Direct Testimony and Exhibits
John J. Spanos

Before the South Dakota Public Utilities Commission
of the State of South Dakota

In the Matter of the Application of
Black Hills Power, Inc., a South Dakota Corporation

For Authority to Increase Rates
in South Dakota

Docket No. EL14-___

March 31, 2014

Q. Please state your name and address.

A. My name is John J. Spanos. My business address is 207 Senate Avenue, Camp Hill, Pennsylvania, 17011.

Q. Are you associated with any firm?

A. Yes. I am associated with the firm of Gannett Fleming, Inc.

Q. How long have you been associated with Gannett Fleming, Inc.?

A. I have been associated with the firm since college graduation in June 1986.

Q. What is your position with the firm?

A. I am a Senior Vice President.

Q. On whose behalf are you testifying in this case?

A. I am testifying on behalf of Black Hills Power, Inc. ("BHP" or the "Company").

Qualifications

Q. Please state your qualifications.

A. I have over 27 years of depreciation experience which includes expert testimony in over 160 cases before 38 regulatory commissions, including this Commission. Please refer to Exhibit JJS-1 for my qualifications.

Purpose of Testimony

Q. What is the purpose of your testimony?

A. I sponsor the Depreciation Study performed for Black Hills Power attached hereto as Exhibit JJS-2 ("Depreciation Study"). The Depreciation Study sets forth the calculated annual depreciation accrual rates by account as of December 31, 2012. Based on the Depreciation Study, I recommend depreciation rates using the December 31, 2012, plant and reserve balances for approval. The proposed rates appropriately reflect the rates at

which the Company's assets should be depreciated over their useful lives and are based on the most commonly used methods and procedures for determining depreciation rates.

Depreciation Study

Q. Please define the concept of depreciation.

A. Depreciation refers to the loss in service value not restored by current maintenance incurred in connection with the consumption or prospective retirement of utility plant in the course of service from causes which can be reasonably anticipated or contemplated, against which the Company is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and the requirements of public authorities.

Q. Did you prepare the Depreciation Study filed by BHP in this proceeding?

A. Yes. I prepared the Depreciation Study attached as Exhibit JJS-2. My report is entitled: "Depreciation Study - Calculated Annual Depreciation Accruals Related to Electric Plant as of December 31, 2012." This report sets forth the results of my Depreciation Study for BHP.

Q. In preparing the Depreciation Study, did you follow generally accepted practices in the field of depreciation valuation?

A. Yes.

Q. Are the methods and procedures of this Depreciation Study consistent with past practices?

A. The methods and procedures of this study are the same as those utilized in the past by this Company as well as others before this Commission. Depreciation rates are determined based on the average service life procedure and the remaining life method.

Q. Please describe the contents of the Depreciation Study.

A. The Depreciation Study is presented in three parts: Part I, Introduction, presents the scope and basis for the Depreciation Study; Part II, Methods Used in Study, includes descriptions of the basis of the study, the estimation of survivor curves and net salvage and the calculation of annual and accrued depreciation; and Part III, Results of Study, presents a description of the results, a summary of the depreciation calculations, graphs and tables that relate to the service life and net salvage analyses, and the detailed depreciation calculations.

The table on pages III-4 through III-8 of the Depreciation Study presents the estimated survivor curve, the net salvage percent, the original cost as of December 31, 2012, the book depreciation reserve and the calculated annual depreciation accrual and rate for each account or subaccount. The section beginning on page III-9 presents the results of the retirement rate analyses prepared as the historical bases for the service life estimates. The section beginning on page III-118 presents the results of the salvage analysis. The section beginning on page III-141 presents the depreciation calculations related to surviving original cost as of December 31, 2012.

Q. Please explain how you performed your Depreciation Study.

A. I used the straight line remaining life method of depreciation, with the average service life procedure. The annual depreciation is based on a method of depreciation accounting that seeks to distribute the unrecovered cost of fixed capital assets over the estimated remaining useful life of each unit, or group of assets, in a systematic and reasonable manner.

For General Plant Accounts 391.01, 391.03, 391.05, 393.0, 394.0, 395.0, 397.0 and 398.0; I used the straight line remaining life method of amortization. The account numbers identified throughout my testimony represent those in effect as of December 31, 2012. The annual amortization is based on amortization accounting that distributes the unrecovered cost of fixed capital assets over the remaining amortization period selected for each account and vintage.

