OTP/MDU Exhibit 328

CASE NOS. PU-06-481 & PU-06-482

BEFORE THE NORTH DAKOTA PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION BY OTTER TAIL POWER CORPORATION D/B/A

OTTER TAIL POWER COMPANY

AND

MONTANA-DAKOTA UTILITIES CO., A DIVISION OF MDU RESOURCES GROUP, INC.

FOR AN ADVANCED DETERMINATION OF PRUDENCE

FOR THE BIG STONE II GENERATING PLANT

SUPPLEMENTAL PREFILED DIRECT TESTIMONY

OF

THOMAS CROWLEY

L.E. PEABODY & ASSOCIATES, INC.

MARCH 10, 2008

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I. INTRODUCTION

Q: Would you state your name, background, and present position.

A: My name is Thomas D. Crowley. I am an economist and President of the economic consulting firm of L. E. Peabody & Associates, Inc. The firm's offices are located at 1501 Duke Street, Suite 200, Alexandria, VA 22314; 5901 Cicero Avenue, Suite 504, Chicago, IL 60646; and 10445 N. Oracle Road, Suite 151, Tucson, Arizona 85737. I have been employed by L. E. Peabody & Associates, Inc. since 1971.

Q: What is your educational background?

A: I received a Bachelor of Science degree in Economics from the University of Maine. I have also taken graduate courses in transportation at George Washington University in Washington DC.

Q: What previous experience do you have?

A: The firm of L.E. Peabody & Associates, Inc. specializes in solving economic, marketing and transportation problems. As an economic consultant, I have organized and directed economic studies and prepared reports for railroads, freight forwarders and other carriers, for shippers, for associations and for state governments and other public bodies dealing with transportation and related economic problems. Examples of studies I have participated in include organizing and directing traffic, operational and cost analyses in connection with multiple car movements, unit train operations for coal and other commodities, freight forwarder facilities, TOFC/COFC rail facilities, divisions of through rail rates, operating commuter

passenger service, and other studies dealing with markets and the transportation by different modes of various commodities from both eastern and western origins to various destinations in the United States. The nature of these studies enabled me to become familiar with the operating practices and accounting procedures utilized by railroads in the normal course of business.

Additionally, I have inspected and studied both railroad terminal and line-haul facilities used in handling various commodities, and in particular unit train coal movements from the Powder River Basin ("PRB") of Wyoming and Montana to various utility destinations in the midwestern and western portions of the United States. These operational reviews and studies were used as a basis for the determination of the traffic and operating characteristics for specific movements of coal, both inbound raw materials and outbound paper products to and from paper mills, crude and pelletized iron ore, crushed stone, soda ash, aluminum, fresh fruits and vegetables, TOFC/COFC traffic and numerous other commodities handled by rail.

I have frequently been called upon to develop and coordinate economic and operational studies relative to the acquisition of coal and the rail transportation of coal on behalf of electric utility companies. My responsibilities in these undertakings included the analyses of rail routes, rail operations and an assessment of the relative efficiency and costs of railroad operations over those routes. I have also analyzed and made recommendations regarding the acquisition of railcars according to the specific needs of various coal shippers. The results of these analyses have been employed in order to assist shippers in the development and negotiation of rail transportation contracts which optimize operational efficiency and cost effectiveness.

Since the implementation of the Staggers Rail Act of 1980, which clarified that rail carriers could enter into transportation contracts with shippers, I have been actively involved in negotiating transportation contracts on behalf of coal shippers. Specifically, I have advised

utilities concerning coal transportation rates based on market conditions and carrier competition, movement specific service commitments, specific cost-based rate adjustment provisions, contract reopeners that recognize changes in productivity and cost-based ancillary charges.

I have also been actively engaged in negotiating coal supply contracts for various users throughout the United States. In addition, I have analyzed the economic impact of buying out, brokering, and modifying existing coal supply agreements. My coal supply assignments have encompassed analyzing alternative coals to determine the impact on the delivered price of operating and maintenance costs, unloading costs, shrinkage factor and by-product savings.[1]

I have developed different economic analyses for over sixty (60) electric utility companies located in all parts of the United States, and for major associations, including American Paper Institute, American Petroleum Institute, Chemical Manufacturers Association, Coal Exporters Association, Edison Electric Institute, Mail Order Association of America, National Coal Association, National Industrial Transportation League, the Fertilizer Institute and Western Coal Traffic League. In addition, I have assisted numerous government agencies, major industries and major railroad companies in solving various economic problems.

