, the weather forecasts and the past

inaccuracy of the forecasts, the Monday forecasted peak load and our plan for resumption of interruptible service.

**Q. What discussion did you have with Mr. Hogan about the weather forecasts?**

A. I pointed out that the weather forecasts had been inaccurate and were currently inconsistent, with some forecasting continued cold through the weekend and the following week, while others were indicating a warming trend after Christmas Day. See Exhibit \_\_\_ (PAR-3).

**Q. During this discussion did you point out the extent of the inaccuracy of past forecasts?**

A. Yes. I noted that the actual temperatures experienced on the system had been significantly lower than the forecasted temperatures and that they had continued to be inaccurate in this direction through December 23. The past inaccuracies in the forecasts and their current projections made them less reliable and led me to conclude that PSE needed to plan for temperatures as low as 30 degrees Fahrenheit. This was the approximate low that we experienced during the morning of gas day December 24, 1998. My concern over the inaccuracy was compounded because the forecast temperatures had been higher, rather than lower than the actual temperatures. If the pattern held true to form, PSE's gas distribution system would experience greater distribution capacity constraints in the coming days. See Exhibit \_\_\_ (PAR-6). Expecting a low temperature between 30 and 35 degrees Fahrenheit, I forecasted system performance very similar to that which was experienced on December 24, the morning this discussion took place. I was aware from discussions with Operations Planning that their Stoner model simulations verified that PSE would not be able to serve interruptible loads in this range of temperatures, without risking service to firm customers. In addition, as more fully described in Ms. Caswell's testimony, the Stoner model does not include a number of factors which can affect distribution system capacity and which were factors on December 24, 1998.

**Q. What conditions in the distribution system were you concerned about?**

A. I had been seeing a large number of firm customer service calls that indicated distribution system capacity constraints throughout PSE's gas distribution system. In addition, I was aware that there were still frozen meters, regulators, mains and service lines. I was also concerned that the system pressures had not rebounded from the last 5 days of cold weather.

Q. What do you mean by the term "rebounded"?

**A. In managing the distribution system, I have observed that after distribution system capacity has been stressed, it may take a significant period of time to rebound. This period varies due to a number of factors, including the duration of the event, the severity of the event and the customers' responses to the event. Upon rebound, the system returns to its pre-stress behavior.**

Q. Did the location of interruptible customers and the area in which customer complaints were being received influence your recommendation to extend the curtailment through the weekend?

**A. Based on my knowledge of the location of interruptible customers and my understanding that PSE was receiving customer service calls indicating possible low pressure problems throughout the system, I concluded that adding Rate Schedule 86 customers back on to a system which had not yet rebounded would likely lead to loss of service to firm customers. The location of customer service calls which indicate potential low pressures for December 24, 1998 is depicted in Exhibit \_\_\_ (PAR-5), page 1. This exhibit along with Exhibit \_\_\_ (PAR-7) illustrates that there are high concentrations of Rate Schedule 86's in areas where we had received concentrations of customer service calls. Additionally, if there was not sufficient distribution system capacity to service the smallest of customers, the larger customers (Rate Schedules 85, 87 and 57) could have an even greater negative effect on the distribution system. See Exhibit \_\_\_ (PAR-7).**

**Q. What were the concerns about the peak hours on Monday, December 28, 1998?**

A. As testified to by Ms. Caswell, Monday peak hour factors tend to be extreme. This creates additional stress on the distribution system's capacity. It would be poor system management to subject the distribution system to this stress before it had fully rebounded, as it could lead to further loss of firm service. I received input from Ms. Caswell on this issue prior to the discussion with Mr. Hogan regarding the curtailment.

**Q. What was your understanding after your discussions with Mr. Hogan on December 24, 1998?**

A. Given the conditions of the system on December 24, 1998, we anticipated that the curtailment would continue through the peak on Monday morning.

**Q. Was your recommendation to Mr. Hogan on December 24, 1998 based on whether meter readers were available?**

A. No.

**Q. What occurred over the period between December 25 to December 27, 1998?**

A. I remained in contact with Gas Control, and Gas Dispatch. I continued to review weather forecasts, and information about customer service calls and SCADA readings.

**Q. Did the parameters change over the weekend such that you believed that it was appropriate to initiate discussion to resume interruptible customers over the weekend?**

A. No, the parameters did not change significantly. The customer service calls indicating potential low pressure problems over this period are depicted on Exhibit \_\_\_ (PAR-5). The 24-Hour Operations Group arranged for additional customer service personnel, who worked throughout the weekend to respond to service calls from firm customers.

**Q. What happened on Monday?**

A. Even with all interruptibles off through the Monday morning peak, we had 635 customer service calls which potentially indicated pressure problems. Through the day and evening, with the warming temperatures, and the return of the customers to a more "normal" usage, the system continued to rebound.

**Q. What experience have you had with past curtailments?**

A. I have been significantly involved with the curtailment process since roughly 1984 when I became the Gas Dispatch (Control) Analyst. In this position, I participated in curtailment planning and implementation.

**Q. Was the process for managing the curtailment at PSE consistent with what you had experienced at WNG?**

A. Yes.

**Q. Can Kimberly-Clark affect the gas distribution system?**

A. Yes.

**Q. How?**

A. Kimberly-Clark is one of PSE's largest gas transporters (on an annual basis, while not using gas as the primary fuel). It holds the largest hourly interruptible contract PSE has with any customer, and has equipment which is capable of consuming approximately 10% of the volume available through the North Seattle lateral. Its volume is enough to affect the distribution system even on relatively warm days.

**Q. Has Kimberly-Clark been curtailed routinely?**

A. No. Not routinely. In spite of the fact that PSE designs its system to provide service to its firm customers, it attempts to maintain service to its interruptible customers as continuously as possible. PSE has made system adjustments to preserve even interruptible customer's service. Oftentimes these actions are totally transparent to customers. In certain circumstances, however, system instability concerns have precipitated targeted operation restrictions to customers such as Kimberly-Clark.

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

A. Yes, it does.

Background of Witness:

Paul A. Riley

Employment Experience

- 1976-1978, Meter Reader, Washington Natural Gas (WNG).
- 1978-1980, Engineering Aide, Distribution Department, WNG. Recording Mapping Data, progressed into main design, meter design, high-pressure main and regulator design.
- 1980-1984, Engineering Aide, Engineering Department, WNG. High pressure main design, regulating station design, large volume meter set design, testing and tie-in procedures, assistance with Operating Standards.
- 1984-1992, Gas Dispatch Analyst, WNG. Curtailment preparation and execution, analysis of Gas Control operations, computer programming for Gas Control and other areas including, load forecasting, graphic displays, corrosion, valve and regulator record keeping. Gas transportation system design, customer requirements, computerization of record keeping.
- 1992-March 1997, Supervisor, Gas Measurement, WNG Curtailment preparation and execution including volume and penalty calculations, large volume metering design recommendation, problem analysis and resolution, flow estimations for large volume customers, telemetry evaluation and implementation, Operating Standards and tariff revisions for metering.

- March 1997-February 1999, Day System Manager - Gas, Puget Sound Energy (PSE).  
Responsibility for Gas Control, Gas Operations Dispatch, Gas Measurement.
- February 1999-current, System Manager PSE. With four other shift System Managers for  
After Hours Electric Distribution and Transmission operations, Gas Control and Gas  
Operations Dispatch. Management of System Operators, Load Dispatchers and Gas  
Controllers.
- 1997-current, Secretary, Western Gas Measurement Short Course Committee.