REFURBISHING COAL-FIRED POWER PLANTS WILL INCREASE COSTS

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ISSUE

SaskPower is proposing to refurbish coal-fired power plants and run them to 2050. This option has not been sufficiently compared to other pathways for providing Saskatchewan residents, businesses, and industries with affordable, reliable power. In this brief I compare the coal refurbishment plan against options combining natural gas power plants, wind turbines and solar photovoltaic panels.

KEY FINDINGS

- **A SaskPower internal briefing indicated that refurbishing coal and running units to 2050 will cost $25.8 Billion, including capital, transmission and fuel costs.**
- **Prior to 2025, SaskPower had been planning to build a combination of natural gas power plants and wind and solar facilities to meet the province's electricity needs.**
- **A comparable gas + renewables portfolio would be two-thirds the cost of coal refurbishment under current cost conditions, and without carbon pricing applied. This would save SaskPower between $8.8 and $9.4 Billion over 25 years.**
- **With industrial carbon pricing applied, a gas + renewables portfolio would be less than half the cost of a coal pathway under current cost conditions, and between 57% and 67% of the cost under pessimistic cost conditions. This would save SaskPower between $15.4 and $32.0 Billion over 25 years.**

DECISION RECOMMENDATION

- Based on this analysis I recommend that the Saskatchewan Rate Review Panel (SRRP) refuse the rate increase proposed by SaskPower and ask them to resubmit their rate application with a detailed comparative analysis of the cost of retiring coal and replacing those plants with additional natural gas, wind, and solar capacity.

Analysis submitted to the SRRP by Brett Dolter, PhD, Email: brett.dolter@uregina.ca

BACKGROUND

- In Question 9 (Q9) of Round 2 of the Saskatchewan Rate Review Panel (SRRP) process, SaskPower was asked to provide a quantitative analysis comparing extending coal to other options. They provided only a comparison of capital costs. The analysis summarized in this document provides a quantitative comparison.
- An internal SaskPower briefing on coal refurbishment was released on May 13th, 2026 (Quon, 2026). The briefing included the cost of extending the life of SaskPower's coal-fired power plants for 25 years. These costs include $11.4 billion ($B) for a "25-year life extension", $1.4B for "Transmission", and $13B for "Fuel cost". This leads to a total cost of $25.8B for 25 years of operation.
- SaskPower indicated that refurbishing coal plants would have a $2.6B capital cost. This number does not include ongoing "sustainment capital" expenditures which can be significant for older power plants. It also excludes operational costs.
- The analysis I have conducted consists of two investment pathways that could replace SaskPower's coal-fired power plants:
    - In the first scenario, SaskPower would build four natural gas combined cycle power plants of 370 Megawatts (MW) in size, as well as 1200 MW of wind power capacity, and 300 MW of solar capacity.
    - In the second scenario, SaskPower would build six natural gas simple cycle power plants of 250 MW in size, as well as 1500 MW of wind power capacity, and 600 MW of solar capacity.
    - These scenarios provide comparable dispatchable capacity and the same level of electricity generation as extending the life of coal plants. Detailed calculations can be viewed in the spreadsheet that accompanies this brief.

SCENARIO ASSUMPTIONS

- Current cost conditions for the first scenario assume that new 370 MW combined cycle gas plants can be built at a capital cost of $1.7B, and natural gas sells for $3/Gigajoule (GJ) on average between 2026 and 2050.
- Pessimistic cost conditions assume that new 370 MW combined cycle gas plants are more expensive to build and cost $2.5B each. They also assume that natural gas sells for an average price of $8/GJ over the next 25 years.
- For the second scenario, the capital cost of 250 MW simple-cycle natural gas plants is assumed to be $680 million ($M). This cost is sourced from Manitoba Hydro's most recent rate application. Manitoba Hydro estimates that two simple cycle plants of 250 MW in size can be built at Brandon for a combined cost of $1.36B and enter service in 2030/31 (Manitoba Hydro, 2026, p. 104). Manitoba Hydro will also be procuring 600 MW of wind capacity between 2029 and 2033.
- This analysis makes the conservative assumption that the $25.8B cost allows SaskPower's coal-fired power plants to run at 85% capacity factor continually for 25 years. The internal SaskPower briefing indicated that units may be retired earlier as nuclear small modular reactors (SMRs) are built. If coal-fired units are retired before 2050 that will increase the average price of electricity that results from these units since the capital cost is spread over fewer hours of operation.
- This analysis does not assume that nuclear power plants are built between 2026 and 2050 or that coal-fired plants are retired during this period. Building nuclear power plants and retiring coal plants would lower the operational costs and carbon emissions of the coal-fired power plants but would also substantially increase SaskPower's capital costs. A recent cost estimate indicates that the four 300 MW SMRs being constructed in Ontario will cost $20.9B (World Nuclear News, 2025).

