

**Module: Introduction****Page: Introduction**

---

**CC0.1****Introduction**

Please give a general description and introduction to your organization.

TransAlta Corporation (TSX: TA, NYSE: TAC), headquartered in Calgary, Alberta, is one of Canada's largest publicly-traded power generators and marketers, and the sponsor and majority owner of TransAlta Renewables (TSX: RNW). TransAlta owns assets strategically positioned in Canada, the United States and Australia. The goal shared by our more than 2,200 employees is to provide affordable, reliable and clean power to our customers in a responsible, sustainable way. We own, operate and manage a highly contracted and geographically diversified portfolio of 69 generating facilities that use a variety of fuels, including wind, hydro, solar, natural gas and coal.

Since 1911, we've supplied the electric power that has made progress and innovation possible in Alberta and beyond. Our growth was once tied to the evolution of a province steeped in rich natural resources. More recently, we've powered industry, commerce, and community well-being across Canada, in the U.S., and Australia. Wherever we operate, we are committed to responsibly supplying reliable electric power to customers at an affordable cost; to investing in the local community; and to doing business in a manner that ensures our employees are safe and proud.

It's important to note that TransAlta is not a traditional vertically-integrated utility, but rather the company is focused on wholesale electricity generation and energy marketing in deregulated electricity environments.

We are competing in a capital-intensive, commodity-based industry that has long business cycles and it's a business where power plants routinely run for 50 years or more. That means when we plan, we're planning years, even decades, into the future. We were one of the first companies in Canada to make significant investments in wind power and today are Canada's leading wind power company.

---

**CC0.2**

**Reporting Year**

Please state the start and end date of the year for which you are reporting data.

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.

Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

Enter Periods that will be disclosed
Wed 01 Jan 2014 - Wed 31 Dec 2014
Thu 01 Jan 2015 - Thu 31 Dec 2015
Fri 01 Jan 2016 - Sat 31 Dec 2016

---

**CC0.3****Country list configuration**

Please select the countries for which you will be supplying data. If you are responding to the Electric Utilities module, this selection will be carried forward to assist you in completing your response.

Select country
Canada
Australia
United States of America

---

**CC0.4**

### **Currency selection**

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

CAD (\$)

---

### **CC0.6**

#### **Modules**

As part of the request for information on behalf of investors, companies in the electric utility sector, companies in the automobile and auto component manufacturing sector, companies in the oil and gas sector, companies in the information and communications technology sector (ICT) and companies in the food, beverage and tobacco sector (FBT) should complete supplementary questions in addition to the core questionnaire.

If you are in these sector groupings, the corresponding sector modules will not appear among the options of question CC0.6 but will automatically appear in the ORS navigation bar when you save this page. If you want to query your classification, please email [respond@cdp.net](mailto:respond@cdp.net).

If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below in CC0.6.

---

### **Further Information**

**Module: Management**

**Page: CC1. Governance**

---

### **CC1.1**

**Where is the highest level of direct responsibility for climate change within your organization?**

Board or individual/sub-set of the Board or other committee appointed by the Board

---

### **CC1.1a**

**Please identify the position of the individual or name of the committee with this responsibility**

TransAlta's Governance and Environment Committee (GEC) is a Board-appointed committee that reports directly to the Board of Directors (BoD), which includes our CEO and acts as an assisting body to the Board to help fulfil oversight responsibility with respect to environment, health and safety. In conjunction, the GEC and BoD hold the highest level of responsibility in regards to climate change policy and sustainability. All of our Board members have experience and expertise in the area of Climate Change. We have noted this in our skills matrix section of 2017 Proxy Circular. Attached below.

**CC1.2**

**Do you provide incentives for the management of climate change issues, including the attainment of targets?**

Yes

**CC1.2a**

**Please provide further details on the incentives provided for the management of climate change issues**

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction project Emissions reduction target Efficiency project Efficiency target Other: Behaviour change related indicator	37% of Dawn Farrell's (CEO) compensation is determined by company performance, which in 2016 included strategic focus in areas with climate change impact. Specifically reduced emissions and increased renewable energy development: 1. We signed an Off-Coal Agreement with the Government of Alberta for the cessation of coal-fired emissions from Keephills 3, Genesee 3, and Sheerness. This agreement entitles the Company to 14 annual payments of \$37.4 million, starting in 2017; 2. we signed a Memorandum of Understanding with the Government of Alberta that outlines our cooperative work to: <input type="checkbox"/> transition our coal plants to natural gas and extend their useful lives (accelerated emission reductions from our coal phase-out); <input type="checkbox"/> realize value in our hydro and wind power assets through greenhouse gas offset credits; <input type="checkbox"/> begin to develop our Brazeau Pumped Storage project, one of the leading hydroelectric power projects in Canada; and <input type="checkbox"/> develop a capacity market in Alberta that ensures both current and new electricity generators will have a level economic playing field to build, buy and sell electricity (facilitator for increased renewables)
All employees	Monetary reward	Emissions reduction project	All employees have now been engaged on our strategic Road Map, which is to be the leading clean power company in Canada by 2030. The Road Map calls for increased development of

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
		Emissions reduction target Efficiency project Efficiency target Behavior change related indicator	renewable energy, development of low-carbon natural gas and accelerated transition of coal to natural gas. Incentive plans are tied to performance and achievement of goals. All corporate goals now relate directly or indirectly to re-positioning our company as leading clean power company. Our latest investor presentation, May 2017, highlights our transition. We have 13,000 MWs of proposed low-carbon growth projects in our pipeline.
Business unit managers	Recognition (non-monetary)	Other: Innovation/Leadership	TransAlta President's Awards include and Innovation and Environmental Leadership award (climate change related initiatives evaluated annually).
Energy managers	Monetary reward	Efficiency project Efficiency target	The TransAlta Operations Diagnostic Centre has a mandate to increase energy output from existing renewable assets and optimize coal and gas assets. Employee short-term incentives for this team are tied to meeting these goals within the calendar year.
All employees	Recognition (non-monetary)	Emissions reduction project Efficiency project	TransAlta partnered with Light up the World in 2015, an NGO focused on installing solar power systems in place of fuel burning in remote communities in developing nations. TransAlta offers all employees the opportunity to submit an essay and apply for travel to Peru (twice per year). TransAlta pays for the electrical and solar training, expenses (flights not included) and provides time off for successful applicants. Employees are recognized across the company.
All employees	Recognition (non-monetary)	Other: Behaviour change related indicator	Employees are recognized company-wide for their efforts and achievements related to climate change initiatives through the volunteer based TransAlta Eco-Action Committee. Successful campaigns have included PC Monitor & Power-Off Program, and Greening of Office Supplies. Successful annual campaigns include the Carbon Footprint Challenge, Bike to Work Day, EcoFair and community engagement/education

#### Further Information

#### Attachments

<https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC1.Governance/TransAlta-Investor-Presentation-FINAL-1.pdf>

**Page: CC2. Strategy**

**CC2.1**

**Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities**

Integrated into multi-disciplinary company wide risk management processes

**CC2.1a**

**Please provide further details on your risk management procedures with regard to climate change risks and opportunities**

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
Six-monthly or more frequently	Board or individual/sub-set of the Board or committee appointed by the Board	All operating and office locations: Canada, USA, Australia	> 6 years	Climate change related risks are monitored through our company-wide risk management processes and actively managed. Identified climate change risks and opportunities are identified at the business unit level, i.e. coal, gas, renewables, and through our corporate function (Government Relations, Regulatory, Emissions Trading, Sustainability). Risks and opportunities are reviewed by our management team quarterly and reported through our Governance and Environment Committee of the Board and Audit and Risk Committee of the Board, again quarterly. Please see the attachment: 'TransAlta Climate Change Management_Identification of Risk and Opportunity' for organization flow of risk management.

**CC2.1b**

**Please describe how your risk and opportunity identification processes are applied at both company and asset level**

Company: The corporate function identifies existing and emerging climate change related risk and opportunity. Regulatory risk and opportunity is actively explored, consulted on and analyzed through our Emissions Trading, Regulatory, Operations Compliance, Government Relations and Sustainability teams (please see attachment below). Physical risks are explored in greater detail at the business unit (and asset level). Some corporate functions also support this process (i.e. sustainability). Identification of risk and opportunity information flows back and forth from corporate to the business unit and is reported through regulatory to the executive team and up to the Board via our executive and regulatory function.

An example of risk identification and action is carbon pricing. Corporate attributes regionally specific carbon pricing, both current and anticipated, as a mechanism to manage future risks pertaining to uncertainty in the carbon market and as a safeguard to anticipate future impacts of regulatory changes on facilities. This information is fed to the business unit level for further integration. Identified climate change risks or opportunities and carbon pricing are recognized in the annual TransAlta long-and-medium range forecasting processes.

Asset: TransAlta assesses technical and operational risk through Business Unit (i.e. Hydro) Engineering and Technical Services team for all generation assets. Maintenance plans and sustaining capital are set aside to meet predetermined operating risk. Asset related climate change risks are evaluated at a higher level for each business unit and on a geography basis. In Alberta we monetize carbon offset credits from eligible wind facilities, a geographic climate related opportunity. The business unit and corporate are in constant communication to identify risk and opportunities, review and improve performance.

---

**CC2.1c**

**How do you prioritize the risks and opportunities identified?**

Risk and opportunity are assessed as a function of enhancing long-term shareholder value through consistent operations and cash flow, meeting our return on capital thresholds, and through careful weighting of the likelihood of events against our risk tolerance. We employ an integrated approach to driving long-term shareholder value. Objectives include: (1) optimizing base business: re-contracting to stabilize cash flows and extend asset life, continuously managing operating and fuel costs, maintaining strong availability across the fleet, prudently and rigorously managing sustaining capital expenditures, positioning the Canadian coal fleet to capture significant upside post power purchase arrangements; (2) investing in profitable growth: achieving growth through acquisitions and greenfield projects, ensuring disciplined returns and leverage, targeting markets of strong fundamentals and growth opportunities, focusing on gas and renewable generation (primarily contracted opportunities); (3) delivering sustainable dividend and maintaining financial strength: a competitive pay-out ratio with excess cash flow for growth, a strong balance sheet and investment-grade credit rating, access to multiple sources of capital.