Q: You indicated earlier that you have performed economic analyses for numerous government agencies. Have you ever been retained by the State of North Dakota?

A: Yes, in 2005 and 2006 L. E. Peabody & Associates, Inc. was retained by the State of North Dakota Public Service Commission to evaluate the likely outcome of pursuing a complaint proceeding before the Surface Transportation Board ("STB") related to the level of rail rates charged by BNSF for the movement for grain from origins in the State of North Dakota to

[1] Shrinkage factors vary by coal characteristics such as moisture content and size. By-products of gypsum and fly ash are created by burning coal in an electric generation station and different coals produce varying quantities and qualities of these by-products, thereby creating varying by-product savings.

various destinations. Our preliminary analyses estimated maximum reasonable rates using both the STB's stand-alone cost methodology and its maximum rate procedures for small shipper complaints.

Q: On whose behalf are you testifying?

A: I am testifying on behalf of Otter Tail Corporation and Montana-Dakota Utilities Co., hereinafter referred to as "Applicants".

Q: Have you testified in prior North Dakota or other state or federal utility regulatory proceedings?

A: Yes. I have presented evidence before the Interstate Commerce Commission ("ICC") in Ex Parte No. 347 (Sub-No. 1), Coal Rate Guidelines - Nationwide which is the proceeding that established the methodology for developing a maximum rail rate based on stand-alone costs. I have submitted evidence applying the ICC's stand-alone cost procedures in every proceeding filed before the ICC and its successor the STB where these procedures have been used. I have frequently presented both oral and written testimony before the ICC, STB, Federal Energy Regulatory Commission, Railroad Accounting Principles Board, Postal Rate Commission and numerous state regulatory commissions, federal courts and state courts. This testimony was generally related to the development of variable cost of service calculations, rail traffic and operating patterns, fuel supply economics, contract interpretations, economic principles concerning the maximum level of rates, implementation of maximum rate principles, and calculation of reparations or damages, including interest. I presented testimony before the Congress of the United States, Committee on Transportation and Infrastructure on the status of rail competition in the western United States. I have also presented testimony in a number of

court and arbitration proceedings concerning the level of rates, rate adjustment procedures, rail operating procedures and other economic components of specific contracts.

II. PURPOSE AND SUMMARY OF TESTIMONY

Q: What is the purpose of your testimony?

A: My testimony will address forecasts of coal fuel prices and coal transportation prices.

Q: Are you sponsoring any documents and exhibits in the filing?

A: Yes, I am sponsoring six exhibits. OTP/MDU Exhibit 329 is a summary of our forecast of the delivered price of fuel to the Big Stone II generation station. OTP/MDU Exhibit 330 is our forecast of the cost of transportation of coal from the Powder River Basin of Wyoming ("PRB") to the Big Stone II Generating Station. OTP/MDU Exhibit 331 is our forecast of fuel prices for the Big Stone II Generating Station. OTP/MDU Exhibit 332 is a graphical illustration of the change in PRB spot coal prices from 1997 to today. OTP/MDU Exhibits 333 and 334 illustrate in graphical and tabular form the differences between my forecast and the forecasts used by the Applicants in 2006 and 2007.

Q: Please summarize your testimony.

A: I have independently prepared a delivered coal price forecast for the Big Stone II plant. Comparing my forecast to those of the Applicants, I find that my forecast is very similar to the Applicants' 2006 forecast. My forecast is lower than the Applicants' 2007 forecast used in this proceeding, with the greatest divergence occurring during the time period 2019 to 2025. This indicates that the Applicants' 2007 forecast used in his proceeding is conservative with regard to its potential effects on the amount of Big Stone II that is needed relative to other alternatives.