- The capital cost of SMRs is higher than the cost of building and operating combined cycle gas plants and renewables in the first scenario under current cost conditions, and the cost of building and operating simple-cycle gas plants and renewables in the second scenario.
- This analysis assumes that SaskPower's coal-fired power plants operate at an average greenhouse gas emissions intensity of 1080 tonnes carbon dioxide equivalent (CO2e)/Gigawatt-hour (GWh). This may under-estimate CO2e emissions from Saskatchewan's coal-fired power plants. SaskPower provided heat values for coal at Coronach and Estevan in their response to the Saskatchewan Rate Review Panel. The energy content of coal is lower in the Coronach region, and the Poplar River units may have emissions intensities as high as 1300 tonnes CO2e/GWh. Units in Estevan likely have intensities of 1080 tonnes CO2e/GWh. See "Coal emissions intensity" worksheet for calculations.
- Running coal-fired power plants from 2026 to 2050 would lead to 310 Megatonnes (Mt) of cumulative CO2e emissions. For context, Canada's national emissions were 685 Mt CO2e in 2024. Scenarios that replace coal with a mix of gas, wind, and solar would lead to cumulative emissions of between 55 and 64 Mt CO2e.
- The Government of Canada has updated its industrial carbon pricing backstop schedule after negotiations with Alberta (ECCC, 2026). This analysis applies the carbon prices outlined in that schedule from 2026 to 2040. Carbon prices will reach $130/tonne CO2e by 2035. Between 2035 and 2040 carbon prices will escalate at 1.5% to account for inflation. I assume the carbon price continues to escalate by 1.5% from 2040 to 2050 to account for inflation. I then deflate futures values to $2026 Canadian dollars.
- Additional assumptions around fixed operations and maintenance (O&M) costs, variable O&M costs, and fuel efficiencies are taken from the United States Energy Information Administration (EIA) Annual Energy Outlook 2026, converted to Canadian dollars at an exchange rate of 1.375 (EIA, 2026). See "EIA AEO 2026 costs" worksheet for details.

SENSITIVITY TO NATURAL GAS PRICES

- Natural gas prices are important variables in this analysis. Saskatchewan has speculated that increased Liquified Natural Gas (LNG) capacity would increase the price of natural gas. Alberta natural gas price futures are currently trading between $2.25/GJ and $3.25/GJ out to 2030 (Gas Alberta, 2026).
- Natural gas prices would need to average $8/GJ from 2026 to 2050 and new combined cycle capacity would need to cost $2.5B per power plant in order for the first gas + renewables scenario to cost an equivalent amount as the coal-fired pathway *without carbon pricing* in place. With carbon pricing in place, the gas + renewables pathway would cost two-thirds as much as the coal-fired pathway even under pessimistic assumptions, including natural gas prices averaging $8/GJ.
- Natural gas price risk can be reduced by increasing Saskatchewan wind and solar electricity generation. Wind turbines and solar panels do not provide dispatchable power that meets peak demand. Renewable energy provides value by reducing the amount of fuel burned in natural gas power plants, which reduces gas imports, reduces carbon emissions and reduces exposure to carbon pricing risk.
- Coal-fired power plants are less able to ramp up and down to follow load and respond to changes in wind and solar generation. Gas plants can ramp up and down quickly. Keeping coal on the system, rather than gas plants, crowds out renewable energy.

SUMMARY TABLE

The table below summarizes the findings of this analysis. Detailed calculations can be found within the spreadsheet titled "SaskPower coal decision analysis submitted to SRRP by Brett Dolter.xlsx".

