

Business Model

Our Business

We are one of Canada's largest publicly traded power generators with over 108 years of operating experience. We own, operate and manage a highly contracted and geographically diversified portfolio of assets representing 8,385 MW⁽¹⁾ of capacity and use a broad range of generation fuels that include coal, natural gas, water, solar and wind. Our energy marketing operations maximize margins by securing and optimizing high-value products and markets for ourselves and our customers in dynamic market conditions.

Vision and Values

Our vision is to be a leader in clean electricity – committed to a sustainable future. We apply our expertise, scale and diversified fuel mix to capitalize on opportunities in our core markets and grow in areas where our competitive advantages can be employed. Our values are grounded in safety, innovation, sustainability, integrity and respect, which together create a strong corporate culture that allows our people to work on a common ground and understanding. These values are at the heart of our success.

Strategy for Value Creation

Our goals are to deliver shareholder value by delivering solid returns through a combination of dividend yield and disciplined growth in cash flow per share. We strive for a low to moderate risk profile over the long-term while balancing capital allocation and maintaining financial strength to allow for financial flexibility. Our segmented cash flow growth is driven by optimizing and diversifying our existing assets and further expanding our overall portfolio and presence in Canada, the United States of America ("US") and Australia. We are focusing on these geographic areas as our expertise, scale and diversified fuel mix create a competitive advantage that we can leverage to capture expansion opportunities in these core markets to create shareholder value.

Material Sustainability Impacts

Sustainability means ensuring that our financial returns consider short- and long-term economics, environmental impacts and societal and community needs. This MD&A integrates our financial and sustainability or Environment, Social and Governance ("ESG") reporting. Key elements of our sustainability disclosure are guided by our sustainability materiality assessment. To help inform discussion and provide context on how ESG affects our business, we have referenced the provincial securities commission guidance, Global Reporting Index, Sustainability Accounting Standards Board and the Task Force on Climate-related Financial Disclosures. Our content is structured following guidance on non-traditional capitals from the International Integrated Reporting Framework. In addition, we track the performance of 80 sustainability-related Key Performance Indicator ("KPIs") and have obtained a limited assurance report from Ernst & Young LLP over material KPIs.

(1) We measure capacity as net maximum capacity (see the Glossary of Key Terms for definition of this and other key terms), which is consistent with industry standards. Capacity figures represent capacity owned and in operation unless otherwise stated, and reflect the basis of consolidation of underlying assets.

Corporate Strategy

Our strategic focus is to invest in a disciplined manner in a range of clean and renewable technologies such as wind, hydro, solar, battery and thermal (natural gas-fired and cogeneration) that produce electricity for industrial customers and communities to deliver returns to our shareholders.

On Sept. 16, 2019, TransAlta announced its Clean Energy Investment Plan, which includes converting our existing Alberta coal assets to natural gas and advancing our leadership position in onsite generation and renewable energy. The Clean Energy Investment Plan provided further details of previously highlighted initiatives that TransAlta has been continuing to progress since early 2017. TransAlta is currently pursuing opportunities of \$1.8 billion to \$2.0 billion as part of this plan, including approximately \$800 million of renewable energy projects either recently completed or already under construction. The implementation and execution of TransAlta's Clean Energy Investment Plan, including the acceleration of certain features of that plan, is in large part being facilitated by the \$750 million strategic investment by Brookfield that we announced in March 2019 in response to feedback received from our shareholders during extensive engagement held in 2018 and 2019. The first \$350 million tranche of Brookfield's investment closed in May 2019 and facilitated the acceleration of our coal-to-gas conversion plan discussed below. The second \$400 million tranche of Brookfield's investment, anticipated to close in October 2020, will help further the advancement and implementation of the remainder of our Clean Energy Investment Plan, including our expected growth in renewables, while helping the Corporation maintain a strong balance sheet and financial flexibility to carry out the other pillars of our strategy discussed below. Refer to the Significant and Subsequent Events section of this MD&A for further details.

