

Windrise Wind Project

On Dec. 17, 2018, TransAlta's 207 MW Windrise wind project was selected by the AESO as one of the two successful projects in the third round of the Renewable Electricity Program. The Windrise project is situated on 11,000 acres of land located in the county of Willow Creek, Alberta. The project is underpinned by a 20-year Renewable Electricity Support Agreement with the AESO and is expected to cost approximately \$270 million and is targeted to reach commercial operation during the second quarter of 2021.

Brazeau Hydro Pumped Storage

The Brazeau Hydro Pumped Storage project will generate and support clean electricity in the Province of Alberta. It will store water that can be used to both generate power when it is needed and store excess power supply when demand is low. The Brazeau Hydro Pumped Storage project is a priority for us, as it has existing infrastructure that reduces the cost and environmental footprint of the project, is situated close to existing transmission infrastructure and allows for increased renewables development by balancing intermittent generation from wind and solar.

The Brazeau Hydro Pumped Storage project is expected to have new capacity up to 900 MW, bringing the total Brazeau facility from 755 MW to 1,255 MW, post-completion. We estimate an investment in the range of \$1.5 billion to \$2.7 billion. During the first nine months of 2018, we invested approximately \$2 million to advance the environmental study, work with stakeholders and execute geotechnical work to help further our design and construction phase. Further advancement of the project is dependent on securing a long-term contract.

In May 2018, the AESO released a report stating that dispatchable renewable resources are not needed in the Alberta market before 2030. The value and benefit of the Brazeau Hydro Pumped Storage project would be well beyond the 2030 period. The Corporation still believes that generation from pumped storage should be part of future calls for power under the Alberta Renewables program. The Corporation is not spending additional development dollars on the project at this time but will continue to work with governments to find the appropriate financial mechanisms for bringing low-cost, green, dispatchable renewables into the market to support low prices and emissions for Alberta customers.

Project Greenlight

Project Greenlight is a multi-year program to transform our business and the delivery of the Corporation's strategy. Business units are focusing both on cash flow improvements and the way the Corporation is delivering sustainable value.

Through this program we delivered on projects that improved performance by improving generation efficiency, improving heat rates, lowering fuel costs, reducing GHG emissions, reducing operating and maintenance costs, optimizing our capital spend, avoiding new costs, reducing overhead costs and financing costs, improving working capital, monetizing assets, streamlining processes and achieving efficiencies. Value savings were offset by current year program costs and project costs, made up of mostly capital expenditures. We estimate that the Project Greenlight initiatives generated net \$70 million in gross margin, OM&A expense and capital savings. This enabled financial flexibility for new investments. We invested approximately \$16 million (2017 - \$29 million) in this program and an additional \$21 million (2017 - \$25 million) in productivity capital in 2018.

Contractual Profile

Approximately 70 per cent of our capacity over the next two years is sold under long-term contracts. Excluding Alberta PPAs for our coal and hydro facilities, the majority of these contracts have maturities in excess of 10 years. During the fourth quarter of 2017, we entered into a long-term contract for the Fort Saskatchewan natural gas facility, commencing Jan. 1, 2020. The contract has an initial 10-year term. In 2016, we entered into a long-term contract for the Akolkolex hydro facility in B.C., expiring in 2045. Our South Hedland Power Station reached commercial operations on July 28, 2017, and is contracted until 2042.

Human Capital

Engaging our workforce, developing our employees and minimizing safety incidents are the keys to human capital value creation at TransAlta. The most material impacts on our human capital performance are having an engaged workforce and keeping our employees safe.

As at Dec. 31, 2018, we had 1,883 (2017 - 2,228) active employees. This number has decreased by fifteen per cent over 2017, following reduction in positions at our coal fleet and restructuring initiatives to reduce costs and increase efficiency. A number of unfilled positions have also been eliminated.

With approximately 50 per cent of our employees being unionized, we strive to maintain open and positive relationships with union representatives and regularly meet to exchange information, listen to concerns and share ideas that further our mutual objectives. Collective bargaining is conducted in good faith, and we respect the rights of all employees to participate in collective bargaining.

Organizational Culture and Structure

Our employees are central to value creation. Our corporate culture has been cultivated throughout our more than 100-year heritage of pioneering innovative ways to safely and responsibly generate reliable and affordable electricity. In 2016, we formalized our core values to help provide strategic clarity for our employees. We want our people to align with and live our core values, which are: innovation, respect, loyalty, accountability, integrity and safety. We seek to challenge our employees to maximize their potential. We encourage alignment with our values and work ethic, while providing a foundation for leadership, collaboration, community support, growth and work/life balance.

Our organizational structure consists of six levels, which helps facilitate pace and decision-making in our organization. Our business operates as a business-centric model, with Coal & Mining, Gas & Renewables, Australia, and Energy Marketing & Trading defined as our four primary businesses. Our Corporate function oversees our business and provides strategic alignment.

