Mark E. Hindley (#7222)
Richard R. Hall (#9856)
STOEL RIVES LLP
201 South Main Street, Suite 1100
Salt Lake City, Utah 84111-4904
Telephone: (801) 328-3131

R. Jeff Richards (#7294)
PACIFICORP
201 South Main, Suite 2200
Salt Lake City, Utah 84111
Telephone: (801) 220-4734

Attorneys for Petitioner

BEFORE THE ELECTRICAL FACILITIES REVIEW BOARD

PACIFICORP, an Oregon corporation, Petitioner, vs. THE CITY OF WEST JORDAN, Respondent.	**PRE-FILED TESTIMONY OF DARRELL GERRARD**

Q: Mr. Gerrard, what is your position within PacifiCorp?

A: I am the Vice President of Transmission & Distribution Engineering & Asset Management.

Q: As Vice President of Transmission & Distribution Engineering & Asset Management for PacifiCorp what are your responsibilities in planning, siting and constructing electrical infrastructure?

A: My responsibilities are to ensure that PacifiCorp's electrical transmission and distribution systems are adequately planned, engineered, designed and constructed in order to provide the essential electrical service needs of our customers and communities. These responsibilities includes making sure our electrical infrastructure when installed can operate in a safe, reliable and efficient manner.

Q: What is the purpose of your testimony?

A: My testimony will demonstrate the need for the construction of a new substation within a certain area of West Jordan to ensure safe, adequate, reliable and efficient delivery of electricity to PacifiCorp customers.

Q: What is the general nature of your electrical facilities throughout your system and within West Jordan?

A: Electric power is generated at any one of a number of generation plants. Power is imported into PacifiCorp's service territory by means of high voltage transmission lines and delivered to substations that transform the power to lower voltages. This power is then sent across distribution lines at lower voltages and delivered to individual customers. Substations serve as the hub for distribution of power to local customers. (*See* Exhibit DG-1.)

Q: What obligations does PacifiCorp have to its customers, and how does it satisfy this obligation?

A: By law, PacifiCorp has an affirmative legal duty to design, construct, and maintain facilities sufficient to provide safe, reliable, adequate, and efficient service to its customers. Utah Code Ann. § 54-3-1. To meet that duty, PacifiCorp must plan ahead to ensure that capacity, whether at the generation, transmission, substation, or distribution level, is available to satisfy customers' demand for electricity in the amounts used. If demand, or "load," on the system exceeds the capacity, then service interruptions will occur.

Q: What substations does PacifiCorp own and operate that serve West Jordan customers?

A: The system is a dynamic network composed of interconnected substations and transmission lines. Within and around West Jordan, the network is comprised of approximately ten substations that provide electrical service to West Jordan customers.

Q: How does PacifiCorp determine the need for new electric facilities?

A: PacifiCorp has system loading and operating limits for various components and parts of our electric system. These limits and parameters are essential to ensure reliability, safety, operational continuity, and to prevent damage or catastrophic failure. PacifiCorp uses accepted industry standards and manufacturers' criteria and guidelines in determining these operational loadings limits. They are not unique to the system in West Jordan. Based on these criteria, PacifiCorp identifies the need for new electric facilities.

Q: Does PacifiCorp have sufficient capacity to provide safe, adequate, reliable, and efficient service in West Jordan?

A: No. PacifiCorp must operate electric facilities that have sufficient capacity to satisfy customer load demand at all times, including peak periods of use during the summer when air conditioners place the greatest demand on the system. Several of the substations and associated circuits serving West Jordan exceed system design and collectively the system has become unable to meet customer demand during peak periods of use. Accordingly, PacifiCorp needs additional capacity to serve its customers.

Q: What happens if PacifiCorp's system is overloaded or system designs are exceeded?

A: Failure on PacifiCorp's part to operate within these loading limits may result in loss of supply to customers, damage and failure to critical electrical system components, and may raise public and employee safety matters.

Q: How does PacifiCorp forecast future capacity needs?

A: PacifiCorp forecasts load growth and annually performs a multi-year analysis for an area to determine if the existing electric system is adequate or if additional capacity is needed. Forecasts for a specific area are based on historical load demand and projected load growth of existing and future customers.

Q: What other sources do you use?

A: We also gather local information from city planning groups, customers, and other available resources.

Q: Has PacifiCorp performed a load forecast analysis for West Jordan?

A: Yes. In 2002 PacifiCorp performed a load forecast analysis for West Jordan based in part on information obtained from the West Jordan planning department. This forecast indicated the existing electric system would not have adequate capacity to safely and reliably serve customers beginning in the summer of 2004. (*See* Exhibit DG-2.)

Q: Based on your 2002 load forecast analysis, what facilities did you identify as potentially becoming overloaded or lacking in capacity to meet expected load demand?

A: PacifiCorp identified capacity concerns at four substations and two circuits that provide service to West Jordan. Exhibit DG-2 shows 2002 historical loading conditions on existing substations in the area and the projected loadings for 2004. It also shows the relative position of the substations with projected insufficient capacity. This area can be defined as generally being between 2700 and 4000 West and 6200 and 9000 South, which is referred to as the "critical load area." Exhibit DG-3 shows the critical load area.