To optimize and protect shareholder value as it relates to climate change issues, TransAlta focuses on both regulatory and physical risks. Physical risks are identified by operational groups through asset specific plans (e.g. TransAlta's Hydro Emergency Response Guide) while regulatory risks are tracked and reported by the SD and regulatory groups. Risks are prioritized by probability and potential size of impact. Regulatory climate change risks are more easily quantified financially, given that TransAlta incorporates carbon pricing in its long-range planning. In recognition of the climate change regulatory risks, asset growth plans are focused on the retirement of conventional-coal and investments in renewable energy and natural gas-fired generation.

---

**CC2.1d**

Please explain why you do not have a process in place for assessing and managing risks and opportunities from climate change, and whether you plan to introduce such a process in future

Main reason for not having a process	Do you plan to introduce a process?	Comment
--------------------------------------	-------------------------------------	---------

---

## CC2.2

**Is climate change integrated into your business strategy?**

Yes

---

## CC2.2a

**Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process**

i. Business strategy: to remain a financially viable low cost producer of electricity to the communities we serve and be the leading clean power company in Canada by 2030. Related to climate change, regulatory risk/compliance (coal electricity generation), physical risks (hydro and drought/floods) and monetary opportunities (gas and renewable electricity generation) are the main influencers of integration into business strategy.

Aligned with our business strategy is our climate change strategy, which is implemented & managed on a corporate-wide business unit level, consisting of four main areas of focus (no particular order): 1) Energy efficiency improvements; 2) Development of emissions offsets portfolios to achieve emissions reductions at competitive costs; 3) Development of clean combustion technologies; 4) Growth of our renewables portfolio as an increasing component of our total generation portfolio.

ii. Our business strategy has shifted to a clear focus on clean and low carbon power. We see this as low risk scenario given the identified risks of climate change. Diversifying our fuel types and geographies also helps to minimize impact. Our current fuel mix is coal, gas, wind, hydro and solar and we are shifting our focus to exclude coal. We operate in Australia, Canada and the US.

Other significant aspects that have influenced strategy:

-Federal & state command/control & market-based regulatory frameworks, such as Alberta Specified Gas Emitters Regulation (SGER), Cdn Federal GHG reduction targets & fixed emissions caps for air pollutants, as well as more stringent performance standards for new and old coal facilities in the US.

-Offsets incentives: TA, through the SGER creates ~500,000 tonnes of emissions credits/year from our wind fleet. Also through SGER compliance obligations, TA contributes nearly 2 MT of purchased fund credits to Alberta projects focused on emissions reductions technology.

-Development of green business: a strong renewables portfolio will position us ahead of competitors when considering risk related to carbon regulations and caps,

and the uncertainty of the price of carbon and its impact on coal-fired facilities (highlighted by our +1,050 MW wind capacity).

-Reputation management: transparency becomes paramount for public/customers/stakeholder/shareholder/investors, as sustainability & emissions reductions are of interest to investor groups. Modes of reputation management such as the CDP & Integrated Report are completed by the sustainability team.

iii. Regulatory changes in Canada and the US have impacted our business and accelerated our transition to low carbon power generation. We have recently announced our plan to convert the majority of coal plants to natural gas in Alberta in 2022.

Climate change risk has helped support our strategic shift to wind, we have grown our wind fleet in Canada from zero MW in 2000 to +1050 MW today. We are the largest producer of wind energy in Canada.

v. Key aspects of TA's short-term strategy (2017-2021): explore growth opportunities in renewables and gas, which fits with our low-carbon strategy. Our latest investor presentation identifies 10,000 MW of identified potential opportunities for growth. Early retirement of one unit and mothballing of another at our Sundance coal facility, driven by climate change regulation and low power prices. Planning for conversion of the majority of our coal facilities to gas in Alberta - accelerate emission reductions from our coal phase out and continue to support the Alberta transition to 30% renewable energy. Retirement or conversion of 50% of our Centralia coal plant by 2020 end, driven by climate related policy.

iv. Medium-long term (2022+): We will convert the majority of our coal units in 2022 to natural gas, accelerating emission reductions. By 2025 in Centralia, Washington State we will be off coal and have either retired or converted the facility to gas. Our last coal facility will be retired by 2030 or it will be converted to a gas facility. Our investment in coal will either converted to gas or retired by 2030. Hence by 2030, or sooner, our business will be completely off coal power generation. We will continue to grow our renewable and gas fleet from 2022+ and stay abreast of new technologies and business models in the energy sector. We are currently planning to a large hydro expansion, 600-900 MW of pumped hydro storage, that would be ready by the mid 2020's.

vi. Operating Canada's largest wind fleet & a growing renewables fleet gives us a competitive edge in terms of not just clean generation supply, but also the ability to leverage a renewables-heavy brand, highlighted by the launch of TA Renewables in 2013. TA has 100 years of experience, & our longevity translates into our ability to plan a strategic, long-term sustainability framework. Moving forward, we will utilize our renewables portfolio as a hedge against future regulatory uncertainty. Over time, TA will incur less & less of a financial burden from GHG emissions. We recognize that renewable & clean energy is a responsible & viable business decision.

vii. Most substantial business decisions of 2016:

-announced acceleration of coal phase-out and conversion of the majority of Alberta coal facilities to natural gas. Recently announced we are moving ahead with conversion planning and are targeting conversion in ~2022.

-announced our plans to explore hydro expansion, specifically 600-900 MW of pumped hydro, at our Brazeau facility in Alberta

-continued development of a combined cycle high efficiency natural gas facility in northern Western Australia. Helping meet demand in this region and reducing the grid emissions intensity profile

viii. We understand the need to accelerate progress, hence the announcement of our plans to convert our coal plants to gas, which accelerates emission reductions in Alberta and Canada.

ix. Yes we have transitioned our 2030 coal target of 19.7 million tonnes CO<sub>2</sub>e to a company-wide scope 1 & scope 2 target of 19.7 million tonnes CO<sub>2</sub>e and aligned this target with Sectoral Decarbonization Approach to prevention of 2 degrees of global warming. We are currently testing and reviewing this target via CDP's Science Based Initiative with the intention to officially submit this target.

---

**CC2.2b**

Please explain why climate change is not integrated into your business strategy

---

**CC2.2c**

**Does your company use an internal price on carbon?**

Yes

---

**CC2.2d**

**Please provide details and examples of how your company uses an internal price on carbon**

- TransAlta evaluates all internal business decisions specific to the jurisdictions in which we operate
- Where a jurisdiction has a clear carbon regulatory framework in place, or a clearly stated policy plan, we use that as the planning tool,
- In other jurisdictions where there is less clarity, we apply scenario analysis to an effective carbon price to guide decisions.
- We currently pay \$30 a tonne for emissions over and above our baseline in Alberta as part of the SGER regulation.
- In Alberta we model carbon price estimates at approximately \$30 a tonne for facilities where we have obligations to 2022 at which time we anticipate the carbon price rising to \$50 in line with Canadian federal guidance.
- While we do produce offset credits from our wind facilities, we do not include full-price modeling in budget calculations as the primary driver for wind facilities is their electrical generation, not their offset generating potential.
- We currently purchase carbon credits at market value in the California WCI Cap and Trade System, and we have begun modeling our Ontario potential obligations under this system as well.

---

**CC2.3**

**Do you engage in activities that could either directly or indirectly influence public policy on climate change through any of the following? (tick all that apply)**

Direct engagement with policy makers  
Trade associations  
Funding research organizations

Other

CC2.3a

On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Other: Capacity market (electricity)	Support	Directly engaged with policy-makers on redesign of Alberta electricity market. Encouraging design that supports industry, allows for integration and growth in renewables and protects consumer prices (does not cause price spikes)	"The government will work closely with the province's various electricity agencies, electricity generators, consumer groups, industry, and other stakeholders to implement a capacity market that will best serve Albertans. The new framework will be in place by 2021". <a href="https://www.alberta.ca/electricity-capacity-market.aspx">https://www.alberta.ca/electricity-capacity-market.aspx</a>
Carbon tax	Support with minor exceptions	Directly engaging with policy-makers, industry, NGOs on new carbon market design for Alberta, which will be effective Jan 1, 2018.	On Nov. 22, 2015, the Government of Alberta announced its Climate Leadership Plan. As part of the proposed legislation a new carbon system will be implemented. The Carbon Competitiveness Regulation will replace the current Specified Gas Emitters Regulation. We are supportive of this redesign and are advocating that design ensures competitiveness, growth and job creation in Alberta, while succeeding at reducing emissions.
Carbon tax	Support	Active market participant. Announced recently that we are exploring development of a 150 MW solar farm near Parkes, NSW.	In Australia, the Senate recently passed amendments to the country's Renewable Energy Target Scheme. The scheme was initially introduced in 2001 with three objectives: to establish a mandatory renewable energy target to be achieved in 2020; to provide incentives for large-scale renewable energy generators in the form of one large-scale generation certificate earned for each MWh of generation; and to require retailers and wholesale industrial customers to purchase a specified volume of their electricity from large-scale renewable-sourced electricity or incur a penalty of AUD\$65/MWh on any shortfall. The amendments reduced the annual targets for large-scale renewable sourced electricity down from 41,000 GWh in 2020 to 33,000 GWh in 2020, held constant at this level until 2030. It is estimated that this will require an additional 5,000-6,000 MW of new capacity to be installed to add to the slightly more than 4,000 MW already operating. Our existing Australian gas assets are fully contracted it is not expected that these amendments will have a significant impact.
Climate finance	Support with minor exceptions	Participant of Globe Capital in 2017. Supporting Alberta Securities Commission consultation on climate disclosure.	Unknown yet, but we are actively supporting. We currently integrate climate disclosure in our integrated report alongside financial reports, in line with TFCO recommendations.
Cap and trade	Support with	Signed TransAlta Energy Bill to support	On Aug. 3, 2015, President Obama announced the Clean Power Plan. The plan

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
	minor exceptions	phase out of coal and promote energy efficiency	sets GHG emission standards for new fossil-fuel-based power plants and emission limits for individual states. States will have the option of interpreting their limits in mass-based (tons) or rate-based (pounds per megawatt hour) terms. The plan is intended to achieve an overall reduction in GHG emissions of 32 per cent from 2005 levels by 2030. It will be implemented in two stages: 2022 to 2029, and 2030 and beyond. On Dec. 17, 2014, Washington State Governor Jay Inslee released a carbon-emissions reduction program for the State, where our U.S. Coal plant is located. Included in this program are a cap-and-trade plan and a low-carbon fuels standard. The proposed emissions cap will become more stringent over time, providing emitters time to transition their operations. These additional regulations for existing power plants are not expected to significantly affect our U.S. operations. TransAlta has agreed with Washington State to retire units in 2020 and 2025. This agreement is formally part of the State's climate change program. We believe that there will be no additional GHG regulatory burden on U.S. Coal given these commitments. The related TransAlta Energy Bill was signed into law in 2011 and provides a framework to transition from coal to other forms of generation.
Cap and trade	Support with minor exceptions	Responding to consultation and directly engaged with policy makers. We have been advocating for fair treatment of natural gas cogeneration.	On April 13, 2015, the Ontario government announced that Ontario will be implementing a GHG cap-and-trade system. The cap-and-trade system will impose a hard ceiling on the GHG emissions allowed in each sector of the economy. We have been part of consultation and a supporter of the system, which was implemented on Jan 1, 2017.

