



CANADA'S OIL & NATURAL GAS PRODUCERS



**Submission to the
Saskatchewan Rate Review Panel**

Review of SaskPower's 2018 Rate Application

**Prepared by Drazen Consulting Group, Inc. on behalf of
the Canadian Association of Petroleum Producers and
the Explorers and Producers of Canada**



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Energy & Regulatory Economics

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The Canadian Association of Petroleum Producers (CAPP) represents companies, large and small, that explore for, develop and produce natural gas and crude oil throughout Canada. CAPP's member companies produce about 80 per cent of Canada's natural gas and crude oil. CAPP's associate members provide a wide range of services that support the upstream crude oil and natural gas industry. Together CAPP's members and associate members are an important part of a national industry with revenues from crude oil and natural gas production of about \$110 billion a year. CAPP's mission, on behalf of the Canadian upstream crude oil and natural gas industry, is to advocate for and enable economic competitiveness and safe, environmentally and socially responsible performance.

The Explorers and Producers Association of Canada (EPAC) advocates on behalf of its member companies for sound government policy that promotes a thriving independent oil and gas sector. Canada's junior and mid-sized companies are a critical component of our nation's oil and gas industry, investing billions of dollars each year finding and developing new energy reserves while providing the North American market with a secure, reliable energy source.

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Executive Summary

The Canadian Association of Petroleum Producers (CAPP) and the Explorers and Producers Association of Canada (EPAC) are the voice of Canada's upstream oil and natural gas industry. CAPP and EPAC appreciate the opportunity to review SaskPower's 2018 rate application and to provide input to the Saskatchewan Rate Review Panel (SRRP). As part of our review, we retained Drazen Consulting Group Inc. to review the rate application.

Despite the current economic challenges, Saskatchewan's oil and natural gas industry remains a key economic driver and job creator in Saskatchewan; however, the industry is faced with significant challenges. With numerous policy and regulatory initiatives currently underway, both at the federal level and provincial levels, costs to industry are increasing and investment in Canada's oil and natural gas sector is decreasing. The cumulative impact of cost increases to our sector is occurring at time when Canada's largest competitor, the United States, is streamlining regulations and reducing costs. Our industry has successfully reduced operating costs during this low price environment; however, with the potential for cost reductions already realized combined with increasing costs outside of industry's control such as taxes, fees, and other costs associated with policy and regulatory decisions, the impact to competitiveness and investment is considerable.

The oil and natural gas industry experiences SaskPower rate increases every year and with power costs forming a significant portion of our operations expenses, these rate increases represent a significant cost burden to the sector. To this end, CAPP, EPAC and our members are not supportive of the rate increase proposed by SaskPower in the present application. In this submission, we provide recommendations for consideration by the SRRP. Recommendations are summarized below and described more fully in this submission.

1. Evaluate the fairness of SaskPower's requested increase based on the total returns to the shareholder, rather than exclusively on the requested return on equity.
2. CAPP/EPAC encourage SaskPower to examine all possible alternatives to obtain the lowest possible source of supply in future capital expenditures to implement the preferred supply plan.
3. CAPP/EPAC recommends that the SRRP encourage SaskPower to quantify the cost of greenhouse gas (GHG) emissions reduction for each component of the preferred supply plan. Furthermore, we encourage SaskPower to pursue the lowest cost GHG reduction projects.

4. CAPP/EPAC recommends that the SRRP encourage SaskPower to evaluate its preferred supply plan with appropriate costs of financing natural gas co-generation projects internally and wind projects on an independent power producer (IPP) basis.
5. CAPP/EPAC requests that SaskPower review its preferred supply plan with the view of minimizing the cost of meeting stated GHG reduction goals by maximizing the use of natural gas-fired generation in the supply plan, subject to meeting its stated GHG reduction goals.
6. Finally, the stated goal of reducing GHG emissions to 40 per cent below 2005 levels is a target that looks to achieve environmental outcomes; however, the stated target of 50 per cent of renewable generation is based on capacity, not electricity generation, which does not necessarily achieve additional environmental outcomes. CAPP/EPAC are not supportive of any additional costs required to meet the target of 50 per cent of renewable generation capacity that are not also necessary to meet SaskPower's stated goal of reducing GHG emissions by 40 per cent (from 2005 levels).