Q: How did PacifiCorp's 2002 load forecast analysis for 2004 compare to 2004's actual load data within the critical load area?

A: Exhibit DG-4 shows the 2004 load forecast prepared in 2002 and the 2004 actual load (without incremental measures). The total load in the critical load area was within 2% of the 2002 forecast values.

Q: How was PacifiCorp able to serve its customers in the critical load area during this period?

A: Prior to the summer of 2004, several incremental measures were implemented to increase the capacity to serve the critical load area. This allowed PacifiCorp to continue to provide service to its customers but with reduced reliability and efficiency.

Q: What incremental measures did you implement?

A: PacifiCorp built a new circuit and installed a new breaker at the Kearns substation. Through a series of load switching, this allowed the Kearns substation to absorb some of the excess load from the Taylorsville, West Jordan and Hoggard substations. PacifiCorp also converted a single circuit to a double circuit between 3150 West to just past the Bangerter Highway and installed a new switch. This allowed the Welby substation to relieve some of the loading at the West Jordan substation.

Q: Did PacifiCorp perform a load forecast analysis for 2005 in West Jordan?

A: Yes. Based on our load forecast analysis prior to the summer of 2005, PacifiCorp identified inadequate capacity at three substations and eight circuits. These facilities serve the customers within the critical load area. Exhibit DG-5 shows the 2005 forecast loading.

Q: How did PacifiCorp's load forecast analysis for 2005 compare to actual load data within the critical load area?

A: Exhibit DG-5 also shows the forecast and actual load for 2005 (without the temporary substation). The total load in the critical load area was 2% to the forecast.

Q: Were incremental measures implemented to allow PacifiCorp to continue to serve its customers in the critical load area without service curtailments?

A: Yes. The City of West Jordan permitted PacifiCorp to erect a temporary substation at approximately 7077 South and 2700 West. Two distribution circuits were also constructed to relieve loading on the adjacent substations. During the summer of 2005, the two new circuits carried over 19 mVA which is over 80% of their capacity. Without this temporary substation and the associated circuits, the capacity in the critical area would have been insufficient to meet the load demands.

Q: What was the cost of the incremental measures?

A: Since 2004, PacifiCorp has spent approximately 2 million dollars toward these incremental measures.

Q: Have these incremental measures resolved the need for additional capacity?

A: No. These incremental measures provide neither a short nor a long term solution. We have now exhausted all possible prudent and reasonable incremental measures in this area.

Q: Over the past several years has PacifiCorp been able to identify why the capacity in the critical load area is being exhausted?

A: Yes. West Jordan is growing rapidly in terms of size and its use of power. Load growth in the critical load area is increasing 4% annually on average. As forecast, there are pockets within the critical load area that are growing even faster, ranging up to 12%. This growth is attributed to residential conversion to central air conditioning, expanded use of electric appliances, new residences and home additions, and commercial expansion. During the last three years, over 4,400 new

customers have been connected to PacifiCorp's system in West Jordan and PacifiCorp expects similar growth in the foreseeable future. Exhibit DG-6 shows historical meter sets for West Jordan.

Q: Has PacifiCorp performed a load forecast analysis for 2006 in West Jordan?

A: Yes. Even with the temporary substation in service, PacifiCorp's load forecast analysis for 2006 indicates that PacifiCorp's system will lack sufficient capacity. Exhibit DG-7 shows 2006 forecast loading with the temporary substation in service.

Q If the City of West Jordan requires PacifiCorp to remove the temporary substation before a permanent substation is operational, what impacts will this have on the critical load area?

A: If the temporary substation is removed before a permanent substation is placed in service, several circuits and transformers will be overloaded during the summer peak. Exhibit DG-8 shows the 2006 forecast loading without the temporary substation. To protect against failure of this equipment, service to our customers would need to be interrupted to relieve loading on the system until demand subsides.

Q: Has PacifiCorp designed a permanent solution for providing the necessary capacity to the critical load area?

A: Yes. An additional substation is necessary.

Q: Are there any other long term solutions.

A: No. Additional transformer capacity is required to address the loading concerns in the critical load area.

Q: How does PacifiCorp determine where a substation is best located to provide safe, adequate, reliable, and efficient service to its customers?

A: PacifiCorp evaluates the location of existing substations surrounding the critical load area and the ultimate build-out of each substation. This evaluation also accounts for proximity to existing transmission lines, distribution lines, and roadway corridors. Based on this evaluation, a "target area" within the critical load area is defined.

Q: Where is the target area in West Jordan?

A: PacifiCorp identified the "target area" as being between 2700 West and 3300 West, 6900 South and 7200 South. Exhibit DG-9 shows the target area.

Q: How did PacifiCorp identify potential sites for a new substation?

A: Once a target area has been identified, PacifiCorp makes an initial evaluation of potential sites based on the following criteria:

a) Parcel size;

b) Vacant land;

c) Likely availability; and

d) Proximity to target area.

Q: How many potential sites were evaluated?

A: One hundred potential sites were evaluated, 17 of which best met these criteria. (referred to as "sites of interest"). Exhibit DG-10 shows these 17 sites of interest.