On Jan. 16, 2020, TransAlta announced near-term objectives that further support the Clean Energy Investment Plan. In addition, we announced our 2020 sustainability targets. For further details, refer to the 2020 Sustainable Development Targets section of this MD&A.

Our strategic priorities are focused on the following outcomes:

1. Successfully execute our coal-to-gas conversions

We are transitioning our Alberta thermal fleet to natural gas, as part of our Clean Energy Investment Plan. We plan to invest between \$800 million to \$1.0 billion to convert or repower our Alberta thermal fleet to natural gas. This will repurpose and reposition our fleet to a cleaner gas-fired fleet and advance our leadership position in onsite generation while generating attractive returns by leveraging the Corporation's existing infrastructure.

TransAlta's Clean Energy Investment Plan includes converting three of our existing Alberta thermal units to gas in 2020 and 2021 by replacing existing coal burners with natural gas burners. The cost to convert each unit is expected to be approximately \$30 to \$35 million per unit.

The Clean Energy Investment Plan also includes permitting to repower the steam turbines at Sundance Unit 5 and Keephills Unit 1 by installing one or more combustion turbines and heat recovery steam generators, thereby creating highly efficient combined-cycle units. Repowered units are expected to have a 40 per cent lower capital investment when compared to a new combined-cycle facility while achieving a similar heat rate. The Clean Energy Investment Plan assumes there are no delays in securing the natural gas supply requirements, which may result from regulatory or other constraints.

The highlights of these gas conversion investments include:

- Positioning TransAlta's fleet as a low-cost generator in the Alberta energy-only market;
- Generating attractive returns by leveraging the Corporation's existing infrastructure;
- Significantly extending the life and cash flows of our Alberta thermal assets; and
- Significantly reducing air emissions and costs.

The following key achievements over the past year helped us advance this part of our strategy:

On Dec. 17, 2018, the Corporation exercised our option to acquire 50 per cent ownership in the Pioneer gas pipeline ("Pioneer Pipeline"). During the second quarter of 2019, the Pioneer Pipeline transported its first gas four months ahead of schedule to TransAlta's generating units at Sundance and Keephills. The Pioneer Pipeline initially had approximately 50 MMcf/day of natural gas flowing during the start-up phase where initial flows fluctuated depending on market conditions. Firm throughput of approximately 130 MMcf/day of natural gas began flowing through the Pioneer Pipeline on Nov. 1, 2019. Tidewater Midstream and Infrastructure Ltd. ("Tidewater") and TransAlta each own a 50 per cent interest in the Pioneer Pipeline, which is backstopped by a 15-year take-or-pay agreement from TransAlta at market rate tolls. The investment for TransAlta, including associated infrastructure, was approximately \$100 million.

In 2019, we issued Full Notice to Proceed ("FNTP") to convert Sundance Unit 6 and Keephills Unit 2 to natural gas by replacing the existing coal burners with natural gas burners. We are targeting to complete the conversion of Sundance Unit 6 by the second half of 2020 and Keephills Unit 2 by the first half of 2021.

We expect to issue Limited Notice to Proceed ("LNTP") for Keephills Unit 3 during the first half of 2020 and expect to complete the conversion of that unit during 2021. We are evaluating the potential to install dual fuel capability at Keephills Unit 3 to ensure we have optimal fuel flexibility as we transition the fleet from coal to gas, and to manage any timing delays in obtaining full gas requirements that may occur due to regulatory or other constraints.

We are currently seeking regulatory permits to repower the steam turbines at Sundance Unit 5 and Keephills Unit 1 by installing combustion turbines and heat recovery steam generators, thereby creating highly efficient combined-cycle units. Repowered units are expected to have a 40 per cent lower capital investment when compared to a new combined-cycle facility while achieving a similar heat rate.

