BEFORE THE STATE CORPORATION COMMISSION

OF THE STATE OF KANSAS

DIRECT TESTIMONY

OF

GREG A. GREENWOOD

WESTAR ENERGY

DOCKET NO. 08-WSEE-309-PRE

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Greg A. Greenwood, 818 South Kansas Avenue, Topeka, Kansas 66612.

Q. BY WHOM AND IN WHAT CAPACITY ARE YOU EMPLOYED?

A. Westar Energy, Inc. I am Vice President, Generation Construction.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.

A. In 1988, I graduated magna cum laude with a Bachelor of Business Administration degree in Accounting from Washburn University. I am also a certified public accountant, with five years of public accounting experience prior to my joining Westar. I joined Westar in April 1993 as a staff accountant in the corporate tax department. In September 1995, I joined the finance department as a financial

analyst. I have held a variety of positions of increasing responsibility within the finance organization since that time, focusing primarily on financial forecasting and financial analysis, as well as raising funds for Westar in the capital markets. I was Treasurer of Westar from February 2003 through August 2006 before being named Vice President, Generation Construction in August 2006.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I will:

1. Review the process used to select the renewable energy projects for which Westar is requesting predetermination of ratemaking principles,
2. Summarize the major attributes of the projects selected by Westar, and
3. Provide an estimate of Westar's investment in the wind turbines it will own.

II. DESCRIPTION OF THE REQUEST FOR PROPOSAL PROCESS FOR RENEWABLE RESOURCES

Q. WHAT WAS WESTAR'S PROCESS FOR OBTAINING RENEWABLE ENERGY RESOURCES TO SERVE ITS KANSAS CUSTOMERS?

A. We used a competitive request for proposals (RFP) process. As we were drafting the RFP solicitation, Governor Sebelius announced her vision for a cooperative process to take advantage

of Kansas' domestic resources and have 1,050 megawatts (MW) of Kansas generation come from renewables by 2010, with 2,100 MW by 2020. As noted by Westar witness William Moore in his testimony, Westar supports this policy goal. Accordingly, we sized our RFP to equal our proportionate share of the State's 2010 goal – 500 MW. We issued the RFP in February 2007 and requested responses by April 2, 2007.

Westar intends to obtain 500 MW of wind generation by the end of 2010. At this point, we have completed negotiations for 295 MW to be in commercial operation by year-end 2008 and are currently seeking approval for that amount. We will be negotiating agreements for an additional 200 MW to be completed in 2010 and will request preapproval from the Commission for that amount upon completion of the negotiations.

Q. PLEASE DESCRIBE THE RESPONSES TO THE RFP.

A. We received 23 responses from 17 developers. Although the RFP was for all types of renewable energy, every response we received related to wind generation.

Q. HOW DID WESTAR EVALUATE THE RESPONSES?

A. We assembled a cross-disciplinary team. It was comprised of Westar generation, finance, legal and environmental employees as well as outside experts. The outside consultants included: 1) HDR Inc., an engineering and consulting firm with specific expertise in

wind generation; 2) Les Evans, the vice president of Power Supply for Kansas Electric Power Cooperative, Inc. (KEPCo), who has expertise in the area of wind generation; 3) Alan Pollom, state director of The Nature Conservancy, who solicited comments from his and other environmental organizations active in Kansas; 4) Black & Veatch Corporation, an engineering and consulting firm that assisted with resource planning; and 5) Chadbourne & Parke LLP, a law firm with extensive expertise in the area of contract law related to wind generation. I led the team.

Q. PLEASE EXPLAIN THE PROCESS THE TEAM USED TO EVALUATE THE PROJECTS.

A. First, we evaluated the 23 projects based upon the following criteria: cost (i.e., the levelized revenue requirement under a power purchase agreement (PPA) and/or ownership), public/community acceptance, environmental analysis, credit risk, interconnection and transmission costs, the developer's experience and wind turbine evaluation. Projects that received negative evaluations for community or environmental acceptance were eliminated from consideration regardless of how they scored on the other criteria. Given the broad response we received there was no reason to attempt to build a project in an area where there existed significant public opposition.

For each of the criteria listed above, we scored each project according to its attributes, with a good (green), neutral (yellow) or bad (red) classification system. After completing this evaluation in May, only seven projects remained on the short-list, with three others placed on hold.

