Exhibit No.:	
Issue:	**Depreciation Expense Rates**
Witness:	**Larry W. Loos**
Type of Exhibit:	**Direct Testimony**
Sponsoring Party:	**Black Hills Power, Inc.**
Case No.:	
Date Testimony Prepared:	**September, 2009**

Before the Public Service Commission
of the State of South Dakota

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Direct Testimony
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Qualifications

Q. Please state your name and business address.

A. Larry W. Loos, 11401 Lamar, Overland Park, KS 66211.

Q. What is your occupation?

A. I am an engineer and consultant employed by Black & Veatch Corporation (Black & Veatch). I currently serve as a Director in Black & Veatch's Enterprise Management Solutions Division.

Q. How long have you been associated with Black & Veatch?

A. I have been employed by the company continuously since 1971.

Q. What is your educational background?

A. I am a graduate of the University of Missouri at Columbia, with a Bachelor of Science Degree in Mechanical Engineering and a Masters Degree in Business Administration.

Q. Are you registered as a Professional Engineer?

A. Yes, I am a registered Professional Engineer in the states of Colorado, Indiana, Iowa, Kansas, Louisiana, Missouri, Nebraska and Utah.

Q. Do you belong to any professional societies?

A. Yes, I do. I am a member of the American Society of Mechanical Engineers, the National Society of Professional Engineers, the Missouri Society of Professional Engineers, and the Society of Depreciation Professionals.

Q. What is your professional experience?

A. I have been responsible for numerous engagements involving electric, gas, and other utility services. Clients served include both investor-owned and publicly owned utilities; customers of such utilities; and regulatory agencies. During the course of these engagements, I have been responsible for the preparation and presentation of studies involving valuation, depreciation, cost of service, allocation, rate design, pricing, financial feasibility, cost of capital, and other engineering, economic and management areas.

Q. Have you previously appeared as an expert witness?

A. Yes, I have. Though I have never testified before this Commission, on several occasions I have filed testimony in cases that were settled prior to hearings. I have presented expert witness testimony on a number of occasions before the Federal Energy Regulatory Commission as well as before regulatory bodies in the states of Colorado, Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, New York, North Carolina, Pennsylvania, South Carolina, Texas, Utah, Wyoming, and Vermont. I have also presented expert witness testimony before District Courts in the states of Colorado, Iowa, Kansas, Missouri, and Nebraska; and before Courts of Condemnation in the states of Iowa and Nebraska. I have also served as a special advisor to the Connecticut Department of Public Utility Control.

Q. Please describe Black & Veatch Corporation.

A. Black & Veatch has provided comprehensive construction, engineering, consulting, and management services to utility, industrial, and governmental clients since 1915. We specialize in engineering and construction associated with utility services including electric, gas, water, wastewater, telecommunications, and waste disposal. Service engagements consist principally of investigations and reports, design and construction, feasibility analyses, cost studies, rate and financial reports, valuation and depreciation studies, reports on operations, management studies, and general consulting services. Present engagements include work throughout the United

States and numerous foreign countries. Including professionals assigned to affiliated companies, Black & Veatch currently employs approximately 10,000 people.

Q. For whom are you testifying in this proceeding?

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

Q. What is the purpose of your direct testimony in this matter?

A. I sponsor BHP's proposed depreciation expense rates. In this regard, I sponsor as Schedule (LWL-1) the Black & Veatch report entitled "Report on Depreciation Accrual Rates," dated September 18, 2009. This report was prepared under my supervision and direction. The study is based on plant balances as of December 31, 2008.

Q. Have you previously investigated depreciation expense rates applicable to BHP?

A. Yes, I have. I previously analyzed the depreciation rates of BHP in 1991 based on plant data as of December 31, 1989 and in 2006 based on plant data as of December 31, 2005. BHP's current depreciation rates are based on the proposed rates recommended in the 2006 study. Generally, the results of my current study are consistent with my findings in the 2006 study.

Q. Please outline your direct testimony.

A. I will (1) present my findings and conclusions and address depreciation expense rates in general; (2) address my proposed treatment of depreciation reserve balance surplus and deficiency; and (3) present my recommended remaining life rates for BHP's unit and mass properties.

Conclusion

Q. What are your findings and conclusions?

A. Based on the results of my analysis, I find that BHP's existing depreciation expense rates are generally adequate, in aggregate, to recover undepreciated investment over the remaining life of the property. However, rates applicable to individual accounts may be too low or too high. For example, BHP has generally extended the retirement dates forecast for steam and other production plant. As a result, existing rates are in excess of the minimum level required to fully amortize investment over the remaining life.