To advance this repowering strategy, on Oct. 30, 2019, TransAlta acquired two 230 MW Siemens F-class gas turbines and related equipment for \$84 million. These turbines will be redeployed to our Sundance site as part of the strategy to repower Sundance Unit 5 to a highly efficient combined-cycle unit. We expect to issue LNTP in 2020 and FNTP in 2021 for Sundance Unit 5, with an expected commercial operation date in 2023. The Sundance Unit 5 repowered combined-cycle unit will have a capacity of approximately 730 MW and is expected to cost approximately \$750 million to \$770 million, well below a greenfield combined-cycle project. In conjunction with the Sundance Unit 5 permitting, we are also permitting Keephills Unit 1 to maintain the option to repower Keephills Unit 1 to a combined-cycle unit, depending on market fundamentals. As part of this transaction, we also acquired a long-term PPA for capacity plus energy, including the passthrough of greenhouse gas ("GHG") costs, starting in late 2023 with Shell Energy North America (Canada).

2. Deliver growth in our renewables fleet

We are further expanding our renewables platform. We currently have over \$400 million of renewable energy construction projects to be completed in 2020 and 2021. We completed and commissioned two wind farms in 2019 investing over \$340 million through TransAlta Renewables. Our focus is to ensure that we solidify returns through exceptional project execution and integration where we are able to commission and operate assets within our schedule and cost objectives.

The following key achievements in 2019 helped us advance this part of our strategy:

US Wind Projects

In 2019, we completed the construction of two wind projects (collectively, the "US Wind Projects") in the Northeastern US. The Big Level wind project ("Big Level") acquired on Mar. 1, 2018, consists of a 90 MW project located in Pennsylvania that has a 15-year PPA with Microsoft Corp. The Antrim wind project ("Antrim") acquired on Mar. 28, 2019 consists of a 29 MW project located in New Hampshire with two 20-year PPAs with Partners Healthcare and New Hampshire Electric Co-op. Big Level and Antrim began commercial operations on Dec. 19, 2019, and Dec. 24, 2019, respectively. The US Wind Projects have added an additional 119 MW of generating capacity to our Wind and Solar portfolio.

Cost estimates for the US Wind Projects were reforecasted to be within the range of US\$250 million to US\$270 million, primarily due to construction and weather-related impacts as well as higher interconnection costs.

Windrise Wind Project

On Dec. 17, 2018, TransAlta's 207 MW Windrise wind project was selected by the Alberta Electric System Operator ("AESO") as one of the three selected projects in the third round of the Renewable Electricity Program. TransAlta and the AESO executed a Renewable Electricity Support Agreement with a 20-year term. The Windrise wind project is situated on 11,000 acres of land located in the county of Willow Creek, Alberta, and is expected to cost approximately \$270 million to \$285 million. The project development work is on schedule. Windrise has secured approval for the facility from the Alberta Utilities Commission ("AUC") and is currently permitting transmission lines required to connect the facility to the Alberta grid. Construction activities will start in the second quarter of 2020 and the project is on track to reach commercial operation during the first half of 2021.

Skookumchuck Wind Project

On Apr. 12, 2019, TransAlta signed an agreement with Southern Power to purchase a 49 per cent interest in the Skookumchuck wind project, a 136.8 MW wind project currently under construction and located in Lewis and Thurston counties near Centralia in Washington state. The project has a 20-year PPA with Puget Sound Energy. TransAlta has the option to make its investment when the facility reaches its commercial operation date, which is expected to be in the first half of 2020. TransAlta's 49 per cent interest in the total capital investment is expected to be approximately \$150 million to \$160 million, a portion of which is expected to be funded with tax equity financing.