Introduction

SaskPower is proposing a 5 per cent rate increase effective March 1, 2018. This is a continuation of a consistent pattern of rate increases. Since 2008, the rate increases have been:

- 2008 4.3%
- 2009 8.5%
- August, 2010 4.5%
- 2011 & 2012 0%
- January 1, 2013 5% system-wide
- January 1, 2014 5.5% system wide
- January 1, 2015 3%
- September 1, 2015 2%
- July 1, 2016 5%
- January 1, 2017 3.5%
- March 1, 2018 (requested) 5%

The requested increase would provide an additional \$121.7 million in revenue in 2018-19.¹ If approved, the present request would result in a cumulative rate increase of 46.3 per cent since 2008.

CAPP/EPAC Comments and Recommendations

Return to Shareholder

SaskPower is requesting a 5 per cent across the board increase effective March 1, 2018, largely to enable SaskPower to achieve its long-term return on equity (ROE) target of 8.5 per cent in 2018-19.

SaskPower states that this ROE is reviewed with respect to peer electric utilities; however, when selecting peers, it is important that the comparisons are relevant.

In examining SaskPower’s 8.5 per cent ROE target, we are cognizant of the various other amounts paid by the corporation to the Saskatchewan government – amounts that may not be incurred by SaskPower’s peer electric utilities. Direct payments to the

¹ SRRP Q3 “Revenue Lift” for 2018/19.

Saskatchewan government (i.e. excluding the corporation's net income) amount to roughly \$100 million per year,² roughly 50 per cent of the target net income.

**Payments to the Province of Saskatchewan
 (millions)**

	2013	2014	2015-16	2016-17	2017-18	2018-19
Water Rentals	\$ 21	\$ 23	\$ 17	\$ 19	\$ 26	\$ 21
Corporate Capital Tax	32	35	39	46	46	50
Coal Royalties	24	28	40	32	35	35
Dividends	-	-	-	-	-	21
Total	\$ 77	\$ 86	\$ 96	\$ 97	\$ 107	\$ 127

The Corporate Capital Tax of \$46 to \$50 million per year is the largest component of the \$100 million in payments to government. Capital taxes are not usually assessed against investor-owned utilities³ and could be viewed as additional return to the shareholder. SaskPower's assessed Corporate Capital Tax is equivalent to an additional two percentage points return on equity.⁴

Crown coal royalties paid by SaskPower total \$35 million per year in 2017-18 and 2018-19. This equates to roughly \$4/tonne.⁵ To the extent these royalty levels are significantly higher in Saskatchewan than in other provinces, the increment in Crown coal royalties above those in other provinces can be viewed as further additional return to SaskPower's shareholder.

Crown coal royalties in Alberta are \$0.55/tonne.⁶ Freehold royalties in Alberta, as reported by a major freehold royalty holder, are less than \$2/tonne.⁷ Based on these

² SRRP Q5.

³ Manitoba Hydro pays a capital tax of 0.5%.

https://www.hydro.mb.ca/corporate/ar/pdf/annual_report_2016_17.pdf Page 67 and

<http://web2.gov.mb.ca/laws/statutes/ccsm/c226e.php>

⁴ CAPP 14 (b)

⁵ \$35 million in coal royalties for 2017-18 and 2018-19 per SRRP Q5 divided by 8.7 million tonnes of lignite per SIECA Q5.

⁶ The Alberta coal royalty relates to subbituminous coal, a higher grade than is used for power generation in Saskatchewan. Royalty rate from: <http://energy.alberta.ca/coal/528.asp>

⁷ Altius Minerals hold freehold coal rights at mines associated with a number of electric generating stations in Alberta. Altius' predecessor companies include Fording Coal.