Based on these findings, I recommend the Commission adopt and BHP charge the depreciation rates set forth in Table 7-1, (Page 24), Column [F] of Schedule LWL-1. Based on plant in service as of December 31, 2008, implementation of these rates will result in a decrease in annual depreciation expense of about $2.36 million (11 percent) as shown in Column [H], Line 57. When I include the pro forma adjustment for the addition of the $128.44 million Wygen III (BHP's 52 percent share) generating station in 2010, the annual depreciation expense for Wygen III will be $3.49 million, which results in a net increase in total annual depreciation expense for BHP of $1.14 million, as shown in Column [H], Line 61.

Depreciation Rates - General

Q. How do you define depreciation?

A. My definition is the same as that set forth in the FERC Uniform System of Accounts which defines depreciation as:

> "The loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of electric plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes considered are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities."

With regard to this definition, the reference to value is from an accounting perspective where value represents the investment (original cost) in electric plant. By properly charging depreciation, the investment in plant (initial cost less recovery through salvage and plus cost of removal) is distributed over the useful life of the assets being depreciated. This distribution is intended to equitably allocate total investment in plant to periods during which service is provided through the use and consumption of such facilities.

Q. When were BHP's depreciation rates last revised?

A. BHP's current depreciation rates were approved by the South Dakota Public Utility Commission in 2006 in Docket No. EL06-019, based on plant investment as of December 31, 2005.

Q. What method do you use to develop your recommended rates?

A. I use the remaining life depreciation method. This method is premised on the annual recovery of plant investment in generally equal amounts over the remaining service life of plant facilities. When referring to recovery in this context, it represents the annual charge to net income.

Q Do you apply the same approach to all accounts?

A. No, I do not. In developing depreciation rates, I first divide plant into two fundamental categories. These categories are "mass" property and "unit" property. Mass property represents a collection of a relatively large number of homogeneous property units (i.e., poles, conductors, conduits, and meters) which are retired individually.

Unit property, on the other hand, is characterized as a collection of interconnected, integrated, heterogeneous property elements; the individual components which have limited value outside their contribution to the whole. While individual components of the whole may be retired and/or replaced prior to final retirement, most components comprising the system will be retired with the balance of the whole. This retirement en masse is due to the fact that the benefit provided (engineering value) is a result of the inter-relationship of individual components with the whole.

Q. Does this difference affect how you develop depreciation rates?

A. Yes, it does. For unit property, my concern is that the life of the unit be synchronized with the total investment to be recovered i.e. the total investment associated with a number of heterogeneous components. This requires that interim additions and retirements (those individual heterogeneous components) be incorporated in the development of depreciation expense rates since their cost must be recovered over the remaining life of the facility, not over the life of the individual component. For mass property, interim additions and replacements are not a factor since generally the service life of individual components is not affected by the life of the system. The homogeneous nature of the property components allows depreciation rates to be developed based on the average service life of all units.

Q. Are the procedures you follow the same for unit property and mass property?

A. No, they are not. Consistent with the remaining life concept, for unit property (production plant), I develop a history of investment activity by account for each location or site. This life history reflects gross additions, retirements, surviving property, and account balances. Based on the estimated life (planned retirement date) for each unit property (generating station), I forecast plant investment activity (interim additions, retirements, and account balances) at the account level for each year that units within such an account are forecast to remain in service. I then calculate a remaining life, straight line depreciation accrual rate by dividing the unrecovered gross investment by the sum of the annual depreciable plant balances over the remaining life of the unit property. Unrecovered investment represents plant investment as of December 31, 2008 plus forecast interim additions, less net salvage and accumulated depreciation reserve. Annual depreciable balances are based on plant balances as of December 31, 2008 plus forecast additions less retirements for each year the plant is forecast to remain in service.

Mass Property

Q. How do you treat mass properties?

A. As discussed in Section 4.0 of Schedule LWL-1, for transmission, distribution, and general plant (collectively, mass properties), I perform actuarial studies to determine the experienced mortality characteristics (average service life and Iowa curve) of property for each FERC account. Based upon the historical plant activity, a survivor stub curve is developed based on the percent of investment surviving by age. Using a least squares analysis technique, this experienced survivor stub curve is compared to general survivor curve types to identify the best fitting curves and service lives. I use the historical life determined by this method, results of prior studies, engineering judgment, and other considerations to determine a reasonable average service life and survivor curve applicable to each account. I calculate a whole life depreciation expense rate for each account by dividing one minus the forecast net salvage ratio by the average service life. As a final step, I consider accumulated reserve for depreciation and the average age of surviving plant to adjust the whole life rates to remaining life rates.

