Exhibit 38
Eric Scherr Rebuttal Testimony

Before the Public Service Commission
of the State of Wyoming

Joint Application of
Cheyenne Light, Fuel and Power Company
and Black Hills Power, Inc.
For a Certificate of Public Convenience
and Necessity for a Gas-Fired
Electric Generating Power Plant and
Related Facilities

Docket No. 20003-113-EA-11

Record No.13007

Docket No. 20002-81-EA-11

June 18, 2012

EXHIBIT
38

Table of Contents

I. Introduction and Background 1

II. Purpose of Testimony 1

III. IRP Overview 2

IV. Additional Analysis Conducted for Cheyenne Light 3

V. Additional Analysis Conducted for Black Hills Power 7

Exhibits

Exhibit 39 Cheyenne Light Load and Resource Balance

I. INTRODUCTION AND BACKGROUND

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Eric Scherr. My business address is 2828 Plant Street, Suite B, Rapid City, SD 57709.

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

A. I am a Forward Marketer for Black Hills Power, Inc. (Black Hills Power). At the time the joint Cheyenne Light and Black Hills Power CPCN application and my direct testimony were filed, I was a Resource Planning Engineer for Black Hills Utility Holding Company, an affiliate of Cheyenne Light, Fuel and Power Company (Cheyenne Light) and Black Hills Power.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. I provide an overview of the integrated resource planning (IRP) analyses undertaken by Cheyenne Light and Black Hills Power. I describe the analysis undertaken after the completion of the Cheyenne Light and Black Hills Power IRPs to evaluate a jointly-owned combined cycle unit in Cheyenne, Wyoming in addition to the combustion turbine generator.

III. IRP OVERVIEW

Q. PLEASE PROVIDE A SUMMARY OF THE IRP CONDUCTED BY CHEYENNE LIGHT.

A. Cheyenne Light began its analysis of resource needs in late 2010 because it recognized a need for new resources to offset load growth and expiring power purchase agreements (PPA) over the next several years. In the course of preparing its IRP, Cheyenne Light considered a full range of appropriate supply-side and demand-side resources for the development of its resource portfolio. The demand-side options included such programs as lighting, water heating, refrigerator recycling, and energy audits for residential customers and prescriptive rebates and custom rebates for commercial customers. Supply-side options included different configurations of natural gas-fired combined cycle generation, several types of natural gas-fired simple cycle combustion turbines, a pulverized coal-fired unit, firm market purchases, wind, and solar power.

In June of 2011, Cheyenne Light completed its IRP, which identified a preferred plan that included the addition of three combustion turbine generators (CTG) in 2014. On August 1, 2011, Cheyenne Light filed a Certificate of Public Convenience and Necessity (CPCN) application with the Wyoming Public Service Commission (WPSC) requesting approval to construct three CTGs at a site in Cheyenne, Wyoming.

Q. PLEASE PROVIDE A SUMMARY OF THE IRP CONDUCTED BY BLACK HILLS POWER.

1 A. Black Hills Power began work on an IRP in mid-2011 when it became apparent
2 that environmental regulatory requirements applicable to some of its existing
3 coal-fired generating facilities would require retirement of the units in 2014. In
4 the course of preparing its IRP, Black Hills Power considered a full range of
5 appropriate supply-side and demand-side resources for the development of its
6 resource portfolio. The demand-side options included such programs as water
7 heating, refrigerator recycling, residential heat pumps and energy audits for
8 residential customers and prescriptive rebates and custom rebates for commercial
9 customers. Supply-side options included different configurations of natural gas-
10 fired combined cycle generation, several types of natural gas-fired simple cycle
11 combustion turbines, a pulverized coal-fired unit, existing unit upgrades,
12 conversion of combustion turbine to combined cycle, existing unit purchase, firm
13 market purchases, wind, and solar power.
14 The initial modeling for the Black Hills Power IRP, completed in July
15 2011, showed a preferred plan that included conversion of a CTG to combined
16 cycle (CC) operation in 2014. The CC unit modeled includes two CTGs, a heat
17 recovery steam generator (HRSG), and a turbine. This resource adds 55 MW of
18 capacity (reflective of the new CTG and the heat recovery steam generator
19 (HRSG)) and results in a 95 MW combined cycle unit with a significantly
20 improved heat rate over that which would be experienced with a CTG.
21 **IV. ADDITIONAL ANALYSIS CONDUCTED FOR CHEYENNE LIGHT**
22 **Q. PLEASE DESCRIBE HOW THE RESULTS OF THE BLACK HILLS**
23 **POWER IRP AFFECTED THE DECISIONS OF CHEYENNE LIGHT**

MANAGEMENT WITH REGARD TO THE CHEYENNE LIGHT IRP AND ITS RESULTING CPCN.