Q. WHY WERE THREE PROJECTS PLACED ON HOLD?

A. The three projects placed on hold were located directly south of the area designated by the Govenor as the "Heart of the Flint Hills." Earlier in our RFP process, we had discussions with a group of Flint Hills landowners and ranchers who expressed strong opposition to any project in this area. However, at least one of these projects was attractively priced and located adjacent to an existing wind farm, Elk River Wind Farm. These projects were placed on hold in hopes that a future meeting with these ranchers might result in less opposition.

Q. DID YOU HAVE A SECOND MEETING WITH THIS GROUP?

A. Yes. Representatives from our team met with this group but were unable persuade them to agree with allowing further wind development in the area. The message we received was clear: if we tried to develop projects in this area we could expect strong resistance and protracted litigation. In our experience, opposition almost always means delays and higher costs for our customers, so we moved on, eliminating these three projects that we had

placed on hold and got to work on our short-list of the seven most favorable projects without public opposition.

Q. HOW DID YOU EVALUATE THE SHORT-LISTED PROJECTS?

A. The team invited the six developers representing the seven projects to Topeka for more detailed due diligence. Each session covered all aspects of the RFP and the developers' responses. I have attached the outline for these due diligence sessions as Exhibit GAG-1. Similar to the first phase of the review, but now with even more refinement, we scored each project according to a series of attributes, with weights (in parentheses below) assigned to each of the attributes based on the team's input, including: public and environmental acceptance (5%), production tax credit certainty (5%), credit risk (5%), cost (i.e., levelized revenue requirement) (35%), transmission and interconnection (15%), construction experience (10%), turbine evaluation (15%) and qualifications of the developer as determined by the team during the due diligence session (10%). Scoring was based on a 1 – 10 scale, with 10 being the best possible score.

Q. WHAT WAS THE NEXT STEP IN YOUR EVALUATION PROCESS?

A. We calculated a weighted composite score for each short-list project. We used these scores to develop different possible

portfolios of projects, and to determine with whom we would negotiate contracts.

Q. WHY DID WESTAR NOT SIMPLY CHOOSE ALL OF THE HIGHEST SCORING PROJECTS TO FILL ITS RENEWABLE OBJECTIVE?

A. We had two reasons. First, purely objective scoring, while useful, is still imperfect and would not allow us to fully tap the expertise of the team we assembled. Second, other dynamics come into consideration depending on the projects selected.

Q. PLEASE DISCUSS THE OTHER DYNAMICS YOU CONSIDERED.

A. With the help of B&V, we found that site diversity gave Westar significant benefits in the form of system dispatch savings (or lower inefficient dispatch costs). This variable recognizes that if wind facilities are separated by significant distances, it is less likely that if the wind calms at one location that it will calm simultaneously at other locations. Additionally, the existing transmission system has limitations that must be recognized and addressed. If an area of the transmission grid is only physically capable of handling the interconnection of an additional 100 MW of generation, we cannot add 300 MW of generation without greatly changing the economics of the projects related to the additional 200 MW. Lastly, it would be inefficient for Westar to have four wind farms on its system using

four different types of turbines. The Westar team worked to limit the different types of turbines to no more than two. Limiting the number of turbines allows us to share spare parts and operating knowledge among sites. This is similar to the widely discussed practice of Southwest Airlines – which flies only one type of plane – allowing it to save money by sharing parts inventory, pilots and mechanics across its fleet.

Q. AS A RESULT OF THE SCORING ANALYSIS AND THESE OTHER FACTORS, WHAT WAS THE DESIRED PORTFOLIO OF PROJECTS AND WHO WERE THE DEVELOPERS WITH WHOM YOU BEGAN CONTRACT NEGOTIATIONS AND CONTINUED DUE DILIGIENCE?

A. We selected a portfolio of projects as shown in Table 1 below.

Table 1
Summary of Wind Projects

Developer/Wind Farm Name	In-Service	MW	Location	Structure
RES America/Central Plains Wind Farm	2008	99	Wichita Co.	Owned
Horizon Wind Energy/Cloud County Wind Farm	2008	96	Cloud Co.	PPA
BP Alternative Energy/ Flat Ridge Wind Farm	2008	50 / 50	Barber Co.	Owned/PPA
TOTAL		**295**		

There are three projects in the portfolio of 295 MW of generation. This is the group of projects that represents the lowest cost portfolio. The levelized revenue requirement for this portfolio is about $39 per MWh (net of the value of both production tax credits (PTCs) and renewable energy credits (RECs)).