<http://altiusminerals.com/prairie-royalties/coal>

comparators, roughly half of the Crown coal royalties could be viewed as further additional return to SaskPower's shareholder. One-half of the crown coal royalties would equate to 0.6 percentage points return on equity.

Water rentals are the third component of payments to government, totaling roughly \$20 million per year. SaskPower's water rentals equate to approximately \$6/MWh.⁸ SaskPower's rate is consistent with water rentals paid by B.C. Hydro,⁹ but higher than those paid by Manitoba Hydro.¹⁰

These various payments to government highlight that the actual return to the shareholder is significantly higher than the net income of SaskPower. The corporate capital tax and half of the coal royalties are equivalent to 2.6 percentage points above the requested ROE.

SaskPower's 8.5% ROE target is derived from peer electric utilities. Shareholders of investor owned utilities do not generally receive payments in addition to their ROE (such as corporate capital taxes). To compare to investor owned utilities, the total return to SaskPower's shareholder ought to be considered, not merely the ROE represented by SaskPower's net income.

SaskPower has indicated that without the proposed increase, its ROE in 2018-19 will be 3.7%¹¹, a level that will still exceed that achieved in 2015-16¹² and 2016-17.¹³ Adding back the 2.6 percentage points of additional return provides a total return of 6.3% in 2018-19 without the proposed increase.

Recommendation

CAPP/EPAC recommends that the SRRP evaluate the fairness of SaskPower's requested increase based on the total returns to the shareholder – not based on the requested return on equity in isolation.

⁸ \$26 million for 2017-18 divided by hydro generation of 4,530 GWh equals approximately \$6/MWh.

⁹ <https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/accountability-reports/financial-reports/annual-reports/bchydro-2016-17-annual-service-plan-report.pdf>

¹⁰ Water rental rates in Manitoba are \$3.6/MWh.

https://www.hydro.mb.ca/corporate/ar/pdf/annual_report_2016_17.pdf Page 36 \$131 million divided by 36.4 TWh.

¹¹ SRRP Q3 E) PDF Page 8 Scenario E.

¹² SaskPower 2018 Rate Application Page 26 2015-16 ROE of 2.9%.

¹³ SaskPower 2018 Rate Application Page 26 2016-17 ROE of 2.1%.

Future Rate Increases

While the present application requests a single 5 per cent across-the-board increase, this increase must be viewed in a broader context. There have been regular increases since 2008, and SaskPower suggests numerous future increases:

SaskPower's current Business Plan calls for annual rate increases of 5% or less, which will enable the Corporation to bring its debt ratio below 75% by 2022/23. (SRRP Q6 B))

SaskPower's most recent Business Plan does call for regular but not necessarily annual rate increases. (SRRP Q6 C))

SaskPower's Business Plan currently calls for annual rate increases of 5% or less over the next five years. (SRRP Q6 D))

While the timing of the requested increase is difficult for the various reasons mentioned earlier in this report, the prospect of ongoing future increases is of most concern.

The implementation of SaskPower's preferred supply plan to meet GHG reduction commitments will require significant investments in new generation capacity.

SaskPower has not made public the rate increases to 2030 that would be required to meet its GHG reduction goal.¹⁴ However, as indicated above, SaskPower has stated that repeated increases will be required. The future rate increases are concerning, as well as the uncertainty future rate increases present; this is challenging for the investment climate.

Cost of SaskPower's Preferred Supply Plan

SaskPower has not provided a public version of its Integrated Resource Plan (IRP). Presumably, the IRP provides details of the supply options included in SaskPower's preferred supply plan. While we have not been provided the details of the IRP, various

¹⁴ See SRRP Q8(D) Q: Please provide an estimate of the average annual rate of increase that would be required in order to implement capital projects to reduce SaskPower's greenhouse gas emissions by 40% by 2030. A: A response has been submitted to the Saskatchewan Rate Review panel for its review. However, the response contains confidential information that is not for public release.

documents have outlined the main components of SaskPower's preferred supply plan. The plan includes the following to 2030:

- 1,600 MW of wind generation (beyond the Blue Hills facility).
- 700 MW (and likely 1050 MW) of Combined Cycle Gas generation.¹⁵
- Additional hydro purchases from Manitoba Hydro.