---

**CC2.3b**

**Are you on the Board of any trade associations or provide funding beyond membership?**

Yes

---

**CC2.3c**

**Please enter the details of those trade associations that are likely to take a position on climate change legislation**

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
Canadian Electricity Association	Consistent	The CEA advocates for rational climate change policy with the Canadian federal government as it relates to the electricity sector.	Yes, TransAlta sits on the board.
Canadian Wind Energy Association	Mixed	CanWEA is a non-profit representative of the Canadian wind industry, who through advocacy, education, communications, partnerships, networking and the promotion of best practices, represents its members in communication with the public, government and other stakeholders, aiming to ensure the growth and prosperity of Canadian wind energy. CanWEA believes that wind energy is a major part of the solution for reducing Canadian GHG emissions. The organization hosts conferences and networking events for members. TransAlta's position differs slightly in that the Company does not believe that the wind energy sector requires heavy government subsidy.	Yes, TransAlta sits on the Board.
Independent Power Producers Society of Alberta	Consistent	IPPSA offers a forum for Alberta's power producers to generate policy positions representing the interests of membership with government and stakeholders. IPPSA is a strong proponent of competitive market principles, allowing the market to determine the most appropriate types of energy generation. As Alberta shifts from coal to natural gas and renewables, IPPSA advises government on policy changes while representing the interests of its members.	Yes, TransAlta sits on the Board.
Canadian Clean Power Coalition	Mixed	The CCPC is an association of responsible, leading Canadian electricity producers. The CCPC believes that coal, along with a diverse mix of fuels like hydro, natural gas, wind, solar and nuclear, will play an important role in meeting the energy needs of the future. The CCPC's mandate is to research technologies with the goal of developing and advancing commercially viable solutions that lower coal power plant emissions. Our objective is to demonstrate that coal-fired electricity generation can effectively and economically address environmental issues - including CO2 emissions - and move us forward to a cleaner energy future.	Yes, TransAlta sits on the board.

**CC2.3d**

**Do you publicly disclose a list of all the research organizations that you fund?**

No

**CC2.3e**

**Please provide details of the other engagement activities that you undertake**

We engage as appropriate with government, policy makers, customers, and peer groups as requested or as required. As a company with a long Canadian history (105 years) we are well-positioned to bring our knowledge and expertise to new and developing areas (such as emissions management, low carbon generation and cap and trade, among others). TransAlta also supports numerous NGOs in various capacities, such as the Public Policy Forum, Canada West Foundation, Edison Electric Institute and the Excel Group

---

**CC2.3f**

**What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?**

Our clean power strategy, responsible growth in gas and renewables, accompanied with an internal roadmap provided to all leaders within the company and employees helps ensure consistency and alignment with our strategy. As a result direct and indirect activities are expected to be aligned with our strategic roadmap, which is a clean power future. This strategic direction is overseen by leadership and our board and we believe that in order to achieve this we need cross-functional buy-in. Deeper integration of sustainability, specifically via integrated reporting and our ongoing transformation process to a bottom up innovation employee driven company, has allowed for employees to not work in silos and helped them to think outside traditional boxes (i.e. through a triple bottom line lens). This shift will continue to take shape, but we believe these processes are already helping employees with consistency around messaging, strategy and management in line with our climate change strategy and clean power strategy.

---

**CC2.3g**

Please explain why you do not engage with policy makers

---

**Further Information**

**Attachments**

[https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC2.Strategy/TransAlta Climate Change Management\\_Identification of Risk and Opportunity.pdf](https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC2.Strategy/TransAlta Climate Change Management_Identification of Risk and Opportunity.pdf)  
[https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC2.Strategy/Q1-2017-Results\\_FINAL.pdf](https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC2.Strategy/Q1-2017-Results_FINAL.pdf)

CC3.1

Did you have an emissions reduction or renewable energy consumption or production target that was active (ongoing or reached completion) in the reporting year?

Absolute target

CC3.1a

Please provide details of your absolute target

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions covered by target (metric tonnes CO2e)	Target year	Is this a science-based target?	Comment
Abs1	Scope 1+2 (location-based)	100%	22%	2015	32227815	2021	No, but we are reporting another target which is science-based	Revised baseline to align with COP21 Paris Agreement. Revised targets to be company-wide and inclusive of scope 1 and 2 emissions.
Abs2	Scope 1+2 (location-based)	100%	61%	2015	32227815	2030	Yes, but this target has not been approved as science-based by the Science Based Targets initiative	Revised baseline to align with COP21 Paris Agreement. Revised target to company-wide and inclusive of scope 1 and 2 emissions. Aligned target with UN Sustainable Development Goals. Aligned target with science based target setting, specifically using the sectoral decarbonization approach - we have recently completed unofficial validation of this target with SBTi.

CC3.1b

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions covered by target	Target year	Is this a science-based target?	Comment
----	-------	-------------------------	----------------------------	--------	-----------	--	-------------	---------------------------------	---------

CC3.1c

Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment
----	---	--	---	--	---------

CC3.1d

Please provide details of your renewable energy consumption and/or production target

ID	Energy types covered by target	Base year	Base year energy for energy type covered (MWh)	% renewable energy in base year	Target year	% renewable energy in target year	Comment
----	--------------------------------	-----------	--	---------------------------------	-------------	-----------------------------------	---------

---

**CC3.1e**

For all of your targets, please provide details on the progress made in the reporting year

ID	% complete (time)	% complete (emissions or renewable energy)	Comment
Abs1	17%	22%	We made steady progress towards our target of reducing 7 million tonnes of CO2e by 2021. We continue to reduce our coal activity as we shift our business and capital allocation to renewable energy and natural gas power generation. We anticipate steady and small reductions in 2017 and a larger reduction in 2018 as per our announcement to retire 50% and mothball 50% our Sundance A coal facility (~3 million tonnes CO2e).
Abs2	7%	8%	We made steady progress towards our target of reducing 19.7 million tonnes of CO2e by 2030. Our announcement to accelerate our coal phase out and convert our coal plants to gas will help us realize more emission reductions at an earlier timeframe to the Federal coal closure timelines. This target has been aligned with the UN Sustainable Development Goals and aligned with science based target setting, specifically using the sectoral decarbonization approach. We have recently completed unofficial validation of this target with SBTi. We anticipate steady and small reductions in 2017 and a larger reduction in 2018 as per our announcement to retire 50% and mothball 50% our Sundance A coal facility (~3 million tonnes CO2e). We are again anticipating a large reduction in approximately 2022 when we switch the majority of our coal plants to gas (~8 million tonnes CO2e).

---

**CC3.1f**

Please explain (i) why you do not have a target; and (ii) forecast how your emissions will change over the next five years

---

**CC3.2**

Do you classify any of your existing goods and/or services as low carbon products or do they enable a third party to avoid GHG emissions?

Yes

**CC3.2a**

Please provide details of your products and/or services that you classify as low carbon products or that enable a third party to avoid GHG emissions

Level of aggregation	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
Group of products	Renewable energy (green electricity): hydro,	Low carbon product	Other: Internal model, based on grid based emissions within province/state	17%	More than 60% but less than or equal to 80%	A core piece of our business is now renewable energy electricity generation. We are the largest producer of wind electricity in Canada and the largest generator of hydro in Alberta.
Product	Renewable Energy Credits: Alberta Carbon Offsets & RECs	Low carbon product	Other: Wind Offset Protocol & EcoLogo	0.01%	Less than or equal to 10%	We market Alberta Carbon Offset credits and EcoLogo RECs to customers. Although the % of revenue is small we allow customers to offset or avoid xxxx tonnes

**CC3.3**

Did you have emissions reduction initiatives that were active within the reporting year (this can include those in the planning and/or implementation phases)

Yes

**CC3.3a**

Please identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	1	1763661
To be implemented*	7	9949187
Implementation commenced*	1	543996
Implemented*	4	350586
Not to be implemented		

### CC3.3b

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Low carbon energy purchase	Acquisition of Lakeswind, Minnesota wind farm in 2015. We realized our first full year of production in 2016	152822	Scope 2 (location-based)	Voluntary	14	49	4-10 years	21-30 years	Annual CO2e savings are calculated as emissions avoided/saved for our customers in Massachusetts (green energy procurement) versus the grid emission intensity of approximately 0.79 CO2e/MWh.

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
									Monetary savings are calculated as revenue earned from the facility in 2016, which were approximately \$14 million.
Low carbon energy purchase	Acquisition of Wintering Hills, Alberta wind farm in 2015. We realized our first full year of production in 2016	182572	Scope 2 (location-based)	Voluntary	6	0	<1 year	21-30 years	Annual CO2e savings are calculated as emissions avoided/saved for our customers in Alberta (green energy procurement) versus the grid emission intensity of approximately 0.82 CO2e/MWh. Wintering Hills and Kent Breeze were acquired in swap of assets with Suncor Energy. TransAlta divested gas power generation assets to acquire both facilities. Monetary savings are calculated as revenue earned from the facility in 2016, which were approximately \$6 million.
Low carbon energy purchase	Acquisition of Kent Breeze, Ontario wind farm in 2015. We realized our first full year of production in 2016	2039	Scope 2 (location-based)	Voluntary	5	0	<1 year	21-30 years	Annual CO2e savings are calculated as emissions avoided/saved for our customers in Ontario (green energy procurement) versus the grid emission intensity of approximately 0.05 CO2e/MWh. Wintering Hills and Kent Breeze were acquired in swap of assets with Suncor Energy. TransAlta divested gas power generation

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
									assets to acquire both facilities. Monetary savings are calculated as revenue earned from the facility in 2016, which were approximately \$5 million.
Low carbon energy purchase	Acquisition of Massachusetts solar farm in 2015. We realized our first full year of production in 2016	13154	Scope 2 (location-based)	Voluntary	21	55	1-3 years	21-30 years	Annual CO2e savings are calculated as emissions avoided/saved for our customers in Massachusetts (green energy procurement) versus the grid emission intensity of approximately 0.48 CO2e/MWh. Monetary savings are calculated as revenue earned from the facility in 2016, which were approximately \$21 million.