Gender Diversity

A number of case studies have highlighted the link between gender diversity and additional business value. TransAlta is an active supporter of gender diversity as a driver for value, but also as an ethical business practice. Our commitment to increased female participation in our business is evidenced by our female participation rates on both our executive and Board. As at Dec. 31, 2018, women made up 50 per cent of our executive team and 40 per cent of our Board. This is well above our peers in the electricity sector. The Canadian Electricity Association reported that averages for women in executive and on Boards in 2017 was 25.5 and 31.5, per cent respectively. This is also well above the Catalyst Accord, which is signed by a number of leading organizations in Canada, that all support targets to ensure women comprise 30 per cent of executive and Board roles by 2022.

Year ended Dec. 31	TransAlta (per cent)	Industry average (per cent)	Catalyst Accord targets (per cent)
Women on executive team	50	25	30
Women on Board	40	31	30

Employee Benefits

TransAlta is an attractive employer in all three countries in which we operate. We provide compensation to our employees at levels that are competitive in relation to their respective location. We strive to be an employer of choice through our total rewards program, which includes various incentive plans designed to align performance with our annual and mid-term targets, as determined annually by the Board.

Also included in compensation are various retirement savings plans. We have registered pension plans in Canada and the US, as well as a superannuation plan in Australia. The plans cover substantially all employees of the Corporation, its domestic subsidiaries, and specific named employees working internationally. These plans have defined benefit ("DB") and defined contribution ("DC") options, and in Canada there was an additional DB supplemental pension plan ("SPP") for members whose annual earnings exceeded the Canadian income tax limit. The DB SPP was closed as of Dec. 31, 2015, and a new DC SPP commenced for only executive members effective Jan. 1, 2016. Current executives as of Dec. 31, 2015, were grandfathered in the DB SPP. The Australian superannuation plan is compulsory for employers with contributions required at a rate set by the government, currently 9.5 per cent of employees' wages and salaries.

The Canadian and US defined benefit pension plans are closed to new entrants, with the exception of the Highvale pension plan acquired in 2013. The US defined benefit pension plan was frozen effective Dec. 31, 2010, resulting in no future benefits being earned. The defined benefit plans are funded by the Corporation in accordance with governing regulations and actuarial valuations. We provide other health and dental benefits for disabled members and retired members, typically up to the age of 65. The Canadian retiree benefits plan was closed for all new hired employees as of March 1, 2017. The supplemental pension plan is non-registered and an obligation of the Corporation. We are not obligated to fund the supplemental pension plan but are obligated to pay benefits under the terms of the plan as they come due.

Talent and Employee Development

Talent and employee development is viewed as a key pillar of organizational health. In 2018, we extended our Change Leadership Forum to our managers, building upon senior management training in 2017. The two-day session is focused on organizational transformation with an emphasis on identifying root causes of barriers related to driving change.

In 2018, we completed a six-month peer lead leadership training program, called Elevate, for our professionals and subject matter experts. This builds on training of 75 middle management professionals in 2017. The program is focused on establishing a learner's mindset, building trust and influence, strengths-based leadership, being transparent, providing feedback, collaboration as a team and innovation.

In addition to Elevate, we continued our two-day leadership program in 2018 for all of our employees. The program, called Execution Engine, was designed to build capabilities for our people to create an organization that is both efficient and adaptive, while living our values. The training program was built on research into what is needed for our people to help drive and sustain change. To date, approximately 830 employees (or 44 per cent) have taken this course. Employees learn project management (i.e., idea generation, planning, problem solving and prioritization), effective communication (i.e., presentations, meetings and emails), how to get the best out of people (coaching and influencing) and health (organizational health and personal resilience).

In addition, we seek unique ways to expose employees to energy transformation and disruption. Employees are encouraged to target development in areas to support this. In 2018, we sent 25 of our employees to the Energy Disruptors conference in Calgary, which was highlighted by Richard Branson as a keynote. Learning from global leaders working on the energy transition, this group returned to integrate ideas and solutions into our business, through our Project Greenlight program.

Safety

The safety of our people, communities and environment is one of our seven core values. At TransAlta we operate large and complex facilities. The environments in which we work, including Canadian winters and the Australian outback, often add an additional challenge to keep our employees safe. The safety of our staff, contractors and visitors is the top priority of our social performance. Our safety culture is further embedded into TransAlta culture each year. Every meeting of more than four people starts with a "safety moment," which helps share key safety learnings across the Corporation.