III. FORECAST SUMMARY

Q: Please explain what is displayed in OTP/MDU Exhibit 329.

A: OTP/MDU Exhibit 329 is a summary of our forecast of the delivered price of fuel to the Big Stone II Generation Station though 2038. Page 1 of OTP/MDU Exhibit 329 shows our forecast of the delivered price on a per ton basis and Page 2 of OTP/MDU Exhibit 329 shows our forecast of delivered prices on a price per million British Thermal Units ("MMBTU") basis.[2]

Q: OTP/MDU Exhibit 329 shows a Rail Transportation Forecast, a PRB Coal Forecast and a Total Delivered Cost Forecast. Please describe the differences in these forecasts.

A: The Rail Transportation forecast shown in Column (2) of OTP/MDU Exhibit 329 is our rail freight rate forecast for moving PRB coal to the Big Stone II Generating Station for the period 2012 through 2038. The PRB Coal Forecast shown in Columns (3), (4) and (5) of OTP/MDU Exhibit 329 is our forecast of the price that the Applicants will pay for PRB coal over the same 30 year period. Finally, Columns (6), (7) and (8) show our forecast of the delivered price of PRB coal to the Big Stone II Generating Station assuming "Low Case," Base Case" and "High Case" scenarios. I explain the differences between the "Cases" later in my testimony. The delivered price forecast is the combination of the transportation forecast and the coal price forecast.

Q: OTP/MDU Exhibit 329 shows a "Low Case," "Base Case" and "High Case" forecast for PRB coal prices, but only shows one forecast for Rail Transportation. Why is that?

A: The Big Stone Generating Station is served only by one rail carrier, the Burlington Northern Santa Fe Railway Company ("BNSF"), and is therefore considered a "captive" shipper. As BNSF faces no effective competition for delivery of coal to Big Stone II, it has no incentive to lower its transportation rates for delivery of coal to Big Stone and therefore no "Low Case"

[2] A British Thermal Unit ("BTU") is a standard unit for measuring the quantity of heat energy equal to the quantity of heat required to raise the temperature of one pound of water by one degree Fahrenheit.

scenario exists for rail rates. Further, as the rates currently charged by BNSF for coal shipments to Big Stone I reflect captive shipper rates, they already reflect a "High Case" scenario.

Q: Are you suggesting that BNSF has no incentive to raise the rates to Big Stone above the current tariff levels?

A: BNSF's economic incentive is to raise rates on all of its shipments to the extent the marketplace will allow such increases. As Big Stone is captive to BNSF, the only pricing constraint on BNSF is the maximum rate guidelines promulgated by the STB. The current tariff rates reflect this level of maximum rate and therefore if BNSF attempted to unreasonably increase these transportation rates, Applicants could ask the STB for relief.

Q: But didn't Otter Tail lose its maximum rate challenge before the STB which would suggest that the BNSF can increase the rate level?

A: Yes, Otter Tail did lose its maximum rate challenge before the STB. Since the issuance of its January 2006 decision, the STB has altered its regulation of maximum reasonable rail rates for moving coal, which would affect the rate level BNSF could charge for the shipment of coal from the PRB to Big Stone II. The change in the regulations would have both positive and negative effects on the maximum rate levels BNSF could charge for this movement.[3] In my opinion, these regulatory changes, combined with the changes in the rates and fuel surcharges BNSF currently charges to shippers which would be included in an analysis of the maximum rate

[3] The STB determines maximum reasonable rates a rail carrier can charge for moving coal for captive rail shippers base on the rates that would be charged by a least cost, most efficient, hypothetical competitor, which earns a return on its investment equal to the STB's determination of the rail industry's cost of capital, (i.e. stand-alone costs). Since the issuance of the STB's January 2006 decision in the Otter Tail case, the STB has changed the maximum rate regulation methodology and outcome: 1) by adopting a revised method for determining the industry's cost of capital; and 2) has adopted a revised maximum rate methodology, adopted an average total cost approach for allocating revenues for cross over traffic, shortened the discounted cash flow period to 10 years, included a hybrid productivity approach for indexing operating expenses, required the use of unadjusted Uniform Rail Costing System Phase III cost program for jurisdictional threshold determinations and created new standards for reopening a rate case.

to Big Stone II, would result in the existing or marginally lower rates than the rates currently charged for shipments to Big Stone I.