	Scenario			
Costs without carbon pricing	**1 Coal Refurb**	**2 Gas-CC + Renew**	**3 Gas-CC + Renew**	**4 Gas-SC + Renew**
Cost of Gas Plant	-	$1.7B for 370 MW	$2.5B for 370 MW	$680M for 250 MW
Gas price ($/GJ)		$3.00	$8.00	$3.00
Capital + O&M	$11.4	$12.2	$15.4	$11.1
Fuel	$13.0	$3.4	$9.0	$4.0
Transmission	$1.4	$1.4	$1.4	$1.4
Total	$25.8	$17.0	$25.8	$16.4
Cost relative to coal refurbishment	**100%**	**66%**	**100%**	**64%**
Savings relative to coal ($B)	$0.0	$8.8	$0.0	$9.4
Savings per year ($M)	$0	$368	$0	$390
Electricity total (GWh)	286,671	286,671	286,671	286,671
Average cost ($/MWh)	**$90.00**	**$59.22**	**$89.97**	**$57.33**
Average cost (cents/kWh)	**9.00**	**5.92**	**9.00**	**5.73**

Costs with carbon pricing and OBPS for coal set at 370 tonnes/GWh 2030-2049				
GHG total (Mt CO2)	310	55	55	64
Carbon pricing cost (2026 - 2050 cumulative)	$20.8	$5.4	$5.4	$6.5
Total cost with federal carbon pricing	$46.6	$22.4	$31.2	$22.9
Cost relative to coal refurbishment	**100%**	**48%**	**67%**	**49%**
Savings relative to coal ($B)	$0.0	$24.3	$15.4	$23.7
Savings per year ($M)	$0	$1,011	$644	$988
Average cost with carbon pricing ($/MWh)	**$162.71**	**$78.08**	**$108.83**	**$79.98**
Average cost with carbon pricing (cents/kwh)	**16.27**	**7.81**	**10.88**	**8.00**

Costs with carbon pricing if OBPS set to 0 tonnes/GWh 2031-2049				
Carbon pricing cost (2026 - 2049 cumulative)	$28.5	$5.4	$5.4	$6.5
Total cost with federal carbon pricing	$54.3	$22.4	$31.2	$22.9
Cost relative to coal refurbishment	**100%**	**41%**	**57%**	**42%**
Savings relative to coal ($B)	$0.0	$32.0	$23.1	$31.4
Savings per year ($M)	$0	$1,331	$964	$1,309
Average cost with carbon pricing ($/MWh)	**$189.55**	**$78.08**	**$108.83**	**$79.98**
Average cost with carbon pricing (cents/kwh)	**18.96**	**7.81**	**10.88**	**8.00**

REGULATORY AND LEGAL RISK

- Electricity generation in Saskatchewan is subject to three federal policies:
    - **Industrial carbon pricing backstop**: This policy requires each Canadian province to implement an industrial carbon pricing system that meets a national standard. The new federal carbon pricing schedule is included below. Under the output-based pricing system (OBPS) electricity generation facilities receive some free allowances for a portion of emissions. Natural gas plants receive declining free allowances that reach 0 tonnes CO2e/GWh in 2030. Coal plants receive free allowances of 370 tonnes CO2e/GWh until 2030. The scenario summary table provides two possible futures for free allowances; one in which coal plants continue to receive free allowances for 370 tonnes CO2e/GWh and another in which coal plants do not receive free allowances after 2030. (Output-Based Pricing System Regulations, 2019)
    - **Coal-fired power regulations**: This policy requires coal-fired power plants to meet an intensity standard of 420 tonnes CO2e/GWh by the end or their prescribed life, or December 31st, 2029, whichever is sooner. If coal plants do not meet this intensity standard they must be retired. A table summarizing the regulated retirements dates for Saskatchewan coal-fired power plants is included below. (Reduction of Carbon Dioxide Emissions from Coal-Fired Generation of Electricity Regulations, 2012)
    - **Clean Electricity Regulations:** This policy requires new fossil fuel power plants to achieve an emissions intensity standard of 65 tonnes CO2e/GWh by 2035. Existing plants do not have to meet this standard until the end of their prescribed life, which is set at 25 years after commissioning or December 31st, 2049, whichever is sooner. (Canada Gazette, Part 2, Volume 158, Number 26, 2024)
- **The decision to refurbish coal-fired power plants would put SaskPower in violation of all three of these federal policies.** This introduces regulatory and legal risk, including to SaskPower's board of directors and employees.
- Continuing to run coal-fired power plants leads to an emissions intensity of at least 1080 tonnes CO2e/GWh. This is higher than the limit allowed under the coal-fired regulations and the Clean Electricity Regulations.
- Investing in a scenario that combines natural gas plants with wind and solar facilities leads to an emissions intensity of between 190 and 220 tonnes CO2e/GWh. This is below the threshold of the coal-fired regulations but lies above the threshold of the Clean Electricity Regulations. However, the federal government is pausing the Clean Electricity Regulations until the Alberta Court of Appeal and the Supreme Court decide whether they are constitutional (PMO, 2026). The federal government has also committed to negotiate an equivalency agreement with Alberta with regards to the Clean Electricity Regulations if they are found to be constitutional (PMO, 2026). This makes a gas and renewables pathway a less risky pathway from the perspective of federal policy. Retiring coal and replacing it with gas and renewables puts SaskPower in compliance with the coal-fired regulations, reduces carbon pricing exposure, and allows the possibility of negotiating an equivalency agreement with regards to Saskatchewan natural gas power plants if the Clean Electricity Regulations are found to be constitutional. Scenarios that involve building combined cycle natural gas plants also allow the possibility of equipping the

