BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

In the Matter of Black Hills Power, Inc. dba Black Hills Energy's Application for Adjustment in its Cogeneration and Small Power Production Service Simultaneous Net Billing Generation Credit Rate(s)	**Docket No. EL16-042**

Mr. Bell's Petition to Intervene Response

1. Summary of Current Docket Situation

On December 30, 2016, the South Dakota Public Utilities Commission (Commission) received an application from Black Hills Power, Inc. dba Black Hills Energy (BHE) for approval of an adjustment to its Cogeneration and Small Power Production Service Simultaneous Net Billing Generation Credit Rate (GCR). This filing updated the GCR based on BHE's alleged current avoided costs and requested a reduction in the GCR from the current rate of $0.0332/kWh to $0.0270/kWh. BHE requested an effective date of March 1, 2017. On January 5, 2017, the Commission electronically transmitted notice of the filing and the intervention deadline of January 20, 2017, to interested individuals and entities on the Commission's PUC Weekly Filings electronic listserv. On February 13, 2017, Richard A. Bell, PE, CEM filed a Petition to Intervene and requested a 90-day extension on the effective date of this matter.

At its regularly scheduled meeting on February 28, 2017, the Commission considered the petition for intervention and the 90~day extension. BHE stated that it did not object to granting the petition to intervene or the 90-day extension. Finding that the petition demonstrated good cause to grant intervention and the 90-day extension, the Commission voted unanimously and ordered to grant intervention and the 90-day extension to Richard A. Bell. He subsequently signed a non-disclosure agreement (NDA) with BHE and reviewed a number of confidential files upon which BHE's request for a reduction in the GCR was based.

2. Introduction - What is an avoided cost and what is an avoided cost rate?

When qualifying facilities ("QFs"), like solar facilities, wind farms, and biomass plants are built, they enable utilities to avoid the costs of building and operating a utility-owned power plant. Under federal law, these avoided costs determine how much QFs should be paid for the electricity they sell into the grid. When avoided cost rates are set correctly, the amount the utility pays for renewable power purchased from QFs does not increase customers' bills at all because the money paid to QFs would have been spent anyway on conventional power. Avoided cost rates play a key role in the continued development of our renewable energy industry. Like tax credits, fair avoided cost policy allows renewable energy to penetrate South Dakota's otherwise highly regulated and very limited energy market. And these rates directly impact how much renewable energy project developers get paid for the electricity they sell to the utilities.

However, when those rates aren't fair, the businesses and their projects (and the associated economic development) will go elsewhere. SD's clean energy industry already contributes millions of dollars to the state's economy. So the SD-PUC's avoided cost policy is critical for our state in order for us to become a leader in clean energy development.

3. Background on Mr. Bell's Solar System

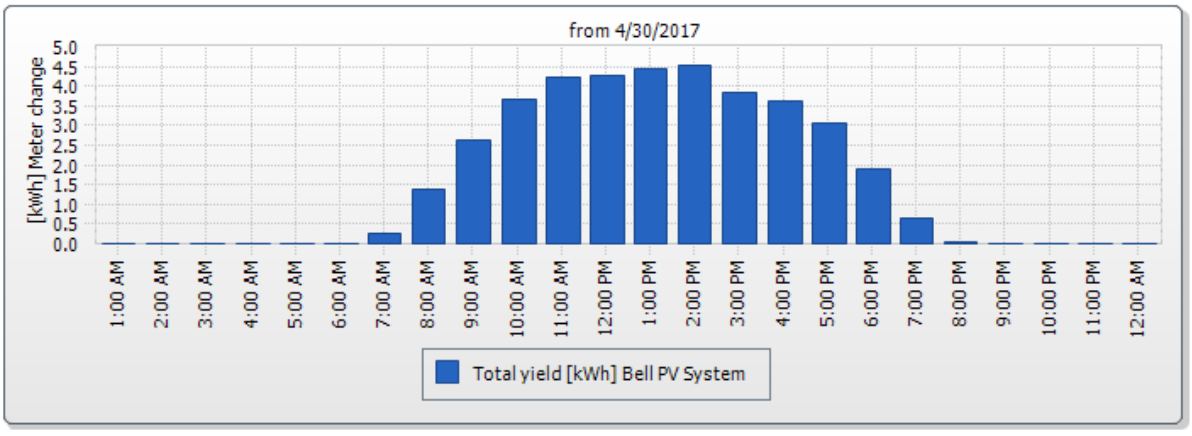
As background to this Intervention response, an explanation of Mr. Bell's solar system is appropriate. His system consists of eighteen (18)-310W panels for a total of 5.6 kW and was commissioned at the end of July, 2016.