IV. TRANSPORTATION FORECAST

Q: Please explain what is shown in OTP/MDU Exhibit 330.

A: OTP/MDU Exhibit 330 is the source for the rail transportation rates shown in Column (2) of OTP/MDU Exhibit 329. OTP/MDU Exhibit 330 shows the various components of our rail transportation forecast.

Q: How did you develop the various rail transportation forecast components shown in OTP/MDU Exhibit 330?

A: A rail freight rate forecast depends upon the characteristics of each utility's position in the marketplace. For example, a utility may be procuring coal from different origin regions, and may be served by different modes and different carriers. In addition, each situation will be affected by different market forces. In the case of Big Stone II, we know that Big Stone II will procure coal from the PRB, that the coal will be delivered by rail and that Big Stone is captive to BNSF. In addition, we know that the Applicants intend to provide the railcars necessary to move the coal to Big Stone II. As a result, we developed a forecast for each of the components that will comprise the rail transportation cost for moving PRB coal to Big Stone II. These components include the rail rate itself, the fuel surcharge that we assume BNSF will apply to the rail rate, and the costs of acquiring and maintaining rail cars for this movement.

Q: What is the basis for your rail freight transportation forecast shown in Column (2) on page 1 of OTP/MDU Exhibit 330?

A: We develop rail transportation forecasts for moving coal from several different origin regions to destinations that are captive to a single rail carrier and to destinations that enjoy

competitive alternatives from other modes or more than one rail carrier. Column (2) of OTP/MDU Exhibit 330 shows the rate of change in rail transportation rates based on our forecast of transportation rates for PRB coal moving to destinations captive to a single rail carrier. Our forecasted rate of change was applied to the rail tariff rates currently paid by Otter Tail for shipment of coal to the Big Stone I Generating Station. Stated differently, I applied our forecast of the rate of change in transportation charges for coal moving from PRB origins to destinations captive to one rail carrier.

Q: How was your forecast developed?

A: First, the historic rate of change for rail rates for moving coal in captive markets was developed. Next the historic and projected economic trends and factors that affect the change in captive rates, including items such as the overall economic output as measured by the Gross Domestic Product ("GDP"), and the impact of regulations on coal transportation were estimated. Using these trends and my experience in rail transportation, I then examined the expected changes in these same factors and estimated the impact of future inflation, rail productivity and demand will have on captive rail rates for moving coal.

Q: What is the basis for your Fuel Surcharge Forecast?

A: BNSF and all Class I railroads currently charge a fuel surcharge to shippers where not prohibited by contract. The fuel surcharge for coal is dependent on the change in fuel prices and the distance traveled by the individual shipment. To develop our forecast of the fuel surcharge to be charged by BNSF to the Applicants, I adopted the Energy Information Agency's forecast of highway diesel fuel prices and applied BNSF's fuel surcharge formula to the characteristics of the Big Stone II movement. The results of this analysis are shown in Column (3) on page 1 and page 2 of OTP/MDU Exhibit 330.

Q: What is the basis of your Railcar Maintenance Forecast?

A: Our Firm has developed a proprietary model for estimating rail car maintenance costs. The model takes into account expected wear by component for aluminum coal cars (like those used by Applicants) in normal use conditions, combined with Association of American Railroad ("AAR") material and labor prices. As the Applicants anticipate supplying the railcars for this movement, I assumed that 80 percent of the railcar repairs will occur in a private rail car shop on a scheduled basis and 20 percent of repairs will be performed by BNSF on a non-scheduled basis. The difference between private shop and BNSF repairs costs are related to the labor rates charged for the repair service. Labor rates and material prices are both increased by 2 percent annually to reflect inflation.

Q: What is the basis for your Railcar Lease forecast?

A: The railcar lease expense is based on a quote provided to Otter Tail Power Company by Trinity Railcar, one of the country's largest railcar manufacturers. The quote is for a 15 year net lease rate of $645 per month per railcar. We increased the Trinity quote to reflect inflation and Ad Valorem taxes paid by the rail car user. Our rate of inflation of 2.5 percent per year is based on the average annual change in coal rail car prices over the 1996 to 2007 period.