Q. WHAT ARE THE EXPECTED IN-SERVICE DATES FOR THE WIND TURBINES?

A. We expect that all of the 295 MW of wind generation that is the subject of this Application will come on-line in late 2008.

Q. HOW DO YOU PROPOSE TO INCORPORATE THE WIND RESOURCES INTO WESTAR'S SYSTEM?

A. We plan to own 149 MW of the proposed generation and obtain the other 146 MW through PPAs. One of the projects is structured with Westar owning 50% of the facility and buying 50% of the output under a PPA.

Q. WHY WOULD WESTAR WANT TO OWN HALF AND ENTER INTO A PPA FOR HALF?

A. Our analysis shows that there is no clear cost advantage for customers whether we own the projects or we acquire the energy through PPAs. The relative advantage or disadvantage will depend on future events and circumstances that we cannot know today. Because the difference between the projected costs for ownership versus purchasing power are within the error of our modeling, we

believe the best hedge against a wrong choice is to split the wind generation between ownership and purchased power.

Q. IF OWNERSHIP AND PPA COSTS ARE ABOUT THE SAME, AND IN SOME CASES OWNERSHIP MAY EVEN BE SLIGHTLY MORE EXPENSIVE, WHY WOULDN'T IT BE LESS RISKY SIMPLY TO PURCHASE MORE POWER AND OWN LESS OF THE ASSETS?

A. As I said, the differences are very small and depend entirely on present assumptions about future uncertainties. But let me share an example as to why ownership is sometimes the better route. One of the biggest downsides to PPAs compared to ownership is that if the assets continue to have significant value after the original term of the PPAs, that residual value reverts to the developer, not Westar and its customers. Let me illustrate.

At the end of the first 20 years of operation, if it turns out that the project has a 30-year life, only under the ownership option would customers get the incremental benefit of the difference. With a PPA, customers would have to pay again for the extra 10 years of value, by paying the then-current market prices – likely to be much higher than the original PPA price given normal inflation. By contrast, in the case of utility ownership, the facilities would be largely or completely depreciated, and the unexpected additional 10 years of value would come at much lower cost, reflecting

essentially on-going operations and maintenance costs, but no remaining capital cost.

Q. WHY IS IT IMPORTANT FOR WESTAR TO "HEDGE ITS BETS" IN CONNECTION WITH THE WIND PROJECT?

A. Because we cannot know for certain what the future will bring. We can only make decisions with the best information available today and manage unexpected occurrences to the best of our ability.

Although it is not an identical situation, Wolf Creek provides a good example of how this can occur. At the time it was conceived, Wolf Creek was believed to be a great choice for base load generation that some said would be "too cheap to meter." However, due in large part to design changes, retrofits required after the Three-Mile Island disaster and historically high interest rates, Wolf Creek cost more than three times its originally estimated cost. There were extensive rate hearings regarding the amount of costs to be included in rates due to these cost overruns. Ultimately, a portion of Wolf Creek was disallowed in rates and Wolf Creek looked like a poor investment for customers. Today, however, 22 years after Wolf Creek went into service, we have a very different situation. Wolf Creek has run exceptionally well, has a 40-year operating license from the NRC that is expected to be extended another 20 years and its net book cost is less than $1,400 per kilowatt. This shows that we never know what the future might hold

for long-lived assets. Had we instead acquired power from Wolf Creek under a PPA, we would be looking forward to a very expensive renewal in a few years. This Wolf Creek example demonstrates that ownership diversity can add value. Wolf Creek is also an excellent example of the benefits that come from physical diversity of supply.

Q. DOES THIS THINKING ALSO APPLY TO YOUR DECISION TO BOTH OWN AND CONTRACT FOR POWER WITHIN A SINGLE PROJECT?

A. Yes. Because a given wind project represents a collection of many individual pieces of equipment, we have structured a contract with one developer in which we will have both an ownership interest and a PPA structure. In that case, Westar will own 50% of the turbines in the project and enter into a PPA to buy energy from the other 50% of the turbines in that project. In order to help ensure that the developer creates two equally productive groups, the developer will divide the project into two equal groups and Westar will chose the group to which it will take title.

