

Rebuttal Testimony and Exhibit
Doug Buresh

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. EL09-018

June 4, 2010



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Exhibits

DAB-1 Resume of Doug Buresh

I. QUALIFICATIONS

1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A. My name is Doug Buresh. My business address is 10226 N. Avalon Ave., Kansas
3 City, MO 64154.

4 **Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?**

5 A. I am a Sr. Vice President at Ventyx, a firm that provides software, data, and
6 consulting services in several areas including electric utilities and resource
7 planning for electric utilities. I have held executive level positions with Ventyx
8 and its predecessor companies (Global Energy Decisions and M.S. Gerber &
9 Associates) since March 2000.

10 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND WORK
11 BACKGROUND.**

12 A. I graduated from the University of Nebraska with a Bachelor of Science Degree in
13 Electrical Engineering in 1989. In 1993, I earned a Master of Business
14 Administration (MBA) from Rockhurst University. I became a Registered
15 Professional Engineer in Missouri in 1995. In 1997, I earned a Master of Science
16 Degree in Electrical Engineering from Kansas State University.

17 I began my career with St. Joseph Light & Power Company ("SJLP") as a
18 Planning Engineer in the System Planning and Operations Department in 1990. In
19 1993, I was promoted to Sr. Planning Engineer. In 1996, I accepted the position
20 of Director, Fuel Procurement.

1 In 1997, I accepted a position with Kansas City Power & Light Company
2 (“KCPL”) as Manager, Resource Management and Deal Structuring where I
3 supervised the team responsible for KCPL’s integrated resource planning efforts
4 and performed front office asset-backed deal structuring.

5 In 2000, I accepted a position with M.S. Gerber & Associates (“MSG”) as Vice
6 President of Consulting. MSG was acquired by Global Energy Decisions
7 (“GED”) in 2004 at which time I accepted the position of Vice President, Strategy
8 Analysis within GED’s Consulting Division. In 2007, Ventyx acquired Global
9 Energy Decisions at which time I was promoted to Sr. Vice President. In my
10 current capacity at Ventyx, I head the Resource Planning Group within the Ventyx
11 Consulting Division.

12 In my career, I have development or assisted in the development of Integrated
13 Resource Plans in Arizona, Arkansas, Colorado, Idaho, Indiana, Illinois, Kansas,
14 Louisiana, Minnesota, Missouri, Oklahoma, Oregon, Pennsylvania, South Dakota,
15 Tennessee, Texas, Utah, Virginia, Washington, Wisconsin and Wyoming.

16 My resume is attached to my testimony as Exhibit DAB-1.

17 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS CASE?**

18 **A.** I am testifying on behalf of Black Hills Power, Inc. (“Black Hills Power” or the
19 “Company”).

20 **II. PURPOSE OF TESTIMONY**

21 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

1 A. The purpose of my testimony is to provide the Commission with an understanding
2 of the models that were used and analysis that was done for Black Hills Power's
3 2007 Integrated Resource Plan ("Integrated Resource Plan" or "IRP").

4 **III. INTEGRATED RESOURCE PLAN**

5 **Q. PLEASE DESCRIBE YOUR INVOLVEMENT AND THE INVOLVEMENT**
6 **OF VENTYX IN THE PROCESS OF DEVELOPING THE INTEGRATED**
7 **RESOURCE PLAN.**

8 A. In January 2007, Ventyx was retained as a subcontractor by Technically Speaking
9 for the purpose of performing the modeling and analysis requirements for the
10 Black Hills Power 2007 IRP.

11 **Q. DO YOU AGREE WITH THE TESTIMONY OF WITNESS DAVID A.**
12 **SCHLISSEL ("SCHLISSEL") THAT STATES BLACK HILLS POWER**
13 **DID NOT ADEQUATELY CONSIDER THE POTENTIAL FINANCIAL**
14 **RISKS OF FUTURE CO₂ EMISSIONS IN ITS 2007 IRP?**