### CC3.3c

What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Alberta Carbon Markets (SGER), Australian carbon markets. More broadly, CEPA in Canada and EPA in the U.S.

Method	Comment
Dedicated budget for low carbon product R&D	We consider our Business Development, heavily focused on renewable energy and low carbon technology, an application of R&D
Internal finance mechanisms	Created TransAlta Renewables (TRI) in 2013 to help generate cash flow for TransAlta, moved several assets into the TRI portfolio through 2014.
Partnering with governments on technology development	We have partnered with the government of Alberta to transition our coal fleet to gas in order to accelerate emission reductions and enable an affordable and reliable switch to renewable energy in the province.
Employee engagement	EcoAction Team- internal committee focused on raising awareness and engaging employees on sustainability issues. Eco-savings challenges, bike to work days, eco-fairs, etc.

### CC3.3d

If you do not have any emissions reduction initiatives, please explain why not

### Further Information

**Page: CC4. Communication**

### CC4.1

Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s)

Publication	Status	Page/Section reference	Attach the document	Comment
In mainstream reports (including an integrated	Complete	1-2, M24, M26, M44, M13, M33, M46-49,		This year we aligned our climate disclosure efforts with TFCD recommendations. We will continue to build on this platform.

Publication	Status	Page/Section reference	Attach the document	Comment
report) but have not used the CDSB Framework		M50-51, M63, M65, M69, M73, F32-34, 193		<a href="http://www.transalta.com/wp-content/uploads/2016/12/TAC2016_IntegratedReport-Final.pdf">http://www.transalta.com/wp-content/uploads/2016/12/TAC2016_IntegratedReport-Final.pdf</a>
In other regulatory filings	Complete	11-19, 23, 39		We have added commentary in our 2017 Proxy Circular on our Board of Directors expertise. All of our Board has expertise in Climate Change management. This is a very material area for our business.
In voluntary communications	Complete	Website		<a href="http://www.transalta.com/sustainability/climate-change-action">http://www.transalta.com/sustainability/climate-change-action</a>
In other regulatory filings	Complete	29-31, 33-35, 37, 39, 41, 44, 47		We discuss climate change policy impacts and climate change related risks in our 2017 Annual Information Form

#### Further Information

We were recognized last year via a Chartered Professional Accountants (CPA) study as the only company in Canada to integrate climate disclosure across all of our external disclosures.

### Module: Risks and Opportunities

#### Page: CC5. Climate Change Risks

##### CC5.1

**Have you identified any inherent climate change risks that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply**

Risks driven by changes in regulation  
Risks driven by changes in physical climate parameters  
Risks driven by changes in other climate-related developments

##### CC5.1a

Please describe your inherent risks that are driven by changes in regulation

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Carbon taxes	On Oct. 3, 2016, the Canadian federal government announced its intention to implement a national price on GHG emissions. Under this proposal, beginning in 2018, there would be a price of \$10 per tonne of carbon dioxide equivalent emitted, rising to \$50 per tonne by 2022, or a comparable reduction in GHGs under a cap-and-trade program. The application of the price would be coordinated with provincial jurisdictions.	Increased operational cost	3 to 6 years	Direct	Virtually certain	High	Our Alberta, Canada coal plants are currently subject to a \$30 tonne CO2e price on carbon. The price of carbon flows through to our customers as per arrangements in our long-term contracts. Alberta has experienced a very low electricity price environment for several years and prices are anticipated to remain low in the foreseeable future. Many of our coal units are currently under long-term contracts, with a fixed price, but as	We have explored numerous options internally and the most balanced and sustainable solution is conversion of our coal plants to natural gas. We worked closely with both Provincial and Federal governments and signed a memorandum of understanding to explore conversion in full. Conversion ensures an acceleration of coal phase out in Alberta (and associated environmental benefits, reduced carbon and air emissions), it	Conversion of coal units will cost approximately \$50 million per coal unit. We are currently exploring conversion of six units, hence a total investment of \$300 million in the 2021-2023 time frame.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							the contracts roll off in the 2018-2021 time frame our economics, inclusive of \$50 carbon price are very challenged. Operating income in 2016 from Canadian coal was \$166 million, which does not price in a \$50 carbon price. Given our current emission profile the combined carbon price to units in operation could be as high as \$150 million.	allows a balanced approach to increasing renewable energy in Alberta (while maintaining grid reliability, price affordability and protecting jobs for Albertans). The environmental benefits are also significant. On Apr 19, 2017 we announced plans to move ahead with conversion of coal plants. Our partner and operator at Sheerness has also announced its intention convert the plant to natural gas in the early 2020 time frame.	
Uncertainty surrounding	In Nov, 2015 Alberta	Reduction/disruption in production	>6 years	Direct	Likely	High	1. Loss on invested	On March 16, 2016, the	As discussed in financial

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
new regulation	announced its Climate Leadership Plan, which was passed on May 24, 2016 as the Climate Leadership Implementation Act. One component of that plan was to phase out all coal-fired power generation 2030. The majority of our coal plants were already scheduled for phase-out/closure under Canadian Federal Coal-Fired GHG rules by 2030, but some of jointly owned facilities have operating lives well past 2030 - presenting a stranded capital scenario. The decision impacts the expected operating lives of	capacity					capital, debt financing, which helped provide the capital to build newer projects 2. Revenue loss post-2030: anywhere from \$200 million - \$300 million per year. 3. Uncertainty surrounding stranded assets was priced in to our market valuation. Our stock price remained low until a final decision was secured.	Government of Alberta announced the appointment of a Coal Phase-out Facilitator to work with coal-fired electricity generators (TransAlta included), the Alberta Electric System Operator ("AESO"), and the Government of Alberta to develop options to phase out emissions from coal-fired generation by 2030. The Coal Phase-out Facilitator was tasked with presenting options to the Government of Alberta that would strive to maintain the reliability of Alberta's electricity grid, maintain	implications, there were significant long-term costs associated with stranding capital. In the short-term our stock price felt the impact of uncertainty surrounding stranded capital. The cost to management in 2016 was largely internal as ongoing negotiations resulted in an increased workload, shared amongst a number of our employees and led by our CEO, Dawn Farrell. Employees who went above and beyond to help secure what was a fair deal

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>our wholly or jointly owned assets at Genesee 3, Keephills 3, and Sheerness. Keephills 3 and Genesee 3, supercritical coal plants, have the ability to run until the early 2060's.</p>							<p>stability of prices for consumers, and avoid unnecessarily stranding capital. We were part of ongoing discussion and negotiation for 8 months with the stakeholders listed above. On Nov. 24, 2016, we announced that we had entered into the OCA, which provides for transition payments for the cessation of coal-fired emissions from the Keephills 3, Genesee 3 and Sheerness coal-fired plants on or before Dec. 31, 2030. The affected plants are not, however, precluded from generating</p>	<p>for all stakeholders were compensated for their additional workload. The benefit to completed negotiations was evidenced by our stock price, which went from \$5.86 at open on Nov 23, 2016 to \$7.33 at close on Nov 25.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								electricity at any time by any method other than the combustion of coal. Under the terms of the OCA, the Corporation will receive annual cash payments of approximately \$37.4 million, net to the Corporation, commencing in 2017 and terminating in 2030.	
Uncertainty surrounding new regulation	On Nov. 21, 2016, the Canadian federal government announced that the Department of Environment and Climate Change will be developing regulations for gas-fired generation. The announcement confirmed plans	Reduction/disruption in production capacity	1 to 3 years	Direct	Virtually certain	High	If coal to natural-gas fired generation rules are stricter than anticipated it could deem conversion uneconomic. We would avoid the capital spend to convert the plants, \$300 million, but	We announced that we had reached an understanding set out in a Memorandum of Understanding to collaborate and co-operate with the Government of Alberta in the development of a policy framework to	Cost are internal, employee time, we continue to work with the Government and industry to provide accurate information to help facilitate fair regulations, which are balanced and sustainable.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>to include specific rules for coal-to-gas converted units, including a proposed 15-year life and a separate emissions intensity standard. The Canadian federal government will conduct consultations on the proposed regulation in the first two quarters of 2017. Finalized regulations are currently expected by the end of 2018.</p>						<p>would lose revenue upside on a longer-term basis as these plants would be bordering on uneconomic, given the anticipated price of electricity and impact of a \$50 carbon price by 2022. If the plants run as coal plants they will retire from 2018-2030 as per economics. Hence we would see a quicker phase out of use able infrastructure and lose the ability to capture upside revenue from conversion.</p>	<p>facilitate the conversion of coal-fired generation to gas fired generation, facilitate existing and new renewable electricity development through supportive and enabling policy, and ensure existing generation and new electricity generation are able to effectively participate in the recently announced capacity market to be developed for the Province of Alberta. The Province is working with the Federal Government to help facilitate a successful transition to a clean economy,</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								which includes coal to gas conversion in Alberta as an enabler for a transition to 30% renewable energy generation in the province by 2030.	
Uncertainty surrounding new regulation	On Dec. 17, 2014, Washington State Governor Jay Inslee released a carbon-emissions reduction program for the state, which is where our U.S. Coal plant is located. Included in this program are a cap-and-trade plan and a low-carbon fuels standard. The proposed emissions cap will become more stringent over time,	Increased operational cost	3 to 6 years	Direct	Unknown	Low	If plants were running at full capacity we would expect increased operating costs and capital costs to reduce our emission profile.	These additional regulations for existing power plants are not expected to significantly affect our U.S. operations. TransAlta has agreed with Washington State to retire units in 2020 and 2025. This agreement is formally part of the State's climate change program. We currently believe that there will be no additional GHG regulatory	Currently there is no cost associated with complying with these regulations. However as per the TransAlta Energy Bill we anticipate costs to convert plants. See below.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>providing emitters time to transition their operations. On Aug. 3, 2015, former U.S. President Obama announced the Clean Power Plan. The plan sets GHG emission standards for new fossil-fuel-based power plants and emission limits for individual states. States will have the option of interpreting their limits in mass-based (tons) or rate-based (pounds per MWh) terms. The plan is intended to achieve an overall reduction in GHG emissions of 32 per cent from 2005 levels by</p>							<p>burden on U.S. Coal given these commitments. The related TransAlta Energy Bill was signed into law in 2011 and provides a framework to transition from coal to other forms of generation. We continue to monitor Clean Power Plan developments nevertheless.</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	2030. It will be implemented in two stages: 2022 to 2029, and 2030 and beyond. On Feb. 9, 2016, the U.S. Supreme Court stated the implementation of the Clean Power Plan was pending consideration as to whether the regulations are lawful. It is not clear yet how this may affect the future of the Clean Power Plan. Donald Trump signed an executive order for further review of the Clean Power Plan on March 28, 2017.								
Air pollution limits	Washington State Senate Bill 5769 requires that the TransAlta Centralia facility shut down one	Reduction/disruption in production capacity	3 to 6 years	Direct	Likely	Medium-high	If complete shutdown occurs, associated revenue will be lost. Centralia generated	We continue to explore the feasibility of natural gas fired generation at Centralia, which looks promising,	Cost to convert both plants is estimated at \$100 million.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	coal-fired boiler in 2020 and the other in 2025. Agreements are in place with legislature to transition the facility to a natural gas plant by using some of the existing infrastructure, but there remains some uncertainty around cost and feasibility.						\$380 million in revenue in 2015. However net income from the facility was -\$20 million due to sustaining capital. Cost to convert will be similar to that at Alberta coal, we are estimating in the range of \$50 million.	and we continue to work with local government and stakeholders to assess demand and the need for conversion.	