WindCharger Project

During the first quarter of 2019, TransAlta approved the WindCharger project, an innovative energy storage project, which will have a nameplate capacity of 10 MW with a total storage capacity of 20 MWh. WindCharger is located in southern Alberta in the Municipal District of Pincher Creek next to TransAlta's existing Summerview Wind Farm Substation. WindCharger will store energy produced by the nearby Summerview II Wind Farm and discharge into the Alberta electricity grid at times of peak demand. This project is expected to be the first utility-scale battery storage facility in Alberta and will be receiving co-funding support from Emissions Reduction Alberta. Regulatory applications, including a facilities application to the AUC and an interconnection application to the AESO, were submitted in 2019. AUC approval was granted in November 2019 and the AESO approval is expected by the end of the first quarter of 2020. Detailed engineering designs, as well as the procurement of long-lead equipment, has been completed. Construction is on track to begin in March 2020 with a commercial operation date expected within the second quarter of 2020. The total expected cost of the project to TransAlta is \$7 million to \$8 million.

3. Expand presence in the US renewables market

We are focusing our business development efforts in the renewables segment of the US market. Demand for new renewables in the US is expected to grow in the near term. We currently have 2,000 MW at different stages in our development pipeline. These opportunities are expected to grow TransAlta Renewables, utilize its excess debt capacity and deliver stable dividends back to TransAlta.

In addition to the US Wind Projects and the Skookumchuck wind project discussed above, during 2019, TransAlta acquired a portfolio of wind development projects in the US. If we decide to move forward with any of these projects, additional consideration may be payable on a project-by-project basis only in the event a project achieves commercial operations prior to Dec. 31, 2025. If a decision is made to not move forward with a project or the costs are no longer considered to be recoverable, the costs are charged to earnings. Estimated returns on these projects and similar projects are sufficient to recover costs of unsuccessful development projects.

4. Advance and expand our on-site generation and cogeneration business

We will grow our on-site and cogeneration asset base, a business segment we have deep experience in, having provided on-site cogeneration services to various customers since the early 1990s. Our current pipeline under evaluation is approximately 900 MW and our technical design, operations experience and safety culture make us a strong partner in this segment. We see this segment growing as industrial and large-scale customers are looking to find solutions to help lower costs of power production, replace aging or inefficient equipment, reduce network costs and meet their ESG objectives.

Consistent with this strategy, on Oct. 1, 2019, TransAlta and SemCAMS announced that they entered into definitive agreements to develop, construct and operate a cogeneration facility at the Kaybob South No. 3 sour gas processing plant. The Kaybob facility is strategically located in the Western Canadian Sedimentary Basin and accepts natural gas production out of the Montney and Duvernay formations. TransAlta will construct the cogeneration plant, which will be jointly owned, operated and maintained with SemCAMS. The capital cost of the new cogeneration facility is expected to be approximately \$105 million to \$115 million and the project is expected to deliver approximately \$18 million in annual EBITDA. TransAlta will be responsible for all capital costs during construction and, subject to the satisfaction of certain conditions, SemCAMS is expected to purchase a 50 per cent interest in the new cogeneration facility as of the commercial operation date, which is targeted for late 2021.

The highly efficient cogeneration facility will have an installed capacity of 40 MW. All of the steam production and approximately half of the electricity output will be contracted to SemCAMS under a 13-year fixed price contract. The remaining electricity generation will be sold into the Alberta power market by TransAlta. The agreement contemplates an automatic seven-year extension subject to certain termination rights. The development of the cogeneration facility at Kaybob South No. 3 is expected to eliminate the need for traditional boilers and reduce annual carbon emissions of the operation by approximately 100,000 tonnes carbon dioxide equivalent ("CO₂e"), which is equivalent to removing 20,000 vehicles off Alberta roads.

5. Maintain a strong financial position

We intend to remain disciplined in our capital investment strategy and continue to build on our already strong financial position.

We currently have access to \$1.7 billion in liquidity, including \$411 million in cash. During 2019, we entered into transactions to strengthen our position to execute on the Clean Energy Investment Plan including: (i) entering into an investment agreement with Brookfield providing us with \$750 million in strategic financing, (ii) increasing our credit facilities by \$200 million to a total of \$2.2 billion and extending the maturity of the term by one year, and (iii) successfully obtaining US\$126 million of tax equity financing associated with the US Wind Projects.