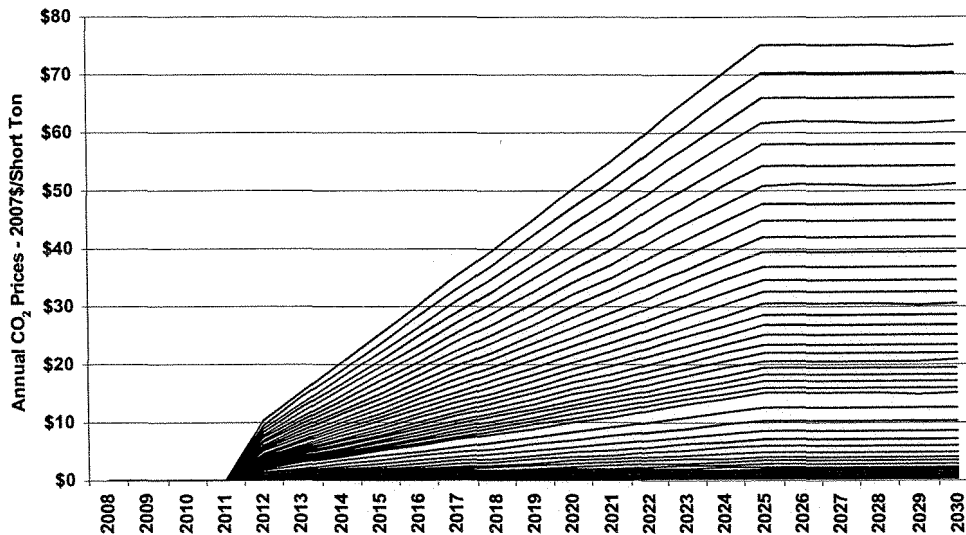
15 A. No. While Schlissel documented numerous CO₂ forecasts from a variety of
16 sources, he failed to recognize Black Hills Power included 50 stochastic CO₂ price
17 trajectories in the analysis and selection of the least cost plan.

18 **Q. PLEASE DEFINE A STOCHASTIC PROCESS.**

19 A. In probability theory, a stochastic process (or random process), is the counterpart
20 to a deterministic process (or single point forecast process). Instead of considering
21 only a few possible CO₂ price futures, in a stochastic or random process there are

1 numerous possible futures described by probability distributions. The probability
2 distributions assign likelihood to each possible future where the fundamental
3 drivers of electricity price (e.g. fuel prices, load, emissions, capital cost, etc.) are
4 often correlated. The stochastic CO₂ price trajectories considered in the 2007 IRP
5 Risk Analysis section are shown in Figure 1.

6 **Figure 1: Annual Stochastic CO₂ Prices – Black Hills Power 2007 IRP**
7 **Risk Analysis**

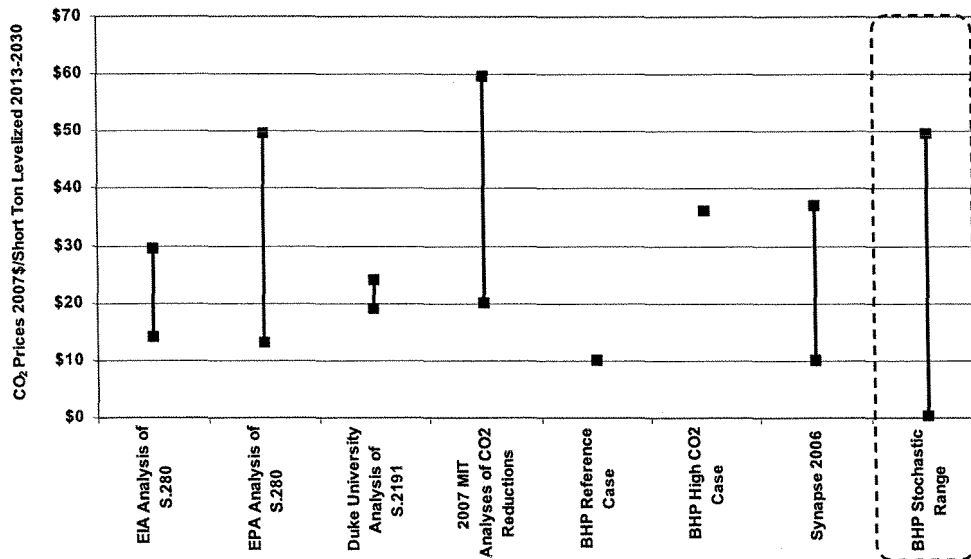


8
9 **Q. HOW DOES THIS RANGE OF CO₂ PRICES COMPARE TO THE RANGE**
10 **OF PRICES OFFERED BY SCHLISSEL (*Docket No. EL09-018, Direct***
11 ***Testimony of David A. Schlissel, Page 5, Figure 2)***

12 **A.** The range of Black Hills Power stochastic CO₂ prices used in the 2007 IRP Risk
13 Analysis was compared to Schlissel's levelized costs for the years 2013 through
14 2030 (in 2007 dollars). Figure 2, shown below, is a recreation of Schlissel's

1 Figure 2 with the addition of the Black Hills Power stochastic CO₂ price range
 2 (highlighted by the dotted line). The Black Hills Power stochastic CO₂ range is
 3 wider than the five forecasts referenced by Schlissel, and only the MIT analysis
 4 has a higher upper bound. While Schlissel states that the CO₂ prices used by
 5 Black Hills Power were unreasonably low, Figure 2 illustrates they were in fact
 6 wider, higher, and more diverse than the CO₂ forecasts referenced by Schlissel.