facilities with carbon capture and storage (CCS) in the future to meet the intensity thresholds required by the Clean Electricity Regulations.

- SaskPower CEO Rupen Pandya has cited $21B as the cost for replacing coal plants with “compliant” natural gas plants (Mantyka, 2026). This is likely an estimate of the cost of building four combined cycle natural gas plants equipped with CCS. Natural gas combined cycle facilities can be built CCS-ready for between $6.8B ($1.7B x 4) and $10B ($2.5B x 4). The addition of CCS could be an item for negotiation with the federal government at a future date once the court process related to the Clean Electricity Regulations has concluded.

Year	Carbon price
2026	95
2027	100
2028	100
2029	100
2030	115
2031	118
2032	121
2033	124
2034	127
2035	130
2036	132
2037	134
2038	136
2039	138
2040	140

Federal Carbon Pricing Schedule as of May 15, 2026 (ECCC, 2026)

Power Plant	Unit	Capacity (MW)	In service	Rebuild and Conversion to CCS	Regulated Retirement
Boundary Dam	3	120	1969	2014	
Boundary Dam	4	139	1970		December 31st, 2019
Boundary Dam	5	139	1973		December 31st, 2019
Boundary Dam	6	284	1977		December 31st, 2029
Poplar River	1	291	1981		December 31st, 2029
Poplar River	2	291	1983		December 31st, 2029
Shand	1	276	1992		December 31st, 2029*
Total		1540			

Retirement Schedule for Coal-Fired Power Plants (ECCC, 2012)

LABOUR SUPPLY AND FAIR TREATMENT OF WORKERS

- A primary motivation of the decision to extend coal appears to be a desire to keep coal-fired power plant workers and coal mine workers employed. The communities of Estevan and Coronach are home to these workers and both communities are rightly concerned about their future.
- If coal plants are retired by 2030, there will be work to shut down the facilities and either restore the sites, or, in the case of Estevan, prepare the site for the construction of a nuclear SMR. Following the closure of the plants there may be job losses in the Estevan and Coronach communities. Several strategies could be implemented to assist those facing job losses:
    - Workers nearing retirement could be offered generous early retirement packages;
    - Workers near the beginning of their career could be offered jobs in other roles at SaskPower, such as linemen;
    - If a nuclear SMR were to be built in Estevan, it would create up to 650 full-time jobs (Willberg, 2026). Once coal-fired power plants are decommissioned SaskPower could provide training for workers interested in working to construct and operate the SMR. Without training and transitioning these workers, SaskPower could face labour shortages in the Estevan region.
    - If workers do not find opportunities within SaskPower, it would be prudent to consider providing on-going wage subsidies to these workers. These subsidies would top-up wages to ensure that impacted workers do not receive a reduction in pay once coal-fired power plants have shut down.
- This analysis does not include wage supports for coal workers in Estevan and Coronach, but the savings of moving to gas and renewables are such that transition supports could be provided, while also reducing pressure on electricity rates.

NORTH AMERICAN TRENDS

- A movement to a gas and renewables pathway would align SaskPower with North American trends. Over the past eight years (2017-2025), over 98.1% of new electricity capacity in the United States has come from three sources: solar (45.29%), natural gas (26.73%), and wind (26.08%) (APPA, 2026). New nuclear makes up less than 1% (0.7%) (APPA, 2026).
- Coal-fired power plants are being retired in the United States. Over the past eight years, 87,246 MW of coal capacity has been retired in the United States (APPA, 2026). This makes up 61% of all of the capacity that has been retired in the United States during this period.
- The expansion of gas and renewables, and retirement of coal, has taken place under both Republican and Democrat Presidents in the United States.
- Manitoba Hydro has opted to build simple cycle gas plants and additional wind capacity to meet their load growth needs.
- Alberta phased out all of their coal plants as of June 16th, 2024 and now relies on a combination of gas and renewables.

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