A typical day's generation from April 30, 2017, is shown in the Figure 1 below. It was a sunny day and 38.43 kWh was generated, bringing the total yield for the month of April to 764 kWh. Like all solar systems, it generates the most renewable energy during the middle of the day when the sunshine is the strongest. This is also typically the time when residential electricity consumption is the lowest, so most of the power goes back to the grid. Then he relies upon the grid to supply power during the remainder of the day and night.

Figure 1

Bell PV System Daily report

Devices/PV system	Total yield Meter Change [kWh] 4/30/2017	Total yield Meter Change [kWh] April 2017	Total yield Meter Change [kWh] 2017
Bell PV System	38.45	763.97	2134.10
	38.45 [Total]	763.97 [Total]	2134.10 [Total]



Looking at data for a longer period of time, Table 1 below shows data for the last nine months (August, 2016 – April, 2017) when Mr. Bell's system has been in operation. It includes the amount of energy consumed from the grid, the excess amount returned to the grid, the amount of power generated by the solar panels, plus the various costs and credits.

Table 1

Month	Usage from BHE (kWh)	Electric Cost	Account Charge	PV Generation (kWh)	Excess to Grid (kWh)	Credit	Invoice Total Cost
Aug-16	103	$15.62	$9.25	843	(634)	($21.05)	$3.82
Sep-16	134	$20.12	$9.25	770	(579)	($19.22)	$10.15
Oct-16	177	$26.41	$9.25	624	(469)	($15.57)	$20.09
Nov-16	297	$43.87	$9.25	446	(339)	($11.25)	$41.87
Dec-16	1,010	$148.11	$9.25	297	(139)	($4.61)	$152.75
Jan-17	840	$123.29	$9.25	365	(224)	($7.44)	$125.10
Feb-17	463	$68.21	$9.25	411	(305)	($10.13)	$67.33
Mar-17	387	$57.12	$9.25	594	(429)	($14.24)	$52.13
Apr-17	219	$32.58	$9.25	764	(619)	($20.55)	$21.28
Total	3,630	$535.33	$83.25	5,115	(3,737)	($124.06)	$494.52

From a cost standpoint, a credit of $124 was received during this period, offsetting electric costs that would have otherwise been $535, reducing the total invoice cost to $495. So this is equivalent to a savings of 23%. This may seem good, however, more energy was sent back to the grid (3,737 kWh) than was taken from it (3,630 kWh) over the last nine months. From a solar generation standpoint, the 3,737 kWh that was sent back to the grid represents 73% of the total solar power that was generated (5,115 kWh). And during the upcoming summer months, when will solar generation be greater, it is expected that an even larger percentage of power will go back to the grid. The question is: Is this an equitable arrangement?

4. Review Comments on This Docket

A number of potential benefits were evaluated during the review of avoided costs as part of this intervention pertaining BHE's proposed reduction in their Generation Credit Rates. Table 2 shown below is a summary of the benefits assessed in this case.

Table 2: Summary of Benefits Assessed in this Case

Benefits to BHE Customers	Fully Valued	Undervalued	Not Included
Energy			
Avoided energy (including fuel)	√		
Avoided T&D line losses	√		
Capacity			
Avoided generation capacity		√	
Avoided T&D capacity and fixed O&M		√	
Grid support services			√
Financial			
Fuel hedging	√		
Avoided RPS or renewables costs			√
Grid security and resiliency			√
Environmental			
Air Pollutants (NO_x, SO_x, PM, & CO_2)		√	
Reduced water usage in power production			√
Avoided land costs for generation or T&D			√
Societal benefits			
Job creation benefits			√
Economic development, including local taxes			√
Avoided health impacts			√

Unfortunately given the limited amount of time and effort allowed for this review, most of these benefits will not be developed fully, but are shown here because avoided costs as calculated by BHE do not take into account many of the benefits that are included in many other states. It is believed that more of these types of benefits should be included in the avoided cost methodology used in South Dakota.

For purposes of this Intervention response, a select few of these beneficial items will be further expanded upon herein to demonstrate that BHE's request to reduce the GCR from its current rate of $0.0332/kWh to $.027/kWh provides them with a return that unfair and unreasonable.