Q: How did PacifiCorp further refine this list of 17 sites of interest?

A: These 17 sites of interest were further reviewed based on the following criteria:

a) Impact of new transmission/distribution lines to the community;

b) Proximity to target area;

c) The ability to interconnect and the distance to existing transmission;

d) The ability to interconnect and the distance to existing distribution lines;

e) Ability to transfer load between substations;

f) Willing seller;

g) Zoning/Land Use compatibility;

h) Distance from residential areas;

i) City support;

j) Buffering/mitigation potential;

k) Financial feasibility;

l) Title report review;

m) Survey review; and

n) Environmental condition.

Q: Which of these 17 sites of interest best met these criteria?

A: One site best met these criteria—the site at the southeast corner of 3200 West and 7000 South (the "3200 West Site").

Q: Please describe this site.

A: This site is 4.34 acres in size, bordered by a park on the west, vacant property on the north, a church on the south and a canal on the east. This parcel provides ample area for physical and visual buffering and/or mitigation. Exhibit DG-11 includes various maps, simulations of the new substation with mature landscaping, and photos of the existing site.

directly impacted by the transmission line. In total, approximately 82 new transmission and distribution structures would be needed to support the Jordan Landing Site. Exhibit DG-13 shows the preliminary line route for the transmission and distribution lines that would be needed. In addition, PacifiCorp identified the following problems:

a) Numerous trees would have to be pruned or removed from private property and thereafter maintained;

b) Potential conflicts locating structures within the Bangerter Highway corridor due to a large underground canal system;

c) Because there is limited available right of way to accommodate the transmission and distribution lines, the necessary lines and supporting structures would have to be placed close to homes and businesses. As a result, a large number of private property owners would be inconvenienced and PacifiCorp would likely have to condemn easements at a significant cost;

d) other operational, engineering, and design issues.

Q: What are these other operational, engineering, and design issues with the Jordan Landing Site?

A: Although it is theoretically possible to build a substation at Jordan Landing, it is located further from the target area and impairs PacifiCorp's ability to provide safe, reliable, adequate, and efficient service to its customers. Siting a substation at Jordan Landing would limit the ability to transfer load among the various circuits serving the critical load area. Also, the transmission circuit's length would increase approximately 1 1/2 miles over the 3200 West Site and structures

would be between 85 feet and 120 feet tall, accommodating up to four circuits each. In addition, 7800 South is a busy four lane highway, which would expose the new transmission line on that route to more potential accidents than the 3200 West Site.

Q: What is the difference in cost to locate a substation at the Jordan Landing as compared to the 3200 West Site?

A: A preliminary estimate for siting a substation at Jordan Landing shows a cost of approximately $8.7 million. (Exhibit DG-14.) This preliminary estimate is approximately $3.6 million more than building a substation at the 3200 West Site. PacifiCorp does not have a comprehensive cost estimate for Jordan Landing because there is no specific site identified at Jordan Landing and the necessary engineering work has not been performed. Moreover, the problems testified to above may increase this cost.

Q: Can you place a new permanent substation in service at any location other than the 3200 West Site in time to support the summer loading of 2006?

A. No. The estimated time line for performing design, purchasing materials and equipment, completing property acquisition, obtaining property easements and completing the substation, transmission and distribution line construction is approximately 12 months for a new location. Difficulties in completing the permitting, property acquisition and property easements can significantly extend this duration.

Q. Can you place a new permanent substation in service at the preferred 3200 West Site in time to support the summer loading of 2006?

A. Yes. If PacifiCorp receives authorization to proceed with the construction of a substation at the 3200 West Site and approval of the site plan by mid November, PacifiCorp anticipates that the substation will be operational by the summer of 2006.

Q: **What factors enable PacifiCorp to place the permanent substation in service to support 2006 summer loading at the 3200 West Site?**

A: PacifiCorp performed an exhaustive study of approximately 100 potential sites and applied solid selection criteria that resulted in the preferred site at 3200 West. Based on the detailed review of these sites and the City staff support for the 3200 West Site, PacifiCorp elected to proceed with property acquisition, design, and procurement of long lead materials. This significantly reduces our time to commission a new station at this preferred site.

Q: Please summarize your testimony.

A: West Jordan's current capacity is inadequate, which threatens PacifiCorp's ability to ensure the safe, adequate, reliable, and efficient delivery of electricity to PacifiCorp customers within West Jordan. West Jordan needs additional capacity beyond that which PacifiCorp can currently provide. Unless a permanent solution to this problem is implemented immediately, West Jordan will likely begin to experience service interruptions in the summer of 2006. Because time is of the essence and all reasonable incremental measures have already been taken, the only prudent and reasonable solution to this problem is to permit and install a new substation at the 3200 West Site.

CERTIFICATE OF SERVICE

I hereby certify that on this 26th day of September, 2005, I caused to be sent by hand delivery a true and correct copy of the foregoing **PRE-FILED TESTIMONY OF DARRELL GERRARD** to the following:

Jody K. Burnett
Williams & Hunt
257 East 200 South # 500
Salt Lake City, Utah 84111