Q. ARE THERE OTHER BENEFITS TO THIS 50/50 STRUCTURE?

A. Yes. From a construction management perspective, this structure reduces risk for Westar and its customers. A developer selling power under a PPA, who intends to own that plant for a long time, will have an incentive to build a plant of the highest quality

(reliability) to assure the maximum production and sales under the PPA. This is because wind power PPAs have no demand charges, and all revenues are variable based on production.

By contrast, under an ownership structure, the developer will build the asset and might help run and maintain the facility for two years. After that, the developer will hand the keys to the utility and go on to the next project. Such a structure might influence a developer to minimize construction cost in order to maximize the developer's short-term profits, which could lead to poorer future reliability. Utilities use construction management oversight on projects like these to mitigate this risk, but the risk can also be reduced through the 50/50 structure we propose. This is achieved by requiring of the developer that each half of the wind project be built to the same engineering quality, same material quality, and the same construction quality.

Q. WERE YOU ABLE TO REACH AGREEMENT WITH ALL THE PARTIES THAT YOU ENTERED INTO NEGOTIATIONS?

A. We reached agreements for 295 MW out of the 500 MW sought in our RFP. These agreements include all projects scheduled to be completed in 2008. We will be negotiating agreements for an additional 200 MW and intend to have 500 MW of wind generation in place by the end of 2010.

III. SUMMARY OF SELECTED WIND ENERGY PROJECTS

Q. PLEASE GIVE US AN OVERVIEW OF EACH OF THE PROJECTS FOR WHICH YOU ARE ASKING THE COMMISSION FOR PREDETERMINATION OF RATEMAKING PRINCIPLES.

A. The summary is as follows:

BP Alternative Energy North America
Flat Ridge Wind Energy

The 100 MW Flat Ridge Project is located on 6,400 acres that are currently under lease. The site is in Barber County approximately sixty miles southwest of Wichita and nine miles northeast of Medicine Lodge. The site is currently used primarily for agriculture, including farming and grazing.

The BP Alternative Energy (BPAE) entity contracting with Westar is Flat Ridge Wind Energy, LLC, a project level entity of BPAE. The agreements between Flat Ridge and Westar provide for Flat Ridge to build and transfer ownership of 50 MW of wind generation to Westar in 2008. Westar would also purchase energy from the remaining 50 MW of the facility from Flat Ridge through a PPA beginning in 2008.

Horizon Wind Energy
Cloud County Wind Farm

The 96 MW Cloud County Wind Farm Project that Westar has contracted for is located on a site located approximately eight miles southeast of the city of Concordia, in Cloud County, Kansas.

The Horizon Wind Energy entity contracting with Westar is Cloud County Wind Farm, LLC, a project level entity of Horizon. The agreement between Cloud County Wind Farm and Westar is for the purchase of energy from the remaining 96 MW of the facility not previously under contract through a PPA beginning in 2008.

RES America Developments
Central Plains Wind Project

The 99 MW Central Plains Wind Project that Westar has contracted for is located on 6,000 acres under long-term lease in Wichita County, Kansas. The project is located located 11 miles west of Scott City, Kansas.

The RES entity contracting with Westar is Central Plains Power, LLC, a project level entity of RES. The agreement between Central Plains and Westar provides for Central Plains to build and transfer ownership of the 99 MW project.

Contract summaries as well as full ownership term sheets and full PPAs for each developer are also attached as Confidential Exhibits GAG-2, GAG-3, and GAG-4.

IV. COST ESTIMATES OF PROPOSED OWNED WIND GENERATION

Q. WHAT ARE THE COST ESTIMATES FOR THE FOUR WIND PROJECTS THAT YOU PROPOSE TO OWN?

A. The total cost of the 149 MW of owned wind generation is approximately $282 million. These costs are broken down by project in Confidential Exhibit GAG–5.

Q. HOW WERE THESE COST ESTIMATES DETERMINED BY WESTAR?

A. Through Westar's competitive RFP process, we received project bids that clearly identify Westar's contractual cost for the assets. Additionally, Westar has calculated expected owner costs, construction overheads, AFUDC and contingency and escalation costs for each project. The contract cost together with these internal Westar costs form the basis for our cost estimates for the proposed 149 MW of owned projects.