A simple energy balance, adding the generation in the preferred plan at typical capacity factors (and reducing coal generation) to meet forecast load, shows that the preferred plan is feasible from an energy supply perspective. The following summarizes our estimate of the changes in generation volume from 2016-17 to 2030:

Reduce coal generation ¹⁶	-10 GWh
Increase gas generation	+7
Increase wind generation	+7
Manitoba Hydro purchase	<u>+1 GWh</u>
Net	+5 GWh
Load Growth	+5 GWh

Applying GHG emission factors to each type of generation further suggests the preferred plan could meet SaskPower's goal of reducing GHG emissions by 40 per cent from 2005 levels.¹⁷

Based on the unit costs reflected in SaskPower's capital plan, the combined capital cost of new natural gas and wind facilities only will approach \$6 billion.

Gas generation 3 x 350 MW x \$1,943 ¹⁸	\$2.0 B
Wind generation 1600 x \$2,333 ¹⁹	3.7 B
Manitoba Hydro purchase (equiv. lump sum)	<u>1.0 B</u>
Total	\$6.7 B

¹⁵ The third unit (or equivalent energy) appears to be necessary by 2030 to meet the stated emission reduction goals.

¹⁶ This is effectively ceasing all coal-fired generation except the CCS equipped BD #3.

¹⁷ Total annual GHG emissions of approximately 8.5 Mt in 2030 relative to 14.1 Mt in 2005 (40% reduction).

¹⁸ SRRP Q142 Table 2 \$680/350 MW for 2020.

¹⁹ SRRP Q142 Table 2 Wind cost of \$505 million for 200 MW in 2024 trended to 2020 at 2 per cent per year.

The existing rate base for generation assets is \$5 billion,²⁰ so the future investments will have a significant impact on the future revenue requirement for the generation function.

In the present application, SaskPower has forecast a significantly lower rate of load growth than in the last application (currently, 1.4 per cent vs. 2.3 per cent, formerly). At 1.4 per cent, cumulative load growth will be 5,000 GWh bringing total load to approximately 30,000 GWh in 2030. Lower load growth suggests there will not be an increasing customer base to dilute the increase in revenue requirement resulting from the preferred supply plan. If the preferred supply plan remains in place, significant rate increases will be required in the period to 2030.

Recommendation

CAPP/EPAC urges the SRRP to recommend SaskPower thoroughly examine the cost of all aspects of the preferred supply plan with a view to minimizing the cost of this plan.

Unit Cost of Proposed Emission Reductions

The analysis described above demonstrates that SaskPower’s preferred supply plan effectively involves replacing coal generation with wind and natural gas generation.

The earlier discussion highlighted the cost of the supply plan and the impact on future rates. Another perspective from which to view the supply plan is to examine the relative cost of emission reductions within the plan.

For example, assume that within the plan one MWh of wind generation offsets one MWh of coal generation. Existing IPP wind generation has an “all-in” cost of approximately \$102/MWh. The variable fuel cost for existing coal generation is \$16/MWh.²¹ This would suggest the cost of GHG reduction as roughly \$78/tonne.^{22, 23}

Wind @ \$102/MWh displaces coal	\$78/tonne GHG
Wind @ \$86/MWh displaces coal	\$64/tonne GHG

²⁰ The rate base for existing assets will decrease to \$2.4 billion in 2030 due to net depreciation of \$200 million per year (\$350 million depreciation offset by \$150 million of sustaining capital).

²¹ SaskPower indicated that \$16 of the \$27/MWh coal fuel cost is a variable cost (CAPP R2Q10b)).

²² $\$(102-16)/1.1 \text{ tonnes GHG/MWh} = \$78/\text{tonne of GHG reduction}$.

²³ In 2016, the IESO RFP 1 in Ontario yielded an average price of \$86/MWh of wind generation. This would provide a cost of \$64/tonne of GHG reduction.