<u>Unit Property</u>

Q. Please describe your analysis of each of BHP's generating stations.

A. In Section 5.0 of Schedule (LWL-1), I discuss the application of the whole life and remaining life procedures separately to each of BHP's generating stations. By separately analyzing each station, I recognize its unique nature. The remaining life rates I develop will, if applied to annual plant balances over the remaining life of the station (from the period ending December 31, 2008 to the year of retirement), recover BHP's total investment in the station, including consideration for the impact of net salvage. The principal forecasts I rely on in the analyses include:

- The retirement date for each generating unit.
- The forecast level of interim additions and retirements.
- Net salvage associated with interim additions and retirements.
- There will be no additional major plant additions, life extension costs, or equipment modifications other than those currently forecast by BHP.

Q. What service life have you estimated for the steam generating units?

A. As indicated in Section 5.1 of Schedule (LWL-1), BHP provided the year of installation and forecast retirement date for each of its steam generating units. As shown in this schedule, the Ben French Station located in Rapid City was placed in service in 1960 and has an estimated remaining life of 15 years (from the end of 2008) based on the forecast retirement in 2023.

The Neil Simpson generating station is located at the Wyodak mine near Gillette, Wyoming. This mine was acquired by BHP in 1954 from the Wyodak Coal Company, a subsidiary of the Homestake Mining Company. Neil Simpson Unit 1 was placed in service in 1969 and has an estimated remaining life of 15 years based on the forecast retirement in 2023. Neil Simpson Unit 2 was placed in service in 1995 and the remaining life is estimated to be 37 years based on the forecast retirement of the unit in 2045.

The Osage Plant units were placed in service between 1948 through 1952. The steam production facilities at this location include two generating units originally owned by BHP and one generating unit acquired from Rushmore REA Co-Op in early 1992. The remaining life of all three units is estimated to be 5 years based on the forecast retirement of the plant in 2013.

The Wyodak Plant is located adjacent to the Neil Simpson Station near Gillette, Wyoming and has been placed in service in 1978. From 1978 through 1990, this plant was jointly leased by Black Hills Power (f/k/a Black Hills Power & Light) and PacifiCorp (f/k/a Pacific Power & Light Company). At the end of 1990, Black Hills Power and PacifiCorp acquired the plant from the leaseholders. BHP receives 20 percent of the plant capacity (and output) of 335 MW. The remaining life of the unit is estimated to be 22 years based on the forecast retirement in 2030.

Q. What service life have you estimated for other electric generating units?

A. As indicated in Section 5.2 of Schedule (LWL-1), BHP provided the year of installation and forecast retirement date for each of its other electric generating units. The four Ben French combustion turbines were installed in the period 1977 through 1979 and the remaining life of the units is estimated to be 22 years based on the forecast retirement in 2030. This is an 11 year increase in service life from BHP's 2006 forecast retirement date of 2013.

Neil Simpson Unit 1 Combustion Turbine was installed in 2000 and the estimated remaining life is 42 years based on the planned retirement of the unit in 2050. This is a 20 year increase in service life from BHP's 2006 forecast retirement date of 2030.

Lange Combustion Turbine was installed in 2002 and the remaining life is estimated to be 42 years based on the forecast retirement of the unit in 2050. This is an 18 year increase in service life from BHP's 2006 forecast retirement date of 2032.

Q. Do you find the planned retirement dates provided by BHP to be reasonable?

A. Based on a general review of the planned retirement dates provided by BHP I find the BHP forecast of service lives, specifically for combustion turbine based generation, to be considerably greater than what is normally used for this type of equipment. However, when considering BHP's aggressive capital maintenance schedule and limited use of these facilities, I find the estimates to be reasonable.

Q. Will there be any substantial forecast capital additions to BHP's production plants?

A. Yes, there will be extensive capital additions required for the various plants to achieve the lives forecast by BHP. For the Ben French steam production plant, BHP forecasts major capital additions of $1.9 million in 2011 and $2.1 million in 2016. The Wyodak Plant will have major capital additions amounting to $4.8 million in 2011. Also, there will be major capital costs of about $2.5 million in 2016, with recurring capital costs every five years escalated at a 2.5 percent annual inflation rate over the remaining life of the plant. The Neil Simpson Unit 1 will have major capital additions of $2.1 million in 2009 and $2.6 million in 2017. For Neil Simpson Unit 2, there will be major capital costs of $1.6 million in 2012, with recurring capital costs every 7 years escalated at a 2.5 percent annual inflation rate over the remaining life of the unit. The Lange CT will have major capital additions of approximately $2.2 million in 2013, with recurring capital costs every seven years escalated at a 2.5 percent annual inflation rate over the remaining life of the unit. For the Neil Simpson Unit 1 combustion turbine, a hot gas path inspection will take place in 2009 at a capital cost of $1.8 million, with recurring capital costs every seven years escalated at a 2.5 percent annual inflation rate over the remaining life of the unit. Other than these major capital additions, nominal levels of interim additions and interim retirements are expected to be made over the remaining life of all the generating units. All these investments have been included in our analysis for the determination of remaining life rates for unit property.