A. As described in the testimony of Kyle White, because the Cheyenne Light IRP showed the need for CTGs in 2014 and the Black Hills Power IRP showed the need for a CTG conversion to a CC unit in 2014, in August 2011, company management began to investigate the possibility that one of the Cheyenne Light CTGs in the already-filed Cheyenne Light CPCN could serve as the base for the CTG to CC conversion indicated as the 2014 resource option in Black Hills Power's preferred plan. To evaluate the cost and risk of this option, in September 2011, additional capacity expansion and production cost modeling was conducted for Cheyenne Light.

Q. PLEASE DESCRIBE THE RESULTS OF THE ADDITIONAL CAPACITY EXPANSION MODELING THAT WAS CONDUCTED FOR CHEYENNE LIGHT.

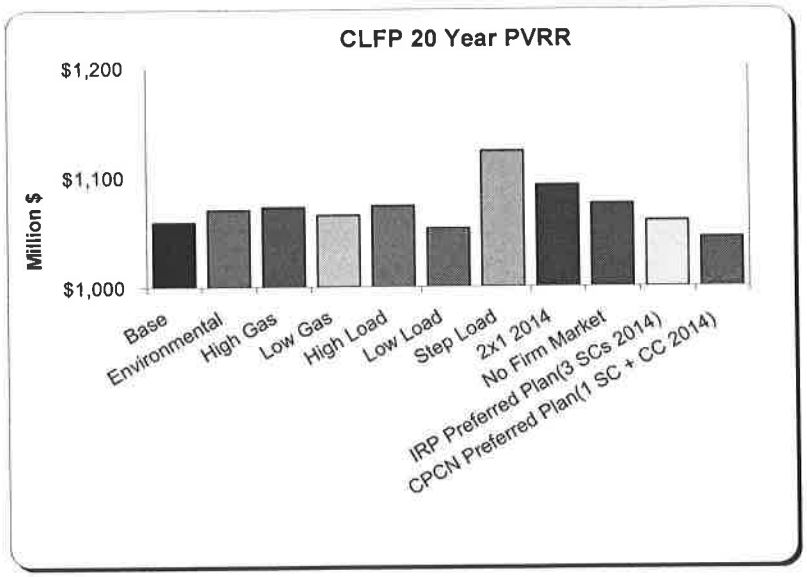
A. In September, 2011 the resource optimization portion of the Cheyenne Light IRP modeling was rerun to determine the optimal plan (preferred plan) with the resource options revised to include a jointly-owned combined cycle unit and the ability to make firm market purchases of 50 MW in all months of the year. The additional capacity expansion model selected the jointly-owned combined cycle conversion and one CTG as the optimal resource build in 2014.

Q. YOU MENTIONED THAT ADDITIONAL PRODUCTION COST MODELING WAS ALSO COMPLETED FOR CHEYENNE LIGHT.

PLEASE DESCRIBE THE RESULTS OF THIS ADDITIONAL MODELING.

A. To verify the financial impact on Cheyenne Light, the additional capacity expansion results were run through the production cost module. The results of the additional production cost modeling showed that the present value of revenue requirements (PVRR) of this new plan [shown on Figure 3-1 below as CPCN Preferred Plan] (one CTG [referred to as simple cycle – SC on Figure 3-1] and joint ownership in a CC) are lower than Cheyenne Light's original preferred plan (three CTGs). Figure 3-1 in the joint Cheyenne Light and Black Hills Power CPCN application (reproduced below) shows the PVRR of all the scenarios evaluated in the Cheyenne Light IRP and the additional analysis.

FIGURE 3-1



Q. WHAT FURTHER ANALYSIS WAS CONDUCTED IN SEPTEMBER AND OCTOBER, 2011 TO DEMONSTRATE THAT THE CTG AND THE

1 **JOINTLY-OWNED CC ARE THE LEAST RISK RESOURCES TO SERVE**
2 **CHEYENNE LIGHT'S CUSTOMER'S NEEDS?**
3 A. Upon the completion of the additional capacity expansion modeling and the
4 additional production cost modeling, in September, 2011 Cheyenne Light
5 examined risk factors related to the CTG versus CC decision including system
6 regulation, capital cost, environmental, regulatory, market, and resource. In total,
7 these risk factors showed that the CC presented lower risk over the planning
8 period than did a CTG for Cheyenne Light's customers.
9 Analyses relating to capacity factor, load duration curve fit, system
10 regulation, operation, carbon emissions, and run hours were undertaken in
11 September and October, 2011 as discussed in greater detail on pages 48 through
12 51 in the joint Cheyenne Light and Black Hills Power CPCN application. Over
13 the planning horizon, this analysis demonstrated that the CC conversion showed a
14 lower risk to the Cheyenne Light customers versus the CTG.
15 **Q. HOW WAS THE RISK ASSOCIATED WITH MARKETS EVAULATED?**
16 A. To assess the risk associated with the possible unavailability of economy energy,
17 capacity factors for the CTG and the CC with and without economy energy were
18 compared. When economy energy is assumed to be curtailed or not economic,
19 there is a sharp increase in the level of operation of the CTG and CC units.
20 Because a CC operates more efficiently than a CTG, Cheyenne Light customers
21 will benefit from the reduced operating costs of a CC versus a CTG.
22 **Q. HOW DOES THE ADDITION OF A CTG AND A JOINTLY-OWNED CC**
23 **LIMIT CHEYENNE LIGHT'S OPERATIONAL RISK?**