The Ad Valorem taxes are based on those charged by the State of Wyoming and are a mileage base user fee for miles traveled in Wyoming. PRB coal moving to Big Stone II will also travel through the states of Montana, South Dakota and North Dakota, however, these states do not charge Ad Valorem taxes to utility companies which provide rail cars for shipping coal.

Q: What is represented in Columns (6) and (7) of OTP/MDU Exhibit 330?

A: Column (6) of OTP/MDU Exhibit 330 provides our forecast of total transportation costs per ton for each year 2012 through 2038 to move coal from the PRB to the Big Stone II

generation station and is a combination of the numbers shown in Columns (2) through (5), Column (7) of OTP/MDU Exhibit 330 shows the year over year percent change in the Column (6) transportation costs per ton.

V. FUEL PRICE FORECAST

Q: Please explain what is shown in OTP/MDU Exhibit 331.

A: OTP/MDU Exhibit 331 is the source for the coal price forecasts shown in Columns (3), (4) and (5) of OTP/MDU Exhibit 329. OTP/MDU Exhibit 331 shows the various components of our coal price forecast.

Q: What is the basis for your PRB Coal Forecast shown in OTP/MDU Exhibit 331?

A: The PRB coal forecast shown in OTP/MDU Exhibit 331 is based on my experience in pricing in coal markets. In addition, the forecast takes into account the view of the future demand for coal, as well as the impact on demand for PRB coal vis-à-vis anticipated Clean Air Act, mercury and likely carbon dioxide regulation. This forecast also considers PRB capacity and production limitations, employment growth and inflation. Forecasts were developed for spot and contract coal and for 8,400 BTU coal and 8,800 BTU coal, the two most common heat rate levels of coal in the PRB.

Q: What is the difference between the "Base," "Low" and "High" forecasts shown on Pages 1, 2 and 3, respectively of OTP/MDU Exhibit 331?

A: The Base case shown on Page 1 of OTP/MDU Exhibit 331 is our estimation of the prices that are most likely to occur for PRB coal over the 2012 to 2038 period. The Low case assumes the same demand, capacity, production, employment and inflation factors included in the Base case and will affect the change in prices of the forecast period.

Similarly, the High case assumes the same factors included in the Base case and will change the future price forecast, but stronger demand will increase the base price by as much as $3.00 per ton. For example, the market is currently experiencing an increase in demand for export coal from Northern Appalachia and Central Appalachia moving to the European Markets. The demand in Europe for coal is steady, although demand in China has increased. South African coal which historically moved to Europe is now moving to China, causing the increase in demand for Appalachia coal. In the short run, western coal and primarily PRB coal is filling the void in domestic markets left by the export of Appalachia coal moving to Europe.

Q: Current coal prices on the PRB spot market are high. How do you view these prices in the context of a long-range forecast?

A: To address this question, I have attached as OTP/MDU Exhibit 332 a graphic display of the historical change in PRB spot coal prices for both 8,400 BTU and 8,800 BTU coal. OTP/MDU Exhibit 332 shows that in specific historical periods the PRB coal market prices have been volatile. This is due to several factors, including historically high natural gas prices and consolidation among the PRB producers.

By early 2006, spot PRB coal prices reached approximately $18 per ton for 8,800 BTU coal and $14 per ton for 8,400 BTU coal before retreating steadily down to between $7.50 and $9.00 ton in mid 2007. Even with this decline in prices from their historic highs in 2006, prices did not decline back to the levels realized prior to the price spike. However, using the change in PRB coal prices over the past ten years as a guide, plus the short-term actions by coal suppliers and western coal railroads, and the continued volatility in the natural gas markets, it is our belief that periodic price "spikes" will occur. These spikes will drive spot prices up in the short run before declining. As in previous short-term price increases, the decline in coal prices after the

market highs will probably not drop back to levels seen directly prior to the price increases, but will instead stabilize at price levels higher than before. This pricing scenario will continue until demand for PRB coal moderates.