Q. How did you determine the recommended annual depreciation accrual rates?

A. I did this in two phases. In the first phase, I estimated the service life and net salvage characteristics for each depreciable group, that is, each plant account or subaccount identified as having similar characteristics. In the second phase, I calculated the composite remaining lives and annual depreciation accrual rates based on the service life and net salvage estimates determined in the first phase.

Q. Please describe the first phase of the Depreciation Study, in which you estimated the service life and net salvage characteristics for each depreciable group.

A. The service life and net salvage study consisted of compiling historical data from records related to BHP's plant; analyzing these data to obtain historical trends of survivor characteristics; obtaining supplementary information from management and operating personnel concerning practices and plans as they relate to plant operations; and interpreting the above data and the estimates used by other electric utilities to form judgments of average service life and net salvage characteristics.

Q. What historical data did you analyze for the purpose of estimating service life characteristics?

A. Where available, I analyzed the Company's accounting entries that record plant

transactions during the period 1950 through 2012, however, the earliest year of data varied by account. The transactions included additions, retirements, transfers, sales, and the related balances.

Q. What method did you use to analyze these service life data?

A. I used the retirement rate method for most plant accounts. This is the most appropriate method when retirement data covering a long period of time is available because this method determines the average rates of retirement actually experienced by the Company during the period of time covered by the Depreciation Study.

Q. Please describe how you used the retirement rate method to analyze BHP's service life data.

A. I applied the retirement rate analysis to each different group of property in the study. For each property group, I used the retirement rate data to form a life table which, when plotted, shows an original survivor curve for that property group. Each original survivor curve represents the average survivor pattern experienced by the several vintage groups during the experience band studied. The survivor patterns do not necessarily describe the life characteristics of the property group; therefore, interpretation of the original survivor curves is required in order to use them as valid considerations in estimating service life. The Iowa-type survivor curves were used to perform these interpretations.

Q. What is an "Iowa-type survivor curve" and how did you use such curves to estimate the service life characteristics for each property group?

A. Iowa-type curves are a widely-used group of survivor curves that contain the range of survivor characteristics usually experienced by utilities and other industrial companies. The Iowa curves were developed at the Iowa State College Engineering Experiment

Station through an extensive process of observing and classifying the ages at which various types of property used by utilities and other industrial companies had been retired.

Iowa-type curves are used to smooth and extrapolate original survivor curves determined by the retirement rate method. The Iowa curves and truncated Iowa curves were used in this study to describe the forecasted rates of retirement based on the observed rates of retirement and the outlook for future retirements. The estimated survivor curve designations for each depreciable property group indicate the average service life, the family within the Iowa system to which the property group belongs, and the relative height of the mode. For example, the Iowa 45-R2 indicates an average service life of 45 years; a right-moded, or R, type curve (the mode occurs after average life for right-moded curves); and a moderate height, 2, for the mode (possible modes for R type curves range from 1 to 5).

Q. What approach did you use to estimate the lives of significant facilities such as production plants?

A. I used the life span technique to estimate the lives of significant facilities for which concurrent retirement of the entire facility is anticipated. In this technique, the survivor characteristics of such facilities are described by the use of interim survivor curves and estimated probable retirement dates. The interim survivor curves describe the rate of retirement related to the replacement of elements of the facility, such as, for a building, the retirements of plumbing, heating, doors, windows, roofs, etc., that occurs during the life of the facility. The probable retirement date provides the rate of final retirement for each year of installation for the facility by truncating the interim survivor curve for each

installation year at its attained age at the date of probable retirement. The use of interim survivor curves truncated at the date of probable retirement provides a consistent method for estimating the lives of the several years of installation for a particular facility inasmuch as a single concurrent retirement for all years of installation will occur when it is retired.

Q. Has Gannett Fleming used this approach in other proceedings?

A. Yes, we have used the life span technique in performing depreciation studies presented to and accepted by many public utility commissions across the United States and Canada. This technique is currently being utilized by BHP in the same manner recommended in this case.

Q. What are the bases for the probable retirement years that you have estimated for each facility?

A. The bases for the probable retirement years are life spans for each facility that are based on judgment, the life assessment study and incorporate consideration of the age, use, size, nature of construction, management outlook and typical life spans experienced and used by other electric utilities for similar facilities. Most of the life spans result in probable retirement years that are many years in the future. As a result, the retirements of these facilities are not yet subject to specific management plans. Such plans would be premature. At the appropriate time, detailed studies of the economics of rehabilitation and continued use or retirement of the structure will be performed and the results incorporated in the estimation of the facility's life span, such as the process conducted for the soon to be retired Ben French, Neil Simpson 1 and Osage plants.