1 A. Generating units for the electric utility industry are generally categorized as
2 baseload, intermediate, peaking, or super peaking. A resource mix that consists of
3 each of these types of capacity generally provides the most operating flexibility
4 for utilities. Currently, Cheyenne Light has adequate baseload capacity which is
5 provided by Wygen I and Wygen II. The addition of a jointly-owned CC, which
6 will serve as an intermediate and peaking resource, will provide Cheyenne Light
7 with greater diversification of its resource portfolio.

8 **V. ADDITIONAL ANALYSIS CONDUCTED FOR BLACK HILLS POWER**

9 **Q. WHAT ANALYSIS WAS CONDUCTED TO VERIFY THAT THE**
10 **JOINTLY-OWNED CC LOCATED IN CHEYENNE IS THE PREFERRED**
11 **RESOURCE PORTFOLIO TO SERVE BLACK HILLS POWER'S**
12 **CUSTOMER'S NEEDS?**

13 A. To verify the impact of a jointly-owned combined cycle unit on Black Hills
14 Power's preferred plan, additional production cost modeling was completed in
15 September 2011. This analysis was conducted because although the Black Hills
16 Power preferred plan included the conversion of an existing CTG to a combined
17 cycle unit, it assumed the full output of a CC would be available for Black Hills
18 Power through the conversion of an existing CTG.

19 **Q. PLEASE DESCRIBE THE RESULTS OF THE ADDITIONAL**
20 **PRODUCTION COST MODELING CONDUCTED FOR BLACK HILLS**
21 **POWER.**

22 A. The ten (10) Black Hills Power scenario model runs included in the original Black
23 Hills Power IRP were remodeled in September, 2011, with only 55 MW of a

jointly-owned combined cycle unit available to Black Hills Power rather than 95 MW of a combined cycle, as modeled in the initial IRP analysis. There was a slight increase, approximately 1%, in the 20-year PVRR of all ten scenarios with this changed assumption. Because the increase was similar in all ten scenarios, the Base scenario, which selected a CC conversion, is still the preferred plan for Black Hills Power.

Q. WILL THE ADDITION OF GENERATION THAT RESULTS IN A NET OUTPUT OF 77 MW RATHER THAN 114 MW, AS IDENTIFIED IN THE CHEYENNE LIGHT IRP, BE SUFFICIENT TO MEET CHEYENNE LIGHT'S NEEDS?

A. Yes, the Load and Resource Balance set forth in Exhibit 39 shows that with the addition of a 37 MW CTG , 40 MW of a CC, (36.2 MW CTG and 39 MW CC as shown in the Load and Resource Balance are summer ratings) and the availability of 50 MW of firm market purchase, the resource needs of Cheyenne Light will be met, including a 15% reserve margin, until 2023 when the model indicates that the next conventional resource will be needed.

Q. PLEASE PROVIDE A SUMMARY OF WHY THE RESOURCES REQUESTED IN THE JOINT CHEYENNE LIGHT AND BLACK HILLS POWER CPCN APPLICATION ARE THE LEAST COST, LEAST RISK RESOURCE OPTION FOR CHEYENNE LIGHT'S AND BLACK HILLS POWER'S CUSTOMERS.

A. Cheyenne Light and Black Hills Power completed independent IRPs that identified preferred plans that included the installation of natural gas-fired

1 resources in the 2014 time frame. Due to this common need, the two companies
2 began to investigate the benefits of jointly locating resources in Cheyenne. After
3 significant additional analysis, analyzing both the costs and risks, a jointly-owned
4 CC and a CTG located in Cheyenne became the 2014 resources that provide the
5 least cost, least risk resource for both Cheyenne Light and Black Hills Power.
6 The benefits that result from the proposed resources include resource mix
7 benefits, operational and environmental benefits, and market risk benefits. The
8 lower heat rate of a CC provides several benefits including reduced reliance on
9 economy energy markets, providing a hedge against future natural gas prices, the
10 ability to provide more economical system and wind regulation, and lower
11 emissions reducing exposure to possible future CO_2 taxes or regulations.
12 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**
13 A. Yes, it does.

STATE OF Wyoming)
: ss
COUNTY OF Laramie)

I, Eric Scherr, being first duly sworn on oath, depose and state that I am the witness identified in the foregoing prepared testimony and I am familiar with its contents, and that the facts set forth are true to the best of my knowledge, information and belief.

ERIC SCHERR

Subscribed and sworn to me this 18 day of June, 2012

NOTARY PUBLIC Sheila M. Suurmeier

My Commission Expires: Nov. 2, 2013

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