

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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Innovation: Applied Technologies

TransAlta has been at the forefront of innovation in the power generation sector since the early 1900s when we developed hydro assets. To add context, these assets were developed at the same time as the automobile. We have been an early adopter and developer of wind technology in Canada and are now one of the largest wind generators in the country. Today we run a Wind Control Centre, the only one of its kind in Canada, that monitors, to the second, each and every wind turbine we operate across North America. In 2015, we made our first investment in solar technology with the purchase of a 21 MW solar facility in Massachusetts.

As we move towards our vision of becoming the leading clean power corporation in Canada by 2025, we continue to seek solutions to innovate and create value for investors, society and the environment. This is evidenced by our announcements of the accelerated coal-to-gas conversion plans, the expansion of our Kent Hills wind farm in New Brunswick, the 90 MW Big Level and 29 MW Antrim wind development projects in the US, the 207 MW Windrise wind development project in Alberta, proposed solar development on our reclaimed mine site at our Centralia facility in Washington State, and the exploration of hydro expansion.

We are keeping up to date with power technologies that have the potential to redefine power markets today and in the future. Innovation is constantly happening on a more micro scale at TransAlta. For more information on innovation at TransAlta, please visit www.transalta.com/about-us/innovation.

In addition, our teams continuously explore the use of applied or new technologies to find solutions to expand or adapt our fleet in an ever-changing world, which helps protect our shareholder value and maintain delivery of reliable and affordable electricity. The following are further examples of how we have developed innovative solutions to optimize and maximize value from our fleet:

Operations Diagnostic Centre

TransAlta has run its Operations Diagnostic Centre ("ODC") since 2008. The ODC monitors coal-fired, gas-fired and wind-generating assets across Canada, the United States and Australia. A centralized team of engineers and operations specialists remotely monitors our power plants for emerging equipment reliability and performance issues. ODC staff are trained in the development and use of specialized equipment monitoring software and can apply their experience in power plant operations. If an equipment issue is detected, the ODC notifies plant operations to investigate and remedy the issue before there is an impact to operations. The monitoring, analysis and diagnostics completed by the ODC are focused on early identification of equipment issues based on longer-term trend analysis and complements day-to-day plant operations.

Operational Integrity Program

Our Operational Integrity program is the integration of sustainability, specifically safety, into asset management. It is a program designed to achieve process and equipment safety by understanding and monitoring key operational risks and implementing mitigation measures. Consider it proactive safety. In 2017, we put into place our Total Safety Management System, which integrates our work in process safety with our existing strength in occupational safety programs. We continue to see a positive increase in self-reporting and addressing process safety hazards as awareness and new tools are being introduced. This is evidenced by our trend in safety incidents, which decreased in 2018 to an IFR of 0.54 (2017 - 0.72). This was one of our best safety performance years in our history. Our goal is zero and the Operational Integrity program is a tried and tested tool to help propel us closer to this goal.

Social and Relationship Capital

Creating shared value for our stakeholders is the key to social and relationship value creation at TransAlta. The most material impacts on our social and relationship performance are public health and safety, anti-competitive behaviour and fostering better relationships with Indigenous neighbours, communities, stakeholders, governments, industry and landowners where we operate.

Public Health and Safety

We seek to ensure public health and safety through measures that include restricting physical access to our operating sites and minimizing our environmental impact. It is our goal to keep safe our employees and the peoples and communities where we operate.