Q. Did you physically observe BHP's plant and equipment as part of your Depreciation

Study?

A. Yes. I made a field review of BHP's property as part of this study during August 2013 to observe representative portions of plant. Field reviews are conducted to become familiar with Company operations and obtain an understanding of the function of the plant and information with respect to the reasons for past retirements and the expected future causes of retirements. This knowledge as well as information from other discussions with management was incorporated in the interpretation and extrapolation of the statistical analyses.

Q. Please describe how you estimated net salvage percentages.

A. I estimated the net salvage percentages by incorporating the historical data for the period 1997 through 2012 and considered estimates for other electric companies. The net salvage percentages are based on a combination of statistical analyses and informed judgment. The statistical analyses consider the cost of removal and gross salvage ratios to the associated retirements during the 16-year period. Trends of these data are also measured based on three-year moving averages and the most recent five-year indications.

Q. Were the net salvage percentages for generating facilities based on the same analyses?

A. Yes, for the interim analyses. The net salvage percentages for generating facilities were based on two components, the interim net salvage percentage and the final net salvage percentage. The interim net salvage percentage is determined based on the historical indications from the period, 1997-2012, of the cost of removal and gross salvage amounts as a percentage of the associated plant retired. The final net salvage or dismantlement component was determined based on the assets anticipated to be retired at the concurrent

date of final retirement.

Q. Have you included a dismantlement component into the overall recovery of generating facilities?

A. Yes. A dismantlement component has been included to the net salvage percentage for steam and other production facilities.

Q. Can you explain how the dismantlement component is included in the Depreciation Study?

A. Yes. The dismantlement component is part of the overall net salvage for each location within the production assets. Based on studies for other utilities and the cost estimates of BHP, it was determined that the dismantlement or decommissioning costs for steam and other production facilities is best calculated on a $/KW factor based on surviving plant at final retirement. These amounts at a location basis are added to the interim net salvage percentage of the assets anticipated to be retired on an interim basis to produce the weighted net salvage percentage for each location. The detailed calculation for each location is set forth on pages III-119 and III-120 of Exhibit JJS-2.

Q. How is the dismantlement component calculated for generating facilities?

A. For Ben French, Neil Simpson I and Osage, the Company has specific cost estimates for decommissioning each plant after retirement in October 2014. The costs approximated $130/kw for the three facilities. The $130/kw cost was utilized for the remaining steam facilities in order to determine the dismantlement component for each facility. There were no company specific costs established for combustion turbine facilities, therefore the most common industry standard of $20/kw was utilized for a dismantlement component.

Q. Can you give an example as to how the dismantlement costs are utilized for a net salvage percent?

A. Yes. I will use Ben French as an example. As of December 31, 2012, the plant in service is $14,267,643 for steam generating assets. The cost to dismantle this facility has been determined to be $3,959,606. Based on the life analyses and Company plans it has been estimated that 1.24% or $177,375 will be retired prior to October 2014. This will be the interim retirement amount, so the remaining amount of $14,090,268 or 98.76% will be the terminal retirements. Therefore, the total dismantlement cost is 28% of the plant in service at final retirement. For interim retirements, the net salvage percent for all steam facilities is 20%; therefore, 20% times the 1.24% of plant to be retired on an interim basis is less than 1%. Consequently, when adding together the two percentages it is determined that the net salvage percent to be applied to Ben French in order to get full recovery of the service value is 28%. A similar calculation is done for each generating facility and set forth on pages III-119 and III-120 of the Depreciation Study.

Q. Please describe the second phase of the process that you used in the Depreciation Study in which you calculated composite remaining lives and annual depreciation accrual rates.

A. After I estimated the service life and net salvage characteristics for each depreciable property group, I calculated the annual depreciation accrual rates for each group, using the straight line remaining life method, and using remaining lives weighted consistent with the average service life procedure.

Q. Please describe the straight line remaining life method of depreciation.

A. The straight line remaining life method of depreciation allocates the original cost of the

property, less accumulated depreciation, less future net salvage, in equal amounts to each year of remaining service life.