Q: What is the difference between the coal forecasts shown in OTP/MDU Exhibit 331 and Columns (6), (7) and (8) of OTP/MDU Exhibit 329?

A: As stated above, the coal forecasts shown in OTP/MDU Exhibit 331 are developed for spot and contract coals and for 8,400 BTU coal and 8,800 BTU coal. In addition, each of these combinations is forecast for the Base, Low and High cases in OTP/MDU Exhibit 331. In contrast, the coal forecast for the base, low and high case shown in OTP/MDU Exhibit 329 reflects a procurement strategy which I anticipated would be implemented by the Applicants.

First, based on the current burn characteristics of Big Stone I coal, I expect that Big Stone II will consume 8,400 BTU coal. Second, Applicants like most other utilities purchase the majority of its coal through contracts, rather than the spot market. Due to the volatility in today's markets, many utilities are purchasing coal through a series of contracts whereby every year they are in the market for a portion of their coal supply. In this instance, I have assumed that Applicants will procure 90 percent of their coal through three-year contracts and 10 percent of their coal through the spot market. Further, I have assumed that Applicants will, at any given time, have three 3-year coal contracts, with one of the contracts expiring each year. This approach reduces the risk of drastic changes in delivered coal prices over time.

VI. COMPARISON OF FORECASTS

Q: Are you familiar with the forecasts of coal and transportation prices that Applicants have submitted in the proceeding previously?

A: Yes. Applicants submitted a forecast of both coal prices and transportation rates in December 2006 and again in November 2007 and I have reviewed both of these forecasts.

Q: How do Applicants' 2006 and 2007 forecasts compare with those which you have prepared for this testimony?

A: OTP/MDU Exhibit 333 is a graphical comparison of the three forecasts of the delivered price of coal from 2012 to 2025, and OTP/MDU Exhibit 334 provides a year-by-year comparison of the three forecasts on both a dollar per ton basis and an annual percent change bases.

As shown in these two exhibits, all three forecasts produce similar results. The geometric average annual percent change in the delivered price of fuel for Applicants' 2006 and 2007 forecast over the 13 year period are 3.01% and 3.64%, respectively. The geometric annual average percent change in my forecast for this same period is 3.00% or nearly the same result as Applicants' 2006 forecast.

Q: What are the major differences in your forecast and Applicants' 2007 forecast?

A: The most significant difference in these two forecasts is our approach to the period 2019 through 2025. During this period Applicants' forecast assumes a constant annual percent increase of 4.03% for both its fuel price component and transportation rate component. In contrast, my forecast in this period does not rely on a default constant year over year change but instead continues to consider the various economic factors discussed above that will specifically impact both the price of PRB coal and transportation of that coal.

As shown in OTP/MDU Exhibit 333, it is during this period that the greatest divergence occurs between Applicant's 2007 forecast and my forecast. During this time period, the Applicants' 2007 forecast is higher than mine.

Q: What are included in these 2019 through 2025 factors?

A: During this period, my forecast continues to consider the effects of demand for PRB coal, production capacity and the coal producers' expansions to meet this demand and its cyclical effects on pricing. My forecast also considers the continuing effects on demand for PRB coal which will result from both the anticipated Clean Air Mercury regulations and Carbon Dioxide regulations, both of which will have a dampening effect on the demand for PRB coal relative to other domestically produced coal.

Q: Are there other significant differences in these two forecasts?

A: No. While the components comprising the two forecasts change in both upward and downward directions over the 2012 to 2025 period, these annual variations do not significantly impact the difference in the forecasts.

Q: What do you conclude from the comparison of your forecast and the Applicants' 2006 and 2007 forecasts?

A: The forecast that I independently developed is very similar to the Applicants' 2006 forecast. My forecast is somewhat lower than the Applicants' 2007 forecast during the time period 2019 to 2025, for the reasons I described earlier. This indicates that the Applicants' 2007 forecast that they are using in this proceeding is conservative with regard to its potential effects on the amount of Big Stone II that is needed relative to other alternatives.

Q: Does this conclude your testimony?

A: Yes.