#### CC5.1b

Please describe your inherent risks that are driven by changes in physical climate parameters

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in precipitation extremes and	Climate change modeling suggests	Reduction/disruption in production capacity	Unknown	Direct	About as likely as not	Medium-high	Our hydro operations accounted for \$82 million in	Insurance deductibles covered \$22 million in losses.	Building in flood resiliency increases our sustaining

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
droughts	increased extreme weather events. Our hydro operations were impacted from increased precipitation and snow melt in 2013, which resulted in flooding and damage to operations. Many forecasts and natural weather changes anticipate drought in southern Alberta and in Western Australia.						EBITDA in 2015. Disruptions in operations have already occurred in 2015/2016 as we have entered into interim agreements with the provincial government to use our dams for flood and drought controls (no anticipated financial impact incurred by TransAlta). In addition to disrupted operations, the flood in 2013 cost TransAlta ~\$70 million (damage and lost revenue). In 2014 flood rebuild costs were \$22 million. TOTAL financial implications: ~\$92 million. Drought and	We entered in to an agreement with the Government of Alberta to manage water in the Bow River (river flows from the Rocky Mountains and runs through Calgary, AB and other large communities) to aid potential flood mitigation and the impact on communities. We have mitigated drought concerns in southern Alberta by way of only having hydro and wind operations. Our hydro operations rely on natural water flows. We remain at risk from forest fires.	capital. Major maintenance increased to \$10 million in 2015 and remained \$10 million in 2016.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							fires also have the potential to impact operations. Estimated financial implications are hard to quantify. From a geographical standpoint our most at risk facilities are in densely treed areas in the Canadian mountains.		
Change in temperature extremes	For our Australia operations, there is a risk of increased summer temperatures where gas turbines could de-rate above normal. A more drastic range of extreme temperatures could be directly correlated to an increased incidence of	Reduction/disruption in production capacity	3 to 6 years	Direct	Likely	Low-medium	The increased temperatures in Australia could result in lost production and associated revenue, should production be disturbed. Australia provided \$174M in revenue in 2016. An average 5-10% de-rate would reduce revenue by ~\$8.7-\$17.4M.	Plants and equipment are designed to operate in hot weather conditions. For future planning purpose (such as with our new South Hedland project) we have ensured design of facilities incorporates changes in ambient temperatures. This may include turbine positioning,	Additional capital costs: approximately \$250,000

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	extreme weather events such as cyclones See below).							insulation and cooling procedures. For existing sites, this will require adjustments to cooling mechanisms and possible changes in generation.	
Snow and ice	More frequent extreme winter temperatures could increase the frequency of icing events (blade icing) at our wind farms, which could result in unanticipated downtime.	Reduction/disruption in production capacity	1 to 3 years	Direct	Likely	Low-medium	\$3-\$6 million annually	Operational procedures being developed and incorporated to monitor weather patterns and potential for icing events. Resulting in modified site operations to reduce impact	This is incorporated into existing weather monitoring and business as usual activity, as such there is no incremental cost
Tropical cyclones (hurricanes and typhoons)	There is expected to be an increase in cyclone activity, affecting our newly acquired Solomon Power station in Australia. Although cyclone strength dissipates	Reduction/disruption in production capacity	1 to 3 years	Direct	About as likely as not	Low	For Solomon, the fact that the facility is located inland will minimize the impact of cyclones on operations. South Hedland (construction currently being completed) is aware that their location could	Facility design specifications, careful weather pattern monitoring, and comprehensive environmental management systems.	We already incorporate much of this management into day to day operations, so no significant additional costs are anticipated.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	inland, large amounts of rain and high winds still remain a physical risk. Our other Australia site, South Hedland, is coastal and could be directly affected by storm surge, wind and rain.						be impacted, and damage prevention is built into the capital cost. Disruption of services and direct revenue impact are possible. It is difficult to predict exact impacts, but approx. 1 million is possible.		
Other physical climate drivers	Climate change modeling suggests that the frequency of extreme tornado activity in North America will expand into northern latitudes, with the potential to specifically impact facilities in central Alberta, Southern Ontario and Quebec.	Reduction/disruption in production capacity	>6 years	Direct	About as likely as not	Low	Could severely damage wind turbines, turbine blades, and power transport infrastructure. Damages in the millions would be possible, with repairs, insurance claims, and lost revenue accounted for.	Management would include careful monitoring of severe weather, and comprehensive environmental management systems.	We already incorporate much of this management into day to day operations, so no significant additional costs are anticipated.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in precipitation extremes and droughts	Potential for droughts in Alberta pose a risk to our hydro facilities in terms of downstream obligations. We are responsible for water flow to people and industry downstream.	Reduction/disruption in production capacity	>6 years	Direct	About as likely as not	Low	We currently have an interim agreement with the Alberta government to manage water flows for flood prevention. However, if drought conditions become apparent, then a new strategy would need to be crafted. Using our hydro facilities for water management as opposed to electricity generation impacts our revenues associated with these units.	Monitoring of river and stream flows currently occurs on a 24/7 basis. We carefully watch snowpack levels, stream flows, and rainfall when planning reservoir capacities. While drought and flood conditions impact these decisions, the infrastructure and planning capabilities are already in place.	We already incorporate much of this management into day-to-day operations, so no significant additional costs are anticipated.

CC5.1c

Please describe your inherent risks that are driven by changes in other climate-related developments

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Reputation	Our existing coal fleet makes up 57% of our capacity and by nature of being a "coal company" we are at times cast in a negative light by stakeholders, environmental groups or reporters. More often than not claims are made regarding our involvement in coal without clear reference to facts and figures, or at times data is misinterpreted or taken out of context. This leads to questions pertaining to our credibility as a company and undermines our broader contributions to the economy and society.	Reduced demand for goods/services	Unknown	Direct	About as likely as not	High	Continued rhetoric surrounding coal and health impacts has supported the phase out of coal. This is far more intangible to cost than actual regulatory actions surrounding coal shutdowns, but we are conscience it has played a role in phase out.	We are very supportive of good dialogue and addressing issues including the health impact of coal. Overtime we have increasingly and strictly managed the environmental impacts as we have learned more regarding possible impacts. Given the isolated nature of our Alberta coal plants studies have shown that they are not impacting health in major urban centres. We are supportive of coal phase out and as discussed above we have accelerated this phase out with announcement of plans to convert plants to natural gas. This was motivated not only by economics, but we also believe in	The cost to convert coal plants, per unit, is \$50 million. Totaling \$300 million for six units. New renewable energy assets will be continued to be financed through a mixture of balance sheet financing or debt financing and long-term contracting (PPA's). Near-term opportunities for Alberta and Saskatchewan's renewables procurement: <input type="checkbox"/> Antelope Coulee (up to 200MW) - \$400 million <input type="checkbox"/> Garden Plains (130MW) - \$260 million <input type="checkbox"/> Cowley Ridge Repower (20MW) - \$40 million Australian Solar projects <input type="checkbox"/> Goonumbla Solar Farm (80MW) - \$160 million

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								<p>the transition as an opportunity to mitigate environmental risk and impact. We have also announced clear strategic plans to be the leading clean power company in Canada by 2030 and the concrete steps necessary to achieve that goal. As per the strategy we are targeting strategic growth in both renewable energy and gas. Since 2000 we have begun increasing our diversification of renewable assets by entering in to the wind business. Today we are the largest wind producer in Canada, a title we are very proud to hold. We are also the largest producer of hydro in Alberta. Our growth and</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								leadership in renewable energy has been a strong reputational value add	
Changing consumer behavior	Some uncertainty exists with consumer trends for energy. Some consumers currently prefer purchasing electricity from "green sources" and it is possible that these consumer choices could lead to a shift in the grid towards more localized power stations and/or self-sufficiency. This may require the accelerated development of new technologies on the part of industry.	Reduced demand for goods/services	>6 years	Direct	About as likely as not	Low	TransAlta has a mix of large scale and small scale decentralized facilities. The impact would be to our large scale facilities. TransAlta has the majority of its renewable energy facilities already Eco-Logo certified. The impact could be a reduction in demand and associated revenue for	Continuing with the TransAlta growth strategy directed at natural gas and renewables generation. We also seek long-term contracting solutions where possible to mitigate. TransAlta also sees the opportunity to support customer solutions with the design, build and operation of small-scale localized power generation. This is something we already offer to industrial customers, called "Behind the Fence" generation of electricity at the point of demand.	We already incorporate much of this management into day-to-day operations, so no significant additional costs are anticipated.