Q. Please describe amortization accounting.

A. In amortization accounting, units of property are capitalized in the same manner as they are in depreciation accounting. Amortization accounting is used for accounts with a large number of units, but small asset values, therefore, depreciation accounting is difficult for these assets because periodic inventories are required to properly reflect plant in service. Consequently, retirements are recorded when a vintage is fully amortized rather than as the units are removed from service. That is, there is no dispersion of retirement. All units are retired when the age of the vintage reaches the amortization period. Each plant account or group of assets is assigned a fixed period which represents an anticipated life during which the asset will render full benefit. For example, in amortization accounting, assets that have a 20-year amortization period will be fully recovered after 20 years of service and taken off the Company's books, but not necessarily removed from service. In contrast, assets that are taken out of service before 20 years remain on the books until the amortization period for that vintage has expired.

Q. Amortization accounting is being utilized for which plant accounts?

A. Amortization accounting is only appropriate for certain General Plant accounts. These accounts are 391.01, 391.03, 391.05, 393.0, 394.0, 395.0, 397.0 and 398.0 which represent slightly more than 1 percent of depreciable plant.

Q. Have you made additional recommendations for the amortization accounts?

A. Yes. In order to achieve a more stable rate for these accounts in the future, I have recommended new additions for all vintages 2013 and subsequent should be amortized consistent with the amortization period.

Q. Please use an example to illustrate how the annual depreciation accrual rate for a particular group of property is presented in your Depreciation Study.

A. I will use Account 365, Overhead Conductors and Devices as an example because it is one of the largest depreciable mass accounts and represents approximately four percent of depreciable plant.

The retirement rate method was used to analyze the survivor characteristics of this property group. Aged plant accounting data was compiled from 1950 through 2012 and analyzed in periods that best represent the overall service life of this property. The life table for the 1950-2012 experience band is presented on pages III-74 and III-75 of the report. The life table displays the retirement and surviving ratios of the aged plant data exposed to retirement by age interval. For example, page III-74 shows $188,892 retired at age 0.5 with $35,272,731 exposed to retirement. Consequently, the retirement ratio is 0.0054 and the surviving ratio is 0.9946. This life table, or original survivor curve, is plotted along with the estimated smooth survivor curve, the 50-R1.5 on page III-73. The net salvage percent is presented on page III-138. The percentage is based on the result of annual gross salvage minus the cost to remove plant assets as compared to the original cost of plant retired during the period 1997 through 2012. The 16-year period experienced $589,748 (($212,499+1,036,750) - $1,838,998) in net salvage for $2,935,389 plant retired. The result is negative net salvage of 20 percent ($589,748/$2,935,389). Based on the overall negative 20 percent net salvage and the most recent five years of

negative 24 percent as well as industry ranges and Company expectations, it was determined that negative 20 percent was the most appropriate estimate.

My calculation of the annual depreciation related to the original cost at December 31, 2012, of electric plant is presented on pages III-193 and III-194. The calculation is based on the 50-R1.5 survivor curve, 20 percent negative net salvage, the attained age, and the allocated book reserve. The tabulation sets forth the installation year, the original cost, calculated accrued depreciation, allocated book reserve, future accruals, remaining life and annual accrual. These totals are brought forward to the table on page III-6.

Q. Have you developed proposed depreciation accrual rates for the Cheyenne Prairie Generating Station?

A. Yes, I have. The depreciation accrual rates are recommended for the Cheyenne Prairie Generating Station when the facility is placed in service during 2014. The Cheyenne Prairie facility relating to the Combined Cycle unit is new construction for BHP. The calculated depreciation accrual rates are determined based on the average service life procedure and the remaining life method. The rates for each account are based on the most appropriate interim survivor curve and net salvage percent for other production plants and a life span. The life span for the Cheyenne Prairie Combined Cycle is 35 years. The life span is within the industry range for the type of facility. The proposed rates for each account utilizing these proposed parameters are set forth on page III-8 of the Depreciation Study.

Conclusion

Q. Was the Depreciation Study filed by BHP in this proceeding prepared by you or under your direction and control?

A. Yes.

Q. Can you summarize the results of your Depreciation Study?

A. Yes. The depreciation rates as of December 31, 2012 appropriately reflect the rates at which the value of BHP's assets have been consumed over their useful lives to date. These rates are based on the most commonly used methods and procedures for determining depreciation rates. The life and salvage parameters are based on widely used techniques and the depreciation rates are based on the average service life procedure and remaining life method. Therefore, the depreciation rates set forth on pages III-4 through III-8 of Exhibit JJS-2 represent the calculated rates as of December 31, 2012.

Q. Does this conclude your direct testimony?

A. Yes.