Q. Do you find the forecast capital additions provided by BHP to be reasonable?

A. Based on a general review of the schedules and costs associated with the planned overhauls of production plant equipment, I find the BHP forecast to be within my expectations.

Q. Please describe your analysis of BHP's Wygen III generating station.

A. In Section 5.3 of Schedule (LWL-1), I discuss the application of the whole life procedure to BHP's Wygen III generating station. Wygen III is expected to be completed in 2010. The whole life rate I develop will, if applied to forecast annual plant balances over the life of the station from the in-service date in 2010 to the forecast date of retirement (December 31, 2055), recover BHP's total investment in the station, including consideration for the impact of net salvage. The principal forecasts I rely on in the analyses include:

- The in service and retirement date for Wygen III.
- The level of interim additions and retirements.
- Net salvage associated with interim additions and retirements.
- There will be no additional major plant additions, life extension costs, or equipment modifications other than those currently forecast by BHP.

Q. What service life have you used for Wygen III steam generating unit?

A. As indicated in Section 5.3 of Schedule (LWL-1), BHP has provided the year of installation and forecast retirement date for Wygen III generating unit. Wygen III is expected to be completed in 2010 and to have a useful life of 45 years.

Q. Do you find the planned retirement date for Wygen III as provided by BHP to be reasonable?

A. Yes, I do. I find BHP's forecast to be within my expectations.

Q. Please describe how you developed you recommended rate for Wygen III.

A. In 2007, I developed the depreciation rate for Wygen II, which is owned and operated by the Black Hills Corporation subsidiary Cheyenne Light, Fuel & Power (CLFP). The deprecation rate for Wygen II was generally modeled after BHP's Neil Simpson II unit. To develop an accrual rate for Wygen III, I generally followed the template used in for the Wygen II depreciation rate and recommend the same applied rate of 2.72%. Both rates are premised on a 45 year service life.

Q. Will there be any substantial forecast capital additions to BHP's Wygen III generating unit?

A. Yes, I expect major capital additions will be required for the Wygen III unit to achieve the life forecast by BHP. BHP forecasts major capital additions of approximately $2.4 million beginning in 2018, with recurring capital costs every seven years escalated at a 2.5 percent annual inflation rate over the remaining life of the unit. These forecast capital additions represent the minimum level I envision required for the plant to realize a lifespan of 45 years.

<u>Depreciation Reserve</u>

Q. How does depreciation reserve affect whole life depreciation rates?

A. As discussed in Section 6.0 of Schedule LWL-1, the whole life rates I develop differ in some instances from the existing depreciation rates. This difference may result in a surplus or deficiency in the depreciation reserve balance relative to the level required at that age by the whole life rate. Depreciation reserve surplus or deficiencies can arise for a variety of causes. Some causes are:

(1) Failure to include forecast levels of interim additions and retirements that correspond to levels which actually occur.

(2) Changes in average service lives occasioned by changes in technology, equipment, and other factors.

(3) Average service lives that do not correspond to actual experience due to inadequate historical retirement data or other considerations which lead to the use of an average service life which differs from actual.

(4) Failure to include an allowance for net salvage at a level which corresponds to actual experience and forecast levels.

Q. Do you calculate a substantial reserve deficiency or surplus?

A. No, I do not. In this case, I calculate directly remaining life depreciation rates. By doing so, I do not calculate the dollar amount of any reserve deficiency or surplus.

However, by comparing the whole life rates I develop in Table 6-1, with the remaining life rates I recommend in Table 6-2, I find that with the exception of general plant, the whole life and remaining life rates are not materially different. This suggests that any reserve deficiency or surplus is relatively minor.

Q. What is your recommendation?

A. I recommend the Commission approve the recommended depreciation rates set forth in Table 7-1, (Page 24), Column [F] of Schedule LWL-1 for prospective application by Black Hills.

Q. Does this conclude your direct testimony in this matter?

A. Yes, it does.