---

CC5.1d

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

CC5.1e

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

CC5.1f

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

**Further Information**

**Page: CC6. Climate Change Opportunities**

---

CC6.1

**Have you identified any inherent climate change opportunities that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply**

- Opportunities driven by changes in regulation
- Opportunities driven by changes in physical climate parameters
- Opportunities driven by changes in other climate-related developments

CC6.1a

**Please describe your inherent opportunities that are driven by changes in regulation**

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Product efficiency regulations and standards	TransAlta is exploring energy storage for use as an ancillary service	New products/business services	1 to 3 years	Direct	Likely	Medium	Capturing energy and offering it as an ancillary service would be an additional revenue stream for TransAlta	We are working with the Alberta Electric System Operator to integrate and help formulate rules around energy storage as part of the Alberta grid	There will be capital costs associated with integrating energy storage, we can not make these public at this time. We have been offered grants, which will help project economics in this area.
Renewable energy regulation	In March 2016, Alberta began development of its renewable	New products/business services	>6 years	Direct	Very likely	High	Successful project will be awarded a Renewable Electricity Supply	We have close to shovel-ready projects ready that will be submitted, which can	\$2 million per MW of wind development. Cost of capital likely reduced if winning bid

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>energy procurement process design for the AESO to procure a first block of renewable generation projects to be in-service by mid-2019. On Sept. 14, 2016, the Government of Alberta reconfirmed its commitment to achieve 30 per cent renewables in Alberta's electricity energy mix by 2030. The Government of Alberta's Renewable Electricity Program is intended to encourage the development of 5,000 MW of new renewable</p>						<p>Agreement that utilizes an indexed renewable energy credit or contract for difference mechanism that will fix the price to the proponent over 20 years. The contracts are expected to require the facility to be operational by 2019. Secured pricing support significantly helps support build of renewables.</p>	<p>meet the 2019 timeline. Short-term and long-term benefits as renewable energy will continue to be integrated in to the Alberta grid until 2030. Also indirect benefit as we market green energy to our customers.</p>	<p>and fixed contract secured. Reference TransAlta Investor Presentation for near opportunities in Alberta, which include Cowley Ridge 20MW &amp; \$40 million AND Garden Plains 130MW and \$260 million.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>electricity capacity by 2030. The AESO is currently soliciting interest in the first competitive procurement for 400 MW under the program. Proponents must submit an expression of interest by late March 2017. The process will be followed by a request for qualification in late April 2017, request for proposal in mid-September 2017 and successful proponents announced in December 2017. As an established renewable energy power</p>								

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	generator TransAlta has competitive advantage in the construction and operation of renewable energy facilities.								
Cap and trade schemes	TransAlta's Alberta wind facilities currently create ~500,000 tonnes / year of saleable greenhouse offset credits gas credits. These credits generate an incremental revenue stream. In addition a number of our wind and hydro facilities generate Renewable Energy Credits (REC), which creates a	New products/business services	Up to 1 year	Direct	Virtually certain	Medium	We generate approximately \$10M - \$15M / year from sales of emission offsets and Renewable Energy Credits. Increasing carbon market prices have a positive impact - in Alberta the carbon price is now \$30/tonne.	We verify our emissions from our renewable energy facilities and also have an emission trading group who markets offset products.	Cost of verification varies, but is estimated at ~\$15k-\$30k per year for AB offsets and less for RECs.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	saleable or tradeable product.								

**CC6.1b**

Please describe your inherent opportunities that are driven by changes in physical climate parameters

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in mean (average) temperature	If temperatures increase, we expect spring, summer, fall electricity loads to also increase (due to increase demand for cooling).	Premium price opportunities	1 to 3 years	Direct	More likely than not	Low-medium	An increase in demand typically leads to higher price per MWh, which would have direct positive impact on our revenue. Currently we earn \$100-\$150 million of revenue from MWh merchant sales. Price spikes could see this total increase anywhere from 10-20% (or much more). A	We currently have a geographically diverse portfolio, diverse fuel types and an active energy trading group, so we are well positioned to take advantage and quickly deploy generation when demand spikes, allowing us to realize revenue.	No incremental costs anticipated, as assets are already in operation.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							15% increase would add ~\$18.5 million of revenue annually.		
Change in temperature extremes	Climate change may result in hotter summer temperatures, especially in Northern latitudes. For Alberta, hotter summers will have a direct impact on demand, as people increase their electricity usage for cooling. Greater market volatility (regarding electricity price and demand) will result in greater trading opportunities.	Increased demand for existing products/services	3 to 6 years	Direct	More likely than not	Low-medium	Greater electricity revenues in Alberta and the Pacific Northwest, increased load demand generally increases electricity prices, which would directly impact our revenues. We foresee a positive financial impact, although exact projections would be difficult to estimate.	We currently have a geographically diverse portfolio, diverse fuel types and an active energy trading group, so we are well positioned to take advantage and quickly deploy generation when demand spikes, allowing us to realize revenue.	No incremental costs anticipated.
Other physical climate opportunities	Increased wind activity or a change in wind pattern could correlate to an increase in marketable RECs (renewable	Increased production capacity	>6 years	Direct	About as likely as not	Low-medium	A change in wind patterns (possible as a result of changing jet-streams) could increase wind in some areas. An	We have wind expertise in building, acquiring, and managing wind sites, so should new areas become	Cost of capital for building and acquiring wind.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	energy credits).						increase in wind availability would directly increase our revenues from this business group. We foresee a positive financial impact, although exact projections would be difficult to estimate.	attractive to wind investment we would be ready to take advantage.	

CC6.1c

Please describe your inherent opportunities that are driven by changes in other climate-related developments

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Reputation	Shift away from coal and towards low carbon power generation will help build TransAlta's reputation as a socially conscious company. Our mission is to	Other: Social licence	>6 years	Direct	Very likely	Medium-high	Intangible, hard to quantify, but a good reputation lends itself employee morale, stakeholder support and investor support for proposed projects	Formed TransAlta Renewables (TRI.TO) as an investment vehicle to allow investors the ability to invest in low carbon and long-term contracted assets (steady yield). Announced transition away from	Costs to form TransAlta Renewables in 2013, which are not disclosed. Gas conversions are approximately \$50 million per unit and renewable energy development is ~2-3 million per MW

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	become Canada's leading clean power in Canada by 2030.							coal and conversion to gas alongside a clean power strategy (growth in gas & renewables)	installed capacity.
Changing consumer behavior	TransAlta's increasing portfolio of affordable renewable energy will attract new consumers and allow them to reduce their carbon footprint.	Wider social benefits	3 to 6 years	Indirect (Client)	Very likely	Medium-high	Increased revenue from the renewable energy side of our business. Affordable and clean electricity provided to customers.	Our clean power growth strategy places high priority on growth in renewables. We have close 1000 MW of near-term opportunities in renewables.	Our cost to build wind is \$2 million per MW of installed capacity. Solar is slightly higher and to develop our Brazeau pumped Hydro storage project the cost is ~\$3 million per MW of installed capacity (much longer asset life).

CC6.1d

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1e

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

CC6.1f

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

---

**Further Information**

**Attachments**

[https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC6.ClimateChangeOpportunities/TransAlta-Investor-Presentation-FINAL-2 \(1\).pdf](https://www.cdp.net/sites/2017/28/19328/Climate%20Change%202017/Shared%20Documents/Attachments/ClimateChange2017/CC6.ClimateChangeOpportunities/TransAlta-Investor-Presentation-FINAL-2%20(1).pdf)

**Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading**

**Page: CC7. Emissions Methodology**

---

CC7.1

Please provide your base year and base year emissions (Scopes 1 and 2)

Scope	Base year	Base year emissions (metric tonnes CO2e)
-------	-----------	--

Scope	Base year	Base year emissions (metric tonnes CO2e)
Scope 1	Thu 01 Jan 2015 - Thu 31 Dec 2015	32041425
Scope 2 (location-based)	Thu 01 Jan 2015 - Thu 31 Dec 2015	186390
Scope 2 (market-based)		

---

### CC7.2

Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Please select the published methodologies that you use
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
Australia - National Greenhouse and Energy Reporting Act
US EPA Climate Leaders: Direct Emissions from Stationary Combustion
Other

---

### CC7.2a

If you have selected "Other" in CC7.2 please provide details of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Government of Alberta, Technical Guidance for Completing Specified Gas Compliance Reports  
Government of Alberta, Specified Gas Reporting Standard

Government of Canada, Technical Guidance on Reporting Greenhouse Gas Emissions  
Ontario Ministry of the Environment, Guideline for Greenhouse Gas Emissions Reporting  
USEPA, 40 CFR Part 98, Mandatory Reporting of Greenhouse Gases; Final Rule

Alberta and Ontario emission sources from facilities verified to a reasonable assurance level as per greenhouse gas compliance

---

**CC7.3**

**Please give the source for the global warming potentials you have used**

Gas	Reference
CO2	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	IPCC Fourth Assessment Report (AR4 - 100 year)
SF6	IPCC Fourth Assessment Report (AR4 - 100 year)

---

**CC7.4**

**Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data at the bottom of this page**

Fuel/Material/Energy	Emission Factor	Unit	Reference
			please see attachment

---

**Further Information**

## Attachments

[https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/ClimateChange2017/CC7.EmissionsMethodology/Emissions Factors.xlsx](https://www.cdp.net/sites/2017/28/19328/Climate%20Change%202017/Shared%20Documents/Attachments/ClimateChange2017/CC7.EmissionsMethodology/EmissionsFactors.xlsx)

## Page: CC8. Emissions Data - (1 Jan 2014 - 31 Dec 2014)

---

### CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

---

### CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO<sub>2</sub>e

34892415

---

### CC8.3

Please describe your approach to reporting Scope 2 emissions

Scope 2, location-based	Scope 2, market-based	Comment
We are reporting a	We have no operations where we are able to access	The majority of our electricity purchases occur in Alberta and are made on

Scope 2, location-based	Scope 2, market-based	Comment
Scope 2, location-based figure	electricity supplier emissions factors or residual emissions factors and are unable to report a Scope 2, market-based figure	the spot market, essentially a pool of all electricity in Alberta, hence using a location based approach and the AB grid emission intensity factor is applicable