7 **Figure 2: Levelized CO₂ Prices – Black Hills Power Reference Case and**
 8 **Stochastic CO₂ Prices vs. EPA, EIA, MIT and Duke Analyses and Synapse**
 9 **Price Forecasts as of 2007**



10

11 **Q. WHAT WAS THE SOURCE OF THE CO₂ PRICES USED IN THE IRP?**

12 A. Ventyx considered a wide range of possible legislation; No legislation, CO₂ tax,
 13 CO₂ cap and trade with international off-sets, CO₂ cap and trade without
 14 international off-sets, and command and control. CO₂ price trajectories were
 15 calculated for the legislative alternatives providing a distribution of CO₂ price

1 trajectories as shown in Figure 1. A probability distribution was assigned to the
2 possible legislation, providing a weighting of the likelihood of the 50 possible
3 futures. As verification, Ventyx used a similar approach as Schlissel where the
4 CO₂ price trajectories were compared to publicly available forecasts developed by
5 other consultants and public agencies.

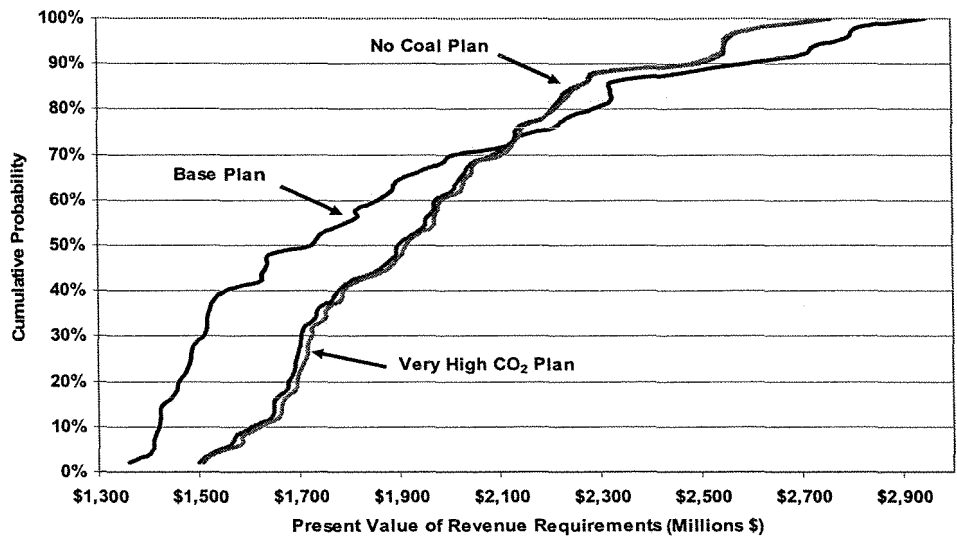
6 **Q. HOW DID VENTYX CONSIDER THE 50 CO₂ PRICE TRAJECTORIES IN**
7 **THE SELECTION OF THE LEAST COST PLAN?**

8 A. As described in the Risk Analysis section of the IRP; Ventyx considered
9 uncertainty under 50 possible future conditions. For example, if CO₂ prices are
10 high, then it is likely that there will be higher demand for natural gas, which drives
11 the price of natural gas higher, which in turn drives the price of wholesale
12 electricity higher. To capture the correlation and interplay of the fundamental
13 drivers of electricity, Ventyx used a sophisticated market model to model the
14 North American generating assets, load, and transmission system to determine the
15 hourly flows and market clearing price of electricity for each possible future.

16 For the Black Hills Power resource plans described in the Risk Analysis section of
17 the IRP, the net present value of revenue requirements (“PVRR”) was calculated
18 for each possible future. To determine the least cost plan including risk,
19 cumulative probability distributions (also known as risk profiles) were created.
20 The expected value of the distribution was a determining factor in the selection of
21 the least cost plan as was consideration of risk contained in the “tails” of the

1 distribution. The risk profiles of Figure 3, which take into account the 50
2 stochastic scenarios, illustrate the Base Plan is the least cost plan for 70% of the
3 possible futures.

4 **Figure 3: Black Hills 2007 IRP Risk Profiles – Base Plan, No Coal Plan,**
5 **Very High CO₂ Plan**



6
7 **Q. DO YOU AGREE WITH SCHLISSEL'S ASSERTION THAT THE**
8 **COMMISSION SHOULD ONLY GIVE MINIMAL WEIGHT TO ANY**
9 **ANALYSIS THAT USED BLACK HILLS POWER'S REFERENCE CASE**
10 **CO₂ PRICES?**

11 **A.** No. It is clear Schlissel did not recognize the depth of CO₂ price trajectories that
12 were used for the selection of the least cost plan. As described earlier in this
13 testimony, the least cost plan was selected using a set of 50 uncertain futures
14 where the expected value and risk of the plans were considered. The Reference

1 Case CO₂ prices were not used for selecting the least cost plan, but rather the
2 selection of the least cost plan was based on 50 scenarios of CO₂ price correlated
3 with other fundamental market drivers.