In our view, this is a relatively high cost per tonne of GHG reduction, raising questions as to whether SaskPower could find lower cost alternatives to reduce GHG emissions.

Recommendation

CAPP/EPAC suggests the SRRP recommend that SaskPower thoroughly examine the cost of each component of the preferred supply plan in terms of the incremental cost of GHG reductions.

Alternatives to Wind Generation

SaskPower’s preferred supply plan appears to attempt to add the maximum amount of wind generation possible, introducing natural gas generation only as necessary to backstop the intermittent wind generation. This approach ignores the cost advantages arising from increasing the use of natural gas generation in achieving GHG emission reduction targets.

For example, SaskPower has identified the capital cost of wind and combined cycle natural gas generation:²⁴

Wind	\$2,333/kW
Natural gas combined cycle	\$1,943/kW

SaskPower has indicated that wind generation has a capacity factor of 40-45 per cent. Necessarily, wind generation facilities require alternate generation to serve as a backstop. The cost of this backstop capability is not explicitly identified in the preferred supply plan.

Natural gas combined cycle facilities can achieve twice the capacity factor of wind generation (i.e. 80 to 90 per cent for natural gas combined cycle versus 40 to 45 per cent wind) at a lower capital cost per unit of capacity. Of course, a natural gas unit incurs fuel costs. An assumed heat rate of 7.2 GJ/MWh (50 per cent efficiency), a \$2.16/GJ natural gas price²⁵ plus \$1/GJ for transportation and storage²⁶ equates to a \$24.50/MWh fuel cost. On a levelized cost basis,²⁷ the total cost of generation is:

²⁴ Cost trended to 2020, based on Table 2 – Business Plan Capital Cost of Preferred Supply Plan from SRRP Q142

²⁵ Arithmetic average of monthly AECO C futures for the 47 month period November 2017 through September 2021. From <http://www.gasalberta.com/gas-market/market-prices?p=pricing-market.htm> accessed October 26, 2017.

²⁶ SRRP Q53

²⁷ Cost levelized in nominal dollars over 30 years at 5% discount rate. Discount rate calculated as weighted average cost of capital (WACC) with 75% debt at 3.75% plus 25% equity at 8.5%.

<u>Natural gas combined cycle</u>	
Capital recovery	\$18.00/MWh
O&M ²⁸	5.00/MWh
Fuel and transportation	<u>22.75/MWh</u>
Total	\$45.75/MWh

Based on the same financial parameters²⁹ the levelized cost of wind generation would be only marginally lower, at \$43/MWh. However, SaskPower is not in a position to build wind generation: it is not gathering data on wind regimes nor does it appear to be seeking options from landowners.³⁰ Therefore, new wind generation would necessarily be acquired through requests for proposals (RFP) from independent power producers. Independent power producers (IPP) would not finance these units at a 5 per cent weighted average cost of capital. Facilities that are project financed are unlikely to have access to debt at less than 4 per cent and the equity returns targeted by an IPP developer would likely be higher than 8.5 per cent. The debt/equity ratio would also likely be lower for an IPP developer than it would be for SaskPower. An IPP developer would also be liable for income taxes.

Although we do not know what overall returns IPP developers³¹ are targeting, we can see that with SaskPower's budgeted capital cost for wind generation and a cost of funds of 12 per cent, the levelized cost of wind generation would be \$86/MWh, equivalent to the average cost of wind power contracts awarded in the Ontario Independent Electricity System Operator (IESO) RFP I completed in 2016.

Natural gas combined cycle	\$45.75/MWh
Wind (at 12% cost of capital)	\$86.00/MWh

Even with some reduction in cost since 2016 due to technological improvements, the cost of wind generation per unit of energy is nearly twice that of natural gas combined cycle generation.

In terms of GHG reductions, natural gas generation is considerably more cost effective than wind generation. For example, assume combined cycle gas generation is built to

²⁸ Estimate of operating and maintenance costs for combined cycle generator.

²⁹ Levelized in nominal dollar terms over 30 years at a weighted average cost of capital (WACC) of 5 per cent. Capacity factor of 80% for natural gas combined cycle and 40% for wind generation.