A. Capacity- related costs were not taken into consideration

It appears that avoided generation capacity, avoided T&D capacity and fixed O&M were not adequately taken into account. SDPUC Request No. 4-4 concerning this subject asked BHE: "In the absence of a separate capacity credit to ratepayers, quantify how much of the $0.027 proposed credit rate is attributable to capacity credits." BHE responded: "As noted in Exhibit 1 of the Company's Informational Compliance Filing pursuant to 18 CFR 292.302, the Company's load and resource balance showed that Black Hills will have sufficient capacity resources to serve customer electricity demand, including a 15 percent reserve margin, over the ten-year planning period (2017 through 2026). Therefore, the addition of QFs during the planning period will not result in avoided capacity cost. The Company does estimate that seasonal firm energy will be required in years 2017 through 2021. The

Company did evaluate the seasonal firm energy need for each portfolio (the portfolio without a QF and the portfolio with a QF) and adjusted the seasonal firm energy purchase assumptions based on the capacity shortfall for the portfolio. Seasonal firm market purchases are firm energy purchases during on-peak hours (16 hours per day, six days per week) for up to three months of the year. Because these purchases are short-term in nature, the Company does not consider seasonal firm energy purchases capacity additions. Therefore, the addition of qualifying facilities during the ten-year planning period will not result in avoided capacity costs and none of the proposed $0.027 credit rate is attributable to capacity credits." However, This Intervener is recommending that the Commission not accept this argument. Just because these seasonal purchases are short term in nature does not mean that they are not capacity additions.

B. BHE's Mark-up and Profit from Renewable Energy is Excessive

When electricity is generated by residential renewable energy sources and excess power is sold to BHE, where does it go? The reality is that it is actually used by the closest neighbors in the immediate area where it is generated. Not only does BHE enjoy transmission cost savings, but these neighbors will be paying $0.09989 /kWh for this energy plus $0.03695/ kWh for the Cost Adjustment Summary (CAS) for a total of $0.13684/kWh (not including taxes). This is for electricity that is obtained by paying people with small generation capacity only $0.027/kWh. So it's an unreasonable 500% mark-up in costs. Note that the CAS includes Base Costs that "cover the remaining costs of delivering electricity," which is unreasonable given that this cost is virtually zero. The CAS also includes an Energy Cost Adjustment (ECA), which again, is unreasonable given that BHE does need to be compensated for any Fuel and Purchased Power Adjustment (FPPA) or Transmission Cost Adjustment (TCA) for this power that is generated and used in the immediate area. Likewise, it is unreasonable to compensate BHE for the Energy Efficiency Solutions Adjustment (EESA), the Environmental Improvement Adjustment (EIA), and the Transmission Facility Adjustment (TFA). Therefore, at the end of the day, it grants an excessive amount of profit to the company at the expense of the small generator.

In addition, the proposed GCR does not include any Renewable Energy Credit (REC) value. Although BHE does not need to acquire RECs for compliance with state or national Renewable Energy Standards at this time, by assuming that RECs created by renewable energy resources have no value, it puts the onus of responsibility to sell their RECs onto the individual generator who must negotiate from a position of weakness because there is no economy of scale.

C. There are only a Small Number of Affected Customers

At present, there are only 35 small power production customers (25 residential and 10 commercial) in the BHE network who are affected by this proposed reduction in the GCR.

So being a small number of affected customers makes it difficult to make our voices heard. However, if BHE does not provide a more reasonable rate of return to small QF's, people with distributed energy resources (DERs) will be driven to seek alternative ways to use or sell their power. When technologies like batteries and blockchain become more cost-effective and widely available, people with DERs will not sell their excess energy generation to the regulated utilities with such low rates and the utilities will be the losers.

D. Use of Average vs. Peak Rates

BHE used cost avoidance methodology that was based on averaging the peak and non-peak values. However, as noted above, during the middle of the day when solar generation is highest and residential consumption is the lowest, most of the power that is generated is being delivered back to the grid. This is also the time when BHE's demand is the highest and generation often needs to be cranked up. It is also the time when BHE pays highest on-peak rates when demand exceeds capacity and they need to purchase power from others. Therefore, the GCR rate should use the seasonal numbers that are based on peak rates rather than average rates. This would cause the GCR to be increased from $0.0275 /kWh to $0.0286/ kWh as shown in Table 3 (based on the format as shown in Ex. 5-3).

Table 3: Generation Credit Rate Based on Peak Values

Black Hills Power, Inc. d/b/a Black Hills Energy **Ex. 5-3 (Modified)**
Tariff Avoided Cost Calculation

Month	Seasonal Average (1)	Season	Month	Seasonal Average (2)	Season
Jun-17	$ 0.0270	Summer	Jun-17	$ 0.0284	Summer
Jul-17	$ 0.0270	Summer	Jul-17	$ 0.0284	Summer
Aug-17	$ 0.0270	Summer	Aug-17	$ 0.0284	Summer
Sep-17	$ 0.0270	Summer	Sep-17	$ 0.0284	Summer
Oct-17	$ 0.0256	Winter	Oct-17	$ 0.0267	Winter
Nov-17	$ 0.0256	Winter	Nov-17	$ 0.0267	Winter
Dec-17	$ 0.0256	Winter	Dec-17	$ 0.0267	Winter
Jan-18	$ 0.0269	Winter	Jan-18	$ 0.0278	Winter
Feb-18	$ 0.0269	Winter	Feb-18	$ 0.0278	Winter
Mar-18	$ 0.0269	Winter	Mar-18	$ 0.0278	Winter
Apr-18	$ 0.0269	Winter	Apr-18	$ 0.0278	Winter
May-18	$ 0.0269	Winter	May-18	$ 0.0278	Winter
Jun-18	$ 0.0281	Summer	Jun-18	$ 0.0294	Summer
Jul-18	$ 0.0281	Summer	Jul-18	$ 0.0294	Summer
Aug-18	$ 0.0281	Summer	Aug-18	$ 0.0294	Summer
Sep-18	$ 0.0281	Summer	Sep-18	$ 0.0294	Summer
Oct-18	$ 0.0269	Winter	Oct-18	$ 0.0278	Winter
Nov-18	$ 0.0269	Winter	Nov-18	$ 0.0278	Winter
Dec-18	$ 0.0269	Winter	Dec-18	$ 0.0278	Winter
Jan-19	$ 0.0295	Winter	Jan-19	$ 0.0303	Winter
Feb-19	$ 0.0295	Winter	Feb-19	$ 0.0303	Winter
Mar-19	$ 0.0295	Winter	Mar-19	$ 0.0303	Winter
Apr-19	$ 0.0295	Winter	Apr-19	$ 0.0303	Winter
May-19	$ 0.0295	Winter	May-19	$ 0.0303	Winter
Generation Credit Rate	**$ 0.0275**		**Generation Credit Rate**	**$ 0.0286**	

(1) Seasonal Average is the seasonal average contained within the Company's Informational Compliance Filing required by 18 CFR 292.302

(2) Using Peak rates from Avoided Cost of 10 MW Solar Project Summary - Fall 2016 Reference Case Forecasts (from CONF SDPUC 1-19 SD PUC Avoided Cost with 10 MW QF output)

5. Conclusions

It is well known that rapid changes in the electric utility industry currently exist. These changes include flat or declining electric sales, increased penetration of advanced metering infrastructure, and growing numbers of residential customers with their own renewable energy sources, such as wind and rooftop solar. These changes are driving utilities to propose new ways of collecting revenues from residential customers, or in this case, pay them less for the power they are putting back into the system. However, the recent move by BHE to decrease their GCR in reaction to these changes and as way to increase revenue is a move in the wrong direction. Such a reduction in the GCR sends the wrong signal to residential customers. It sends the signal that there's no value in conserving electricity or investing in energy efficiency.

So rather than reducing the GCR as a way to increase revenue, what else could BHE do? They could change the residential rate structures by collecting revenues through larger customer charges, volumetric rates that vary based on the time of day or season, and/or demand charges. However, one recent report (https://www.rmi.org/wp-content/uploads/2017/04/A-Review-of-Alternative-Rate-Designs-2016.pdf) explored the relationship between changes in residential rate design and energy efficiency, focusing on how rate structures can alter customer behavior. It was found was that when the rate design includes higher customer charges and demand charges, it actually increases overall consumption and discourages investments in energy efficiency technologies.

So what does work? The above-referenced report found that time-of-use (TOU) rates, potentially combined with other time-varying rate elements such as peak-time rebates (PTR) or critical-peak pricing (CPP), encourages investments in energy efficiency technologies and reduces peak demand. They found that these new types of rate also reduce overall consumption, meaning that customers are not simply shifting their usage outside of peak hours. Encouraging such results will ultimately become a huge benefit to utility companies like BHE. The SD-PUC should be embracing such an effective regulatory approach for the citizens of this state.

BHE has made its modeling for determining avoided costs as complex and opaque as possible. They have also cherry-picking assumptions about the future price of natural gas, by assuming that during periods when they had excess fossil fuel generation that solar power had no value rather than the value it would receive in the broader regional market, and by not taking into account the value of renewable energy credits, etc. The Commission should force BHE to make its methodology transparent and well understood by all the parties. Using such methods as other surrounding states have done, the results for an updated GCR would have been much different with avoided costs in the range of $0.05 to $0.06/kWh.

Now it is up to the Commission to decide. A unique opportunity exists here to adopt a competitive and fair Generation Credit Rate that will open up western South Dakota to the benefits of clean, abundant and economy-growing alternative energy sources.

Dated this 16th day of May, 2017.

Respectfully submitted,

Richard A. Bell

Richard A. Bell, PE, CEM