BEFORE THE PUBLIC UTILTIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

In the Matter of the Complaint by Oak Tree Energy LLC against NorthWestern Energy for refusing to enter into a Purchase Power Agreement

EL11-006

Responsive Testimony of

Steven E. Lewis

On behalf of NorthWestern Energy

Submitted February 24, 2012

Table of Contents

Testimony

Introduction

Q: Please state your name and business address.

A: My name is Steven E. Lewis. I am a principal and employee of Lands Energy Consulting. My business address is 2719 California Avenue SW Suite 5, Seattle, Washington 98116.

Q: Are you the same Steven E. Lewis that has previously filed testimony in this docket?

A: Yes.

Purpose of Testimony

Q: What is the purpose of your responsive testimony?

A: My testimony is in response to the Prefiled Direct Testimony of Brian P. Rounds, particularly the portions regarding the electricity market price forecasts.

Q: Please summarize your testimony.

A: This response provides additional details regarding the forecast of electricity market prices as applied to South Dakota for purposes of computing incremental costs and avoided costs.

Fundamentals of Electricity Market in South Dakota

Q: Starting on page 10 line 17, Mr. Rounds states, "I would prefer some discussion of what fundmentals WAPA's market prices are based upon . . . ." Does the forecast methodology employed by Lands Energy incorporate such fundamental considerations?

A: While electricity markets are ultimately based on the underlying fundamentals of the system, using the existing and transparent markets is a legitimate method for assessing these fundamentals. A range of factors has impacts on the prices, including the compositon of the broader resource supply stack, how that composition may change over time due to resource retirement and additions, the actual demand or loading on the system, the construction of new transmission into or through the region, the cost of fuel inputs such as natural gas and coal, and so on. One approach to forecasting the market prices is to build complex computer simulations that attempt to model all of these different moving parts in a way that produces reasonable results. This method requires a significant amount of overhead as all the inputs needed to accurately run such a complex simulation must be continuously reviewed and the inputs and

assumptions monitored and updated on a continual basis. Using the actual forward markets as the basis for a forecast is not only straightforward, it actually incorporates the combined thinking of the marketplace regarding the various fundamental factors that impact spot market pricing and is arguably a better benchmark against which to measure long-term resource options than a complex fundamentals-based model.

Q: Mr. Rounds indicated that he would like more dicussion of the fundamentals driving the WAPA area market. Can you provide a basic summary?

A: Yes, although a summary provided here will necessarily be very basic, I can provide some insight into the fundamentals influencing this region.

It is useful to get a sense of scale at the outset. NorthWestern Energy serves an electric load in South Dakota that is approximately 341 MW at maximum peak and approximately 170 aMW energy consumption. NorthWestern Energy contracts to the Western Area Power Administration ("WAPA") to balance the generation to load on an hourly basis. WAPA operates a Balancing Authority within the Midwest Reliability Organization ("MRO"), but is not part of the Midwest Independent Transmission System Operator ("MISO"). MISO manages transmission and provides market clearing services for a large portion of the MRO as well as parts of the ReliabilityFirst Corporation, SERC Reliability Corporation, and Soutwest Power Pool regions. The 2012 expected peak load for WAPA/Basin is reported by the MISO as 3,629 MW or about 11.7 times greater than NorthWestern Energy, and the expected peak load for MISO is 100,838 MW, or about another 28 times greater than the WAPA/Basin peak load, so NorthWestern Energy is a relatively small portion of the overall electrical system in the region.

NorthWestern Energy serves its load in South Dakota region with the output from the following generating projects:

- Coal Plants
  - Big Stone
  - Coyote
  - Neal Unit No. 4
- Other Thermal
  - 9 standby/peaking units
- Titan I Wind project

The output from these units supplies the bulk of NorthWestern Energy's needs, and WAPA sells any surpluses and purchases any deficiencies on behalf of NorthWestern Energy. As the bulk of these resources are baseload output, it is reasonable to expect that they will generate relatively flat and that NorthWestern Energy will typically sell during low load hours and typically purchase electricity during higher load periods unless the use of the peaking units is warranted.