Q. PLEASE SUMMARIZE THESE COSTS BY EACH MAJOR COST COMPONENT.

A. The cost of the proposed owned projects are as follows:

Developer contract price	$253.1 million
Owner costs	2.2 million
Escalation & contingency	7.6 million
Construction overheads	6.2 million
AFUDC	12.5 million
TOTAL COST – Owned projects	$281.6 million

These costs are shown separately for each project in Confidential Exhibit GAG–5.

V. CONCLUSION

Q. HOW WILL THE ADDITION OF 300 MW OF WIND GENERATION AFFECT WESTAR'S GENERATION OPERATIONS AND EXPANSION PLANS?

A. As Westar witness Elenbaas testifies, the addition of approximately 300 MW of wind generation will be a significant source of energy to meet our customers' needs. We also expect that the addition of wind generation will allow Westar to defer construction of its next intermediate or baseload generating facility.

Q. HOW WILL ADDITION OF THE WIND GENERATION AFFECT RATES?

A. From a customer's perspective, and with all else constant, adding any new investment and operating costs causes rates to increase. However, as Mr. Elenbaas' analyses show, over the long-term, the annual impact on rates is small and that impact could be either positive or negative depending on future fuel prices and carbon tax

legislation. Mr. Rohlfs quantifies the immediately expected rate impacts associated with adding the wind generation.

Q. WHY SHOULD THE COMMISSION APPROVE WESTAR'S APPLICATION IN THIS PROCEEDING?

A. Wind is a local resource that can be used to benefit Kansans at reasonable cost and it will provide substantial environmental benefits. Construction of wind resources will modestly increase rates in the short-term, but can provide long-term cost advantages depending on future fossil fuel prices, carbon taxes and the value of renewable energy credits. Even with these uncertainties, wind generation brings valuable portfolio diversity to Westar's overall supply planning.

Q. ARE THERE OTHER ATTRIBUTES OF WIND THAT SHOULD BE CONSIDERED OUTSIDE OF THIS ECONOMIC ANALYSIS?

A. Yes. The addition of wind generation will help Westar meet any nationwide renewable portfolio standard that may be imposed by Congress and perhaps even give us a jump start that results in favorable pricing and the most suitable development sites. It is also a significant step towards the Governor's vision for utilization of the Kansas wind resources to have 1050 MW of installed wind resources by 2010. Wind generation provides added benefits of increased energy independence and further fuel diversity along with

environmental benefits resulting from displacing fossil fuels with renewable resources.

Adding 295 MW of wind generation is good for Westar's customers and for the state of Kansas and I urge the Commission to approve the predetermination application.

Q. THANK YOU.

Westar Energy
Wind RFP Due Diligence Meeting Outline

A. Introductions
B. Overview of RFP Selection Timeframe
C. Permitting Requirements and Status
    a. Permitting requirements and status for wind facility, infrastructure, and transmission to interconnect
    b. Environmental permitting and Kansas Siting Guidelines
    c. Public involvement and acceptance
D. Land status
    a. Status of leases, easements, surveys, title reports, title insurance
    b. Possibility of Westar sublease for gas "wind-following" units
E. Interconnection agreement status
F. Transmission requirements to interconnect and cost
G. Turbines
    a. Type(s)
        i. Design improvements to increase availability, ease maintenance
    b. Availability
    c. Delivery
    d. Warranty (normal and extended)
H. Engineering – firm selection, experience, and status
    a. Engineering design – electrical, substation, foundations, civil
I. Construction – firm selection, experience, and status
    a. EPC contractor
    b. Westar involvement -- QA/QC and/or Owners Engineer
J. Operations and Maintenance
K. Schedule
    a. Current status
    b. Liquidated damages
L. Wind data and performance guarantees over life of project
    a. Guaranteed capacity factor
    b. Guaranteed availability factor
M. Financial assurance
    a. During construction
    b. Post-construction (if PPA)
    c. Proposed legal structure of projects
    d. Parental guarantees
N. Financial
    a. Current project sales price
    b. Current project PPA price & term(s)
        i. Pricing subject to change based upon PTC renewal?
O. Legal Documents
    a. Draft Build – Transfer Agreement
    b. Draft Operations & Maintenance Agreement
    c. Draft PPA