Our approach to safety was revised in 2015 when we added to our work on occupational safety with a renewed focus on process safety. In collaboration with ScottishPower, an organization known for achieving leading safety performance, we launched our Total Safety Management System. The management system builds on our occupational safety program, Target Zero, which is focused on protecting our workers on site, through personal protection equipment, inspections, safety controls, job safety analyses, field-level hazard assessments and safety communications. Our Total Safety Management System adds a focus on preventing incidents from our equipment and processes through definition and measurement of safety-critical performance measures and operating limits.

In 2018, the first full year of implementation of a safety culture transformation within our Coal and Mining business was completed. The bulk of the Canadian Coal employees were provided with new tools and capability to improve their own personal safety and that of their workmates. In addition there have been improvements in safety standards, amenities, housekeeping and safety leadership implemented in parallel.

This combination of initiatives has led to progress and results. In 2018 our Injury Frequency Rate ("IFR") was 0.54 (2017 - 0.72). IFR is defined as the number of injuries (lost-time and medical) for every 200,000 hours worked. Our ultimate goal is to achieve zero injury incidents, but annually we seek improvement over the prior year. Our target IFR in 2019 is 0.43, a 20 per cent reduction over 2018 performance.

In 2017, we introduced a new key performance indicator to help us further improve our safety performance. Total Incident Frequency ("TIF") tracks the total number of injuries (medical aids, lost-time injuries, restricted works and first aids) relative to employee hours worked. First aids can be minor (such as a cut or scratch); nevertheless, incident awareness and understanding provide us with preventative safety knowledge, which translates into education for employees and injury avoidance. Our TIF in 2018 was 1.98, which was a 44 per cent improvement over 2017 performance. We are targeting a TIF of 1.58 in 2019, a 20 per cent reduction over 2017 performance. As noted above, our long-term goal is zero.

Year ended Dec. 31	2018	2017	2016
IFR	0.54	0.72	0.85
TIF	1.98	3.54	—

On December 29, 2018, we were notified of an incident that occurred and resulted in the fatality of an employee of Coalview Centralia LLC, which operates a fine coal recovery project within the Centralia mine site. Coalview Centralia LLC is a company that provides reclamation services to TransAlta and is not otherwise affiliated with the Corporation. We are all

deeply saddened by this situation and our thoughts and prayers are with the families, co-workers and friends impacted. Safety is an integral value at TransAlta and we continue to work every day to make our work environments safe.

We reward our business units for safety leadership annually at our President's Awards. This year the award for Safety Leadership and Performance was given to our Hydro fleet for achieving target zero in 2018. No medical aids and injuries occurred in 2018, despite 145,000 exposure hours while operating 27 facilities. It was a fantastic achievement from our Hydro business unit and provides inspiration for our other business units.

Intellectual Capital

At TransAlta we define intellectual capital as our knowledge-based assets. Measuring these assets serves two purposes. First, we seek to understand our knowledge-based assets to improve our management and performance of these assets. Second, we seek to understand these assets to communicate their real value. The following highlights some of our knowledge-based assets, which we believe provide us with a competitive edge and that contribute to shareholder value.

Brand Recognition

Our employee culture is supported by a purpose-based, long-term and sustainable business strategy, which is growth in affordable and clean power generation. TransAlta has operated power generation assets for over 100 years, which reflects this approach to long-term and sustainable business. A long-term commitment to business and partnerships lends itself to goodwill and brand recognition, something we value and don't take for granted. We believe our low-cost and clean power strategy, supported by our internal values and sustainable approach to business, will help support and continue to increase our brand recognition positively.

Diversified Knowledge

The experience and acumen of our employees further enhances our capital value creation. Our business has been operating for over 100 years, and many of our employees have been with us for 30 plus years.

Our experience in developing and operating power generation technologies is highlighted below. The transition of our coal assets to natural gas is a natural fit with our operating experience. Relative to coal, gas operations have lower operating costs, have increased operating reliability and flexibility, require less manpower and reduce GHG and air emissions. Our trading and marketing business complements our knowledge of operating power generation assets.

Power generation type	Operating experience (years)
Hydro	107
Natural Gas	68
Coal	68
Wind	16
Solar	3

Innovation: Idea Generation and Project Management

We believe that global marketplace disruption is a new normal and we recognize that to adapt to the pace of change and remain competitive, our employees and processes must be nimble, adaptive and supporting working more efficiently, while at speed. For further details on our investment in our workforce, please see the Talent and Employee Development discussion in the Human Capital subsection of this MD&A.

This is evidenced by our ongoing internal transformation, called Project Greenlight, which is entering its third year since implementation. This project is focused on bottom-up innovation, specifically fostering a culture of idea generation, development of ideas into projects with defined KPIs, milestones and execution or delivery dates, and ongoing project management to ensure success. Where we fail, we idea generate, build and test again. Since inception, we have spent considerable time educating and training our employees to both think differently and then manage their business case from idea to delivering sustained value. Year three is the final year of the project and we plan to transition Project Greenlight into the business as a sustained process.

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