WAPA is a federal agency providing power and transmission services throughout the Western United States. Their Upper Great Plains Region serves the South Dakota area as well as parts of Montana, North Dakota, Nebraska, Iowa, and Minnesota. WAPA sells the output of 8 federal hydro electric projects in this area and operates a substantial amount of transmission and transmission services. WAPA's hydro-electric resources within the MRO total over 2,300 MW in generating capacity and are on the Missoui River system. They include:

- Garrison
- Oahe
- Big Bend
- Fort Randall
- Gavins Point

Hydro-electric projects are typically more flexible than thermal generators and therefore can be dispatched up and down in a more flexible manner to meet change loads or increasingly to counteract the intermittent nature of renewable resources.

WAPA provides balancing and marketing services to NorthWestern Energy as well as other regional utilities. Among these utilities are Basin Electric Cooperative, Heartland Consumers Power District, and the Missouri River Energy Services. Of these, Basin Electric Coooprative is the largest. Basin's resources within the MRO are approximately 2,500 MW with the following approximate composition:

- Natural Gas Fired: 300 MW
- Coal Fired: 1500 MW
- Diesel Fired (primarily grid reliability): 100 MW
- Wind and renewables: 600 MW

Missouri River Energy Services is a bit smaller, controlling approximately 600 MW of resources with the following composition:

- Natural Gas Fired: 140 MW
- Coal Fired: 282 MW
- Nuclear: 32 MW
- Diesel Fired (primarily grid reliability): 65 MW
- Wind and renewables: 82 MW

Heartland Consumers Power District is substantially smaller with about 230 MW of resources within the WAPA and MRO footprints with the following composition:

- Coal Fired: 131 MW
- Nuclear: 45 MW
- Wind and renewable: 51 MW

In addition, WAPA operates 3 DC tielines connecting the MRO to the Western Electricity Coordinating Council ("WECC"). These tielines have a combined total transfer capability of 600 MW. Because WECC and MRO operate their AC system independently, the interconnections must be DC facilities to keep the two AC systems separate from one another. Because of the losses of such an electrical transformation and the transmission costs, the tielines rarely operate at or near their rated transfer capability.

Based on this basic summary of the region's resources, it is fair to say that the greater WAPA/Basin Electric resource stack does have a significant amout of hydro-electric resources, but also has significant amounts of fossil fuel resources in the form of coal and natural gas, as well as base-load nuclear plants. Although there are tielines to WECC, those tielines probably do not play a significant role in the dispatching of plants in the MRO nor in the ultimate wholesale prices in the MRO.

Besides WAPA, MISO provides a market-clearing function in the MRO as well as the other reliability sub-regions listed earlier. MISO indicates 114,356 MW in installed generation within its market area, with at least 70 percent of that total generated by coal or natural gas units. They also indicate approximately 1400 MW in transfer capability with WAPA, which will link the effective prices seen in the MISO regions and WAPA.

In general, the resource in the region should be dispatched economically, with the units with the lowest incremental costs dispatched first followed by the higher-cost units. The highest cost unit to run at any given time is the marginal unit, or the unit that sets the market prices. Due to their relatively higher cost to run, the natural gas plants tend to set the market prices. While neither NorthWestern itself nor WAPA has appreciable natural gas fired generation, MISO has an abunance, indicating nearly 35,000 MW in the MISO region alone or about 30% of the projected peak need for MISO.

Q: Does this conclude your Responsive Testimony?

A: Yes.

Affidavit of Steven E. Lewis

STATE OF OREGON)
: ss
COUNTY OF MULTNOMAH)

Steven E. Lewis, being first duly sworn upon oath, states and alleges as follows:

1) I am a principal and employee of Lands Energy Consulting.

2) I have read this document and am familiar with its contents, and the same are true to the best of my knowledge and belief.

Further affiant sayeth naught.

Dated at Portland, Oregon, this 23 day of February, 2012.

Steven E. Lewis

SIGNED AND SWORN to before me this 23rd day of February, 2012, by Steven E. Lewis.

Notary Public, Oregon
My commission expires: Nov. 14, 2014

OFFICIAL SEAL
OONA D K C GOODMAN
NOTARY PUBLIC-OREGON
COMMISSION NO. 453859
MY COMMISSION EXPIRES NOVEMBER 14, 2014