**CC8.3a**

Please provide your gross global Scope 2 emissions figures in metric tonnes CO<sub>2</sub>e

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
182349		

**CC8.4**

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

**CC8.4a**

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of location-based Scope 2 emissions from this source	Relevance of market-based Scope 2 emissions from this source (if applicable)	Explain why the source is excluded
--------	---	--	--	------------------------------------

**CC8.5**

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	Less than or equal to 2%	Extrapolation Metering/ Measurement Constraints Data Management	Measurement standards meet industry and regulation best practice. The majority of our facilities operate in carbon markets; hence emissions are reasonably verified and in addition verified to limited assurance for annual integrated reporting. Calibration inaccuracies are possible with the CEMS systems, although regular maintenance and calibration is conducted to avoid such inaccuracies. At our coal facilities in Alberta, TransAlta utilizes lab analyses from three different laboratories to ensure accuracy of coal quality results and avoid inherent bias.
Scope 2 (location-based)	Less than or equal to 2%	Data Gaps Metering/ Measurement Constraints Data Management	Inaccuracies in meter reads and management of collected data are the most problematic issues surrounding scope 2 emissions. However this is a highly scrutinized system as meter reads dictate revenue and money that transfers hands in regards to purchased electricity. Major issues faced include miscommunication with plants/facilities regarding their use of electricity, hence data gaps and management.
Scope 2 (market-based)	Less than or equal to 2%	Other: Not applicable	

**CC8.6**

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance process in place

**CC8.6a**

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Annual process	Complete	Limited assurance	<a href="https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC8.6a/2014_Report_on_Sustainability.pdf">https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC8.6a/2014_Report_on_Sustainability.pdf</a>	62-63	ISAE3000	100

**CC8.6b**

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emission Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

**CC8.7**

**Please indicate the verification/assurance status that applies to at least one of your reported Scope 2 emissions figures**

Third party verification or assurance process in place

**CC8.7a**

Please provide further details of the verification/assurance undertaken for your location-based and/or market-based Scope 2 emissions, and attach the relevant statements

Location-based or market-based figure?	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Location-based	Annual process	Complete	Limited assurance	<a href="https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC8.7a/2014_Report_on_Sustainability.pdf">https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC8.7a/2014_Report_on_Sustainability.pdf</a>	62-63	ISAE3000	100

**CC8.8**

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
Year on year emissions intensity figure	Included within the scope of our assurance
Year on year change in emissions (Scope 1 and 2)	Included within the scope of our assurance

---

#### CC8.9

**Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?**

No

---

#### CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

---

#### Further Information

For 2016 assurance please use link below and view pages 196-197: [http://www.transalta.com/wp-content/uploads/2016/12/TAC2016\\_IntegratedReport-Final.pdf](http://www.transalta.com/wp-content/uploads/2016/12/TAC2016_IntegratedReport-Final.pdf)  
 For 2015 assurance please use link below and view pages 192-193: [http://www.transalta.com/sites/default/files/TransAlta\\_2015\\_Integrated\\_full\\_report.pdf](http://www.transalta.com/sites/default/files/TransAlta_2015_Integrated_full_report.pdf)  
 For 2014 assurance please use link below and view pages 62-63: [http://www.transalta.com/sites/default/files/2014\\_Report\\_on\\_Sustainability.pdf](http://www.transalta.com/sites/default/files/2014_Report_on_Sustainability.pdf) In addition to the limited assurance above, 77% of total GHG from operations in 2014 were reasonably assured for GHG regulatory purposes.

**Page: CC8. Emissions Data - (1 Jan 2015 - 31 Dec 2015)**

---

#### CC8.1

**Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory**

Operational control

---

**CC8.2**

**Please provide your gross global Scope 1 emissions figures in metric tonnes CO<sub>2</sub>e**

32041425

---

**CC8.3**

**Please describe your approach to reporting Scope 2 emissions**

<b>Scope 2, location-based</b>	<b>Scope 2, market-based</b>	<b>Comment</b>
We are reporting a Scope 2, location-based figure	We have operations where we are able to access electricity supplier emissions factors or residual emissions factors, but are unable to report a Scope 2, market-based figure	The majority of our electricity purchases occur in Alberta and are made on the spot market, essentially a pool of all electricity in Alberta, hence using a location based approach and the AB grid emission intensity factor is applicable

---

**CC8.3a**

**Please provide your gross global Scope 2 emissions figures in metric tonnes CO<sub>2</sub>e**

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
186390		

**CC8.4**

**Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?**

No

**CC8.4a**

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of location-based Scope 2 emissions from this source	Relevance of market-based Scope 2 emissions from this source (if applicable)	Explain why the source is excluded

**CC8.5**

**Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations**

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	Less than or equal to 2%		Measurement standards meet industry and regulation best practice. The majority of our facilities operate in carbon markets; hence emissions are reasonably verified and in addition verified to limited assurance for annual integrated reporting. Calibration inaccuracies are possible with the CEMS systems, although regular maintenance and calibration is conducted to avoid such inaccuracies. At our coal facilities in Alberta, TransAlta utilizes lab analyses from three different laboratories to ensure accuracy of coal quality results and avoid inherent bias.
Scope 2 (location-based)	Less than or equal to 2%		Inaccuracies in meter reads and management of collected data are the most problematic issues surrounding scope 2 emissions. However this is a highly scrutinized system as meter reads dictate revenue and money that transfers hands in regards to purchased electricity. Major issues faced include miscommunication with plants/facilities regarding their use of electricity, hence data gaps and management.
Scope 2 (market-based)	Less than or equal to 2%	Other: Not applicable	

**CC8.6**

**Please indicate the verification/assurance status that applies to your reported Scope 1 emissions**

Third party verification or assurance process in place

**CC8.6a**

**Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements**

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Annual process	Complete	Limited assurance	<a href="https://www.cdp.net/sites/2017/28/19328/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.6a/TransAlta_2015_Integrated_full_report.pdf">https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC8.6a/TransAlta_2015_Integrated_full_report.pdf</a>	192-193	ISAE3000	100

#### CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emission Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

#### CC8.7

**Please indicate the verification/assurance status that applies to at least one of your reported Scope 2 emissions figures**

Third party verification or assurance process in place

#### CC8.7a

Please provide further details of the verification/assurance undertaken for your location-based and/or market-based Scope 2 emissions, and attach the relevant statements

Location-based or market-based figure?	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Location-based	Annual process	Complete	Limited assurance	<a href="https://www.cdp.net/sites/2017/28/19328/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.7a/TransAlta_2015_Integrated_full_report.pdf">https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC8.7a/TransAlta_2015_Integrated_full_report.pdf</a>	192-193	ISAE3000	100

#### CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
Year on year emissions intensity figure	Included within the scope of our assurance
Year on year change in emissions (Scope 1 and 2)	Included within the scope of our assurance

#### CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

#### CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

---

#### Further Information

For 2016 assurance please use link below and view pages 196-197: [http://www.transalta.com/wp-content/uploads/2016/12/TAC2016\\_IntegratedReport-Final.pdf](http://www.transalta.com/wp-content/uploads/2016/12/TAC2016_IntegratedReport-Final.pdf)  
For 2015 assurance please use link below and view pages 192-193: [http://www.transalta.com/sites/default/files/TransAlta\\_2015\\_Integrated\\_full\\_report.pdf](http://www.transalta.com/sites/default/files/TransAlta_2015_Integrated_full_report.pdf)  
For 2014 assurance please use link below and view pages 62-63: [http://www.transalta.com/sites/default/files/2014\\_Report\\_on\\_Sustainability.pdf](http://www.transalta.com/sites/default/files/2014_Report_on_Sustainability.pdf) In addition to the limited assurance above, 79% of total GHG from operations in 2015 were reasonably assured for GHG regulatory purposes.

**Page: CC8. Emissions Data - (1 Jan 2016 - 31 Dec 2016)**

---

#### CC8.1

**Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory**

Operational control

---

#### CC8.2

**Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e**

30461320

---

#### CC8.3

**Please describe your approach to reporting Scope 2 emissions**

Scope 2, location-based	Scope 2, market-based	Comment
We are reporting a Scope 2, location-based figure	We have operations where we are able to access electricity supplier emissions factors or residual emissions factors, but are unable to report a Scope 2, market-based figure	The majority of our electricity purchases occur in Alberta and are made on the spot market, essentially a pool of all electricity in Alberta, hence using a location based approach and the AB grid emission intensity factor is applicable

**CC8.3a**

Please provide your gross global Scope 2 emissions figures in metric tonnes CO<sub>2</sub>e

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
253313		

**CC8.4**

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

**CC8.4a**

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of location-based Scope 2 emissions from this source	Relevance of market-based Scope 2 emissions from this source (if applicable)	Explain why the source is excluded

**CC8.5**

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	Less than or equal to 2%		Measurement standards meet industry and regulation best practice. The majority of our facilities operate in carbon markets; hence emissions are reasonably verified and in addition verified to limited assurance for annual integrated reporting. Calibration inaccuracies are possible with the CEMS systems, although regular maintenance and calibration is conducted to avoid such inaccuracies. At our coal facilities in Alberta, TransAlta utilizes lab analyses from three different laboratories to ensure accuracy of coal quality results and avoid inherent bias.
Scope 2 (location-based)	More than 2% but less than or equal to 5%		Inaccuracies in meter reads and management of collected data are the most problematic issues surrounding scope 2 emissions. However this is a highly scrutinized system as meter reads dictate revenue and money that transfers hands in regards to purchased electricity. Major issues faced include miscommunication with plants/facilities regarding their use of electricity, hence data gaps and management.
Scope 2 (market-based)	Less than or equal to 2%	Other: Not applicable	

**CC8.6**

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance process in place

**CC8.6a**

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Annual process	Complete	Limited assurance	<a href="https://www.cdp.net/sites/2017/28/19328/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.6a/TAC2016_IntegratedReport-Final.pdf">https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC8.6a/TAC2016_IntegratedReport-Final.pdf</a>	196-197	ISAE3000	100
Annual process	Complete	Reasonable assurance	<a href="https://www.cdp.net/sites/2017/28/19328/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.6a/Sundance%20SoV.pdf">https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC8.6a/Sundance SoV.pdf</a>	1	Alberta Specified Gas Emitters Regulation (SGER)	45
Annual process	Complete	Reasonable assurance	<a href="https://www.cdp.net/sites/2017/28/19328/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.6a/Keephills%20SoV.pdf">https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC8.6a/Keephills SoV.pdf</a>	1	Alberta Specified Gas Emitters Regulation (SGER)	19
Annual	Complete	Reasonable	<a href="https://www.cdp.net/sites/2017/28/19328/Climate%20Change">https://www.cdp.net/sites/2017/28/19328/Climate Change</a>	1	Alberta	11