To further this strategy in 2020, we will repay the \$400 million bond maturing in November 2020 and continue our share buyback program in an amount up to \$80 million.

The Clean Energy Investment Plan will be funded from the cash raised through the strategic investment by Brookfield, cash generated from operations and raising capital through TransAlta Renewables. For further details on the Brookfield investment, refer to the Significant and Subsequent Events section of this MD&A.

In addition, we continue to execute on our multi-year Greenlight program that is focused on transforming our business and delivering TransAlta's strategy by reducing our cost structure. The program is entering its fourth year since implementation, and with each passing year it creates a continuous improvement culture that improves the way employees work together to deliver better business results. The program is focused on creating a structure around our people that enables them to identify, develop and deliver projects that improve performance across the Corporation with an emphasis on delivering sustainable value and cash flow improvements. Through the program, we have instituted ways to optimize our assets, minimize GHG emissions, reduce capital and operating costs, improve fuel usage and streamline processes. As this approach is increasingly embedded into the Corporation it has increased the empowerment of our employees, strengthened our processes and improved our corporate culture while reducing our operating costs.

Growth and coal-to-gas conversion expenditures

Our growth projects are focused on sustaining our current operations and supporting our growth strategy in our Clean Energy Investment Plan. A summary of the significant growth and major projects that are in progress is outlined below:

Project	Total project		Estimated spend in 2020	Target completion date	Details
	Estimated spend	Spent to date ⁽¹⁾			
Big Level wind development project ⁽²⁾	225 - 240	234	4	Commissioned	90 MW wind project with a 15-year PPA
Antrim wind development project ⁽³⁾	100 - 110	106	—	Commissioned	29 MW wind project with two 20-year PPAs
Pioneer gas pipeline partnership	95 - 100	100	—	Commissioned	50 per cent ownership in the 120 km natural gas pipeline to supply gas to Sundance and Keephills
Skookumchuck wind development project ^(4,5)	150 - 160	—	80	Q2 2020	Option to purchase a 49 per cent ownership in the 136.8 MW wind project with a 20-year PPA
Windrise wind development project ⁽⁵⁾	270 - 285	49	233	Q2 2021	207 MW wind project with a 20-year Renewable Electricity Support Agreement with AESO
WindCharger battery ^(5,6)	7 - 8	1	6	Q2 2020	10 MW/20 MWh utility-scale storage project
Boiler conversions	100 - 200	28	69	2020 to 2022	Coal-to-gas conversions at Canadian Coal
Repowering	750 - 770	85	20	2023	Repower the steam turbines at Sundance Unit 5
Kaybob cogeneration project ⁽⁵⁾	105 - 115	17	59	Q4 2021	40 MW cogeneration project with SemCAMS under a 13-year fixed price contract
Total	1,802 - 1,988	620	471		

(1) Represents cumulative amounts spent as of Dec. 31, 2019.

(2) The numbers reflected above are in CAD but the actual cash spend on this project is in US funds and therefore these amounts will fluctuate with changes in foreign exchange rates. The estimated total spend is approximately US\$173 million to US\$185 million, spent to date is US\$179 million and estimated remaining spend in 2020 is US\$3 million. TransAlta Renewables funded a portion of the construction costs using its existing liquidity and the remaining was funded with tax equity financing.

(3) The numbers reflected above are in CAD but the actual cash spend on this project is in US funds and therefore these amounts will fluctuate with changes in foreign exchange rates. The estimated total spend is approximately US\$77 million to US\$85 million, spent to date is US\$80 million and estimated remaining spend in 2020 is nil. TransAlta Renewables funded a portion of the construction costs using its existing liquidity and the remaining was funded with tax equity financing.

(4) The estimated spend in 2020 assumes the project will receive tax equity financing for the remainder of the total project spend.

(5) These projects will potentially be dropped down to TransAlta Renewables.

(6) Net of expected government reimbursements.