4 **Q. HOW WAS THE REFERENCE CASE USED IN THE DEVELOPMENT OF**
5 **THE IRP?**

6 A. For nearly 10 years, Ventyx has produced a 25-year forward view of wholesale
7 electricity, fuel, and emission markets updated each spring and fall. This forecast
8 is known as the Ventyx Reference Case. As part of this outlook, Ventyx examines
9 changes in market design and conditions and incorporates them into the forward
10 view. The forecast provides an independent, unbiased analysis that is widely used
11 by credit rating agencies, investment banks, energy companies, utilities and by the
12 engineers, consultants and attorneys who serve them.

13 Beginning with the Spring 2007 Reference Case, a CO₂ price has been included in
14 the forward view. The inclusion of a CO₂ price was driven by two factors: 1) In
15 the fall 2006 elections, the Democratic Party took control of both houses of the
16 United States Congress making federal CO₂ legislation more likely; 2) during
17 2006, California became the first state in the nation to enact greenhouse gas
18 (“GHG”) legislation—AB32, The California Global Warming Solutions Act of
19 2006. Governor Schwarzenegger’s success in getting other western governors and
20 the premier of Manitoba to join forces to create a multi-state action plan to

1 implement GHG reductions was a real and material change in both the political
2 and energy dynamic in the Western Electricity Coordinating Council (“WECC”).
3 The Reference Case Forecast was used for the Black Hills Power IRP to provide a
4 base line projection using an independent forward view. However, as explained
5 earlier in this testimony, the selection of the least cost plan was based on 50
6 scenarios of CO₂ price correlated with other fundamental market drivers.

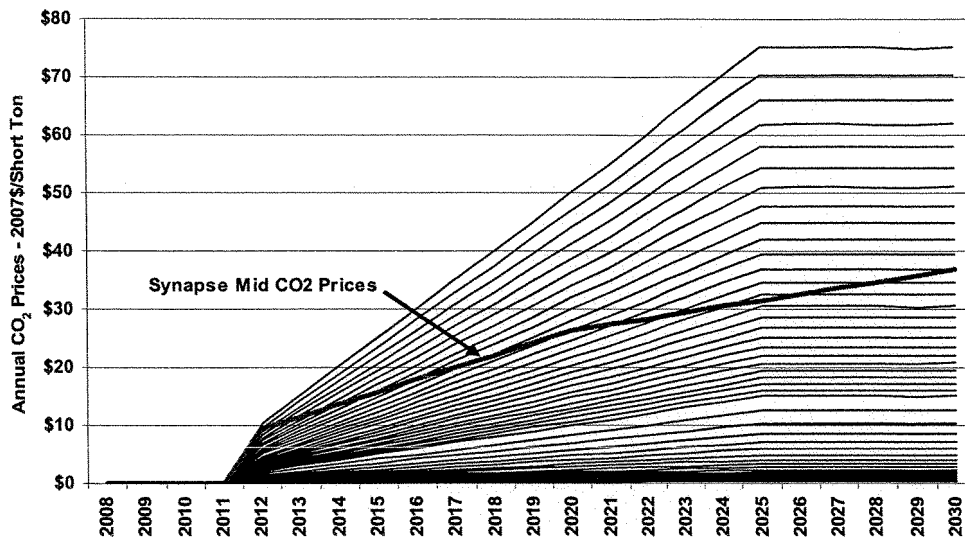
7 **Q. SCHLISSEL RECOMMENDS A MORE REASONABLE CO₂ PRICE FOR**
8 **BLACK HILLS POWER WOULD HAVE BEEN A SET OF CO₂ PRICES**
9 **SIMILAR TO THE SYNAPSE MID CO₂ PRICE FORECAST. DO YOU**
10 **AGREE WITH THIS RECOMMENDATION?**

11 A. No. CO₂ legislation was, and continues to be, highly uncertain. As such,
12 considering a stochastic range of CO₂ prices rather than focusing on a single
13 forecast provides Black Hills Power customers with the least cost plan while
14 considering risk.

15 **Q. HOW DOES THE SYNAPSE MID CO₂ PRICE FORECAST COMPARE**
16 **WITH THE VENTYX STOCHASTIC CO₂ RANGE?**

17 A. In Figure 4, the Synapse Mid CO₂ price forecast was superimposed with the Black
18 Hills Power stochastic CO₂ price forecast. Figure 4 illustrates that the Synapse
19 forecast lies in the middle of the Black Hills Power stochastic CO₂ price forecasts.

20 **Figure 4: Annual Stochastic CO₂ Prices – Black Hills Power 2007 IRP**
21 **Risk Analysis vs. Synapse Mid CO₂ Price Forecast**



1

2 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

3 A. Yes, it does.

4