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
process		assurance	2017/Shared Documents/Attachments/CC8.6a/K3 SoV.pdf		Specified Gas Emitters Regulation (SGER)	
Annual process	Complete	Reasonable assurance	<a href="https://www.cdp.net/sites/2017/28/19328/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.6a/Ft%20Sask%20SoV.pdf">https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC8.6a/Ft Sask SoV.pdf</a>	1	Alberta Specified Gas Emitters Regulation (SGER)	1

#### CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emission Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

#### CC8.7

Please indicate the verification/assurance status that applies to at least one of your reported Scope 2 emissions figures

Third party verification or assurance process in place

#### CC8.7a

Please provide further details of the verification/assurance undertaken for your location-based and/or market-based Scope 2 emissions, and attach the relevant statements

Location-based or market-based figure?	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Location-based	Annual process	Complete	Limited assurance	<a href="https://www.cdp.net/sites/2017/28/19328/Climate%20Change%202017/Shared%20Documents/Attachments/CC8.7a/TAC2016_IntegratedReport-Final.pdf">https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC8.7a/TAC2016_IntegratedReport-Final.pdf</a>	196-197	ISAE3000	100

#### CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
Year on year emissions intensity figure	Included within the scope of our assurance
Year on year change in emissions (Scope 1 and 2)	Included within the scope of our assurance

#### CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

---

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

---

**Further Information**

For 2016 assurance please use link below and view pages 196-197: [http://www.transalta.com/wp-content/uploads/2016/12/TAC2016\\_IntegratedReport-Final.pdf](http://www.transalta.com/wp-content/uploads/2016/12/TAC2016_IntegratedReport-Final.pdf)  
For 2015 assurance please use link below and view pages 192-193: [http://www.transalta.com/sites/default/files/TransAlta\\_2015\\_Integrated\\_full\\_report.pdf](http://www.transalta.com/sites/default/files/TransAlta_2015_Integrated_full_report.pdf) For 2014 assurance please use link below and view pages 62-63: [http://www.transalta.com/sites/default/files/2014\\_Report\\_on\\_Sustainability.pdf](http://www.transalta.com/sites/default/files/2014_Report_on_Sustainability.pdf) As noted above 100% of our GHG emissions in 2015 were verified to a level of limited assurance. In addition to the limited assurance above, 81% of total GHG emissions in 2016 were reasonably assured for GHG compliance purposes - we have provided our Alberta SGER verification statements above.

**Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2014 - 31 Dec 2014)**

---

CC9.1

**Do you have Scope 1 emissions sources in more than one country?**

Yes

---

CC9.1a

**Please break down your total gross global Scope 1 emissions by country/region**

Country/Region	Scope 1 metric tonnes CO2e
Canada	26800131
United States of America	7453954
Australia	638339

---

**CC9.2**

**Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)**

- By business division
- By facility
- By GHG type
- By activity

---

**CC9.2a**

**Please break down your total gross global Scope 1 emissions by business division**

Business division	Scope 1 emissions (metric tonnes CO2e)
Coal	32180132
Natural Gas	2711707
Hydro	524
Wind	49
Corporate	4

---

**CC9.2b**

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
Sundance, AB, Canada	15096756		
Keephills, AB Canada	6300511		
Keephills 3, AB, Canada	3131600		
Highvale, AB, Canada	197320		
Fort Saskatchewan, AB, Canada	373598		
Mississauga, ON, Canada	344054		
Ottawa, ON, Canada	28110		
Windsor, ON, Canada	197927		
Sarnia, ON, Canada	1129678		
Centralia, WA, USA	7451265		
Centralia Mine, WA, USA	2680		
Leinster, WA, Australia	160634		
Mount Keith, WA, Australia	155588		
Kalgoorlie, WA, Australia	94220		
Kambalda, WA, Australia	104164		
Parkeston, WA, Australia	123733		
Hydro Facilities, Canada	524		
Wind Facilities, Canada	49		
Calgary Corporate Office	4		
Solomon, WA, Australia	0		

---

**CC9.2c**

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CO2	34554566
CH4	117035
N2O	220815
SF6	0

---

**CC9.2d**

**Please break down your total gross global Scope 1 emissions by activity**

Activity	Scope 1 emissions (metric tonnes CO2e)
Coal Fired Power Generation	31974917
Natural Gas Fired Power Generation	2711520
Coal Mining	3915
Coal Mining Operations	112540
Mining Vehicles	5978
Fleet Vehicles	83546

---

**Further Information**

**Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2015 - 31 Dec 2015)**

---

**CC9.1**

**Do you have Scope 1 emissions sources in more than one country?**

Yes

---

**CC9.1a**

**Please break down your total gross global Scope 1 emissions by country/region**

Country/Region	Scope 1 metric tonnes CO2e
Canada	25322565
United States of America	5798857
Australia	920003

---

**CC9.2**

**Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)**

By business division  
By facility  
By GHG type  
By activity

---

**CC9.2a**

**Please break down your total gross global Scope 1 emissions by business division**

Business division	Scope 1 emissions (metric tonnes CO2e)
Coal	29081366
Natural Gas	2959255
Hydro	426
Wind	375
Corporate	3

**CC9.2b**

**Please break down your total gross global Scope 1 emissions by facility**

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
Sundance, AB, Canada	14431599		
Keephills, AB Canada	5594353		
Keephills 3, AB, Canada	3055995		
Highvale, AB, Canada	200562		
Fort Saskatchewan, AB, Canada	326593		
Mississauga, ON, Canada	372145		
Ottawa, ON, Canada	39870		
Windsor, ON, Canada	192737		
Sarnia, ON, Canada	1107907		
Centralia, WA, USA	5796121		
Centralia Mine, WA, USA	2736		
Leinster, WA, Australia	159584		
Mount Keith, WA, Australia	176134		
Kalgoorlie, WA, Australia	120507		

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
Kambalda, WA, Australia	125609		
Parkeston, WA, Australia	131909		
Hydro Facilities, Canada	426		
Wind Facilities, Canada	375		
Calgary Corporate Office	3		
Solomon, WA, Australia	206261		

---

**CC9.2c**

**Please break down your total gross global Scope 1 emissions by GHG type**

GHG type	Scope 1 emissions (metric tonnes CO2e)
CO2	31729028
CH4	110480
N2O	201917
SF6	0

---

**CC9.2d**

**Please break down your total gross global Scope 1 emissions by activity**

Activity	Scope 1 emissions (metric tonnes CO2e)
Coal Fired Power Generation	28874303
Natural Gas Fired Power Generation	2959026
Coal Mining	84647
Coal Mining Operations	3768
Mining Vehicles	114883
Fleet Vehicles	4799

---

**Further Information**

**Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2016 - 31 Dec 2016)**

---

**CC9.1**

**Do you have Scope 1 emissions sources in more than one country?**

Yes

---

**CC9.1a**

**Please break down your total gross global Scope 1 emissions by country/region**

Country/Region	Scope 1 metric tonnes CO2e
Canada	24774267
United States of America	4626201

Country/Region	Scope 1 metric tonnes CO2e
Australia	1060852

---

**CC9.2**

**Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)**

- By business division
- By facility
- By GHG type
- By activity

---

**CC9.2a**

**Please break down your total gross global Scope 1 emissions by business division**

Business division	Scope 1 emissions (metric tonnes CO2e)
Coal	27491785
Natural Gas	2968477
Hydro	547
Wind	508
Corporate	3

---

**CC9.2b**

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
Sundance, AB, Canada	13582674		
Keephills, AB, Canada	5699932		
Keephills 3, AB, Canada	3391071		
Highvale, AB, Canada	191906		
Fort Saskatchewan, AB, Canada	356455		
Mississauga, ON, Canada	346748		
Ottawa, ON, Canada	31739		
Windsor, ON, Canada	177503		
Sarnia, ON, Canada	995180		
Centralia, WA, USA	4623271		
Centralia Mine, WA, USA	2931		
Leinster, WA, Australia	164943		
Mount Keith, WA, Australia	212426		
Kalgoorlie, WA, Australia	130321		
Kambalda, WA, Australia	134211		
Parkeston, WA, Australia	123688		
Hydro Facilities, Canada	547		
Wind Facilities, Canada	508		
Calgary Corporate Office	3		
Solomon, WA, Australia	295262		

---

CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CO2	30160729
CH4	107770
N2O	192821
SF6	0

---

#### CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
Coal Fired Power Generation	27293200
Natural Gas Fired Power Generation	2968315
Coal Mining	84864
Coal Mining Operations	2790
Mining Vehicles	107183
Fleet Vehicles	4968

---

#### Further Information

**Page: CC10. Scope 2 Emissions Breakdown - (1 Jan 2014 - 31 Dec 2014)**

---

#### CC10.1

Do you have Scope 2 emissions sources in more than one country?

Yes

---

**CC10.1a**

**Please break down your total gross global Scope 2 emissions and energy consumption by country/region**

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Canada	167491	0	226800	0
United States of America	14821	0	17971	0
Australia	36	0	30	0

---

**CC10.2**

**Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)**

- By business division
- By facility
- By activity

---

**CC10.2a**

**Please break down your total gross global Scope 2 emissions by business division**

<b>Business division</b>	<b>Scope 2, location-based (metric tonnes CO2e)</b>	<b>Scope 2, market-based (metric tonnes CO2e)</b>
Coal	137349	0
Natural Gas	5288	0
Hydro	29712	0
Wind	446	0
Corporate	9553	0

---

**CC10.2b**

**Please break down your total gross global Scope 2 emissions by facility**

<b>Facility</b>	<b>Scope 2, location-based (metric tonnes CO2e)</b>	<b>Scope 2, market-based (metric tonnes CO2e)</b>
Sundance, AB, Canada	24927	0
Keephills, AB, Canada	15248	0
Keephills 3, AB, Canada	947	0
Highvale, AB, Canada	81406	0
Fort Saskatchewan, AB, Canada