³⁰ SRRP Q45

³¹ SaskPower should have a good idea of the IPP cost of capital bid into the RFP for gas generation, from which the Chinook project was ultimately selected.

displace existing coal generation. The cost per unit of GHG reduction is \$43/tonne,³² only two-thirds the cost of GHG reduction from wind generation built to displace coal.

Wind @ \$86/MWh displaces coal	\$64/tonne GHG ³³
Gas @ \$45.75/MWh displaces coal	\$43/tonne GHG

Returning to the energy balance outlined earlier, it would appear that SaskPower could meet its energy requirements and its GHG reduction commitments by incorporating at least one additional 350 MW combined cycle unit (for a total of four by 2030) and reducing wind additions to 800 MW. This would alter the changes in energy volume from 2016-17 to 2030 by increasing natural gas generation by 3 GWh (from 7 GWh to 10 GWh) with an offsetting reduction in wind generation (from 7 GWh to 4 GWh).

Reduce coal generation ³⁴	-10 GWh
Increase gas generation	+10
Increase wind generation	+4
Manitoba Hydro purchase	<u>+1 GWh</u>
Net	+5 GWh
Load Growth	+5 GWh

Such a configuration would appear to be capable of meeting the GHG reduction goal of 40 per cent below 2005 levels; though, it would not achieve 50 per cent renewable capacity.

Recommendation

CAPP/EPAC urges the SRRP to recommend that SaskPower thoroughly examine the cost of wind versus natural gas generation by fully recognizing differences in the financing costs.

Recommendation

CAPP/EPAC requests that SaskPower review its preferred supply plan with the view of minimizing the cost of meeting stated GHG reduction goals by maximizing the use of

³² Assumed 7.2 GJ/MWh (50% efficiency) heat rate at 56 kg/GJ emission factor for natural gas provides 400 kg/MWh CO₂ emissions. This value is consistent with the range of 360-420 kg/MWh for Chinook provided by SaskPower in CAPP R2Q10 g).

SaskPower indicated that \$16 of the \$27/MWh coal fuel cost is a variable cost (CAPP R2Q10b)).

Cost per tonne of GHG reduction of natural gas displacing coal= $\$(45.75-16)/(1.1\text{ t} - 0.4\text{ t}) = \$43/\text{t GHG}$.

³³ Cost per tonne of GHG reduction for wind displacing coal = $\$(86-16)/(1.1\text{ t}) = \$64/\text{t GHG}$

³⁴ This is effectively ceasing all coal-fired generation except the CCS equipped BD #3.

natural gas-fired generation in the supply plan, subject to meeting its stated GHG reduction goals.

Clarify Emissions Targets

SaskPower has two commitments in terms of renewable generation. The first commitment is to reduce GHG emissions by 40 per cent (from 2005 levels) by 2030, and the second is to have 50 per cent renewable capacity by 2030.

In terms of achieving environmental outcomes, the first commitment of emission reductions is a relevant measure; however, the renewable capacity goal does not achieve additional positive environmental outcomes. Investment by SaskPower to achieve the 50 per cent renewable capacity target is costly and unnecessary to meet the GHG reduction goal.

CAPP's concern with this issue is heightened by SaskPower's response to CAPP's information request³⁵, wherein SaskPower provides a generation scenario that would meet its 2030 GHG reduction commitments. The table shows 50 per cent renewable capacity and an associated reduction in GHG emissions of 52 per cent. This suggests that the renewable capacity is the binding constraint and is driving additional investment that is unnecessary to meet SaskPower's stated GHG reduction commitment.

Recommendation

CAPP/EPAC requests that in developing its preferred supply plan that SaskPower include only investments necessary to meet its GHG reduction commitment and avoid additional expenditures required solely to meet the capacity goal.

CAPP, EPAC and our members appreciate the opportunity to participate in the SRRP's review of SaskPower's 2018 rate application. Thank you for your review of the recommendations presented herein.

³⁵ CAPP R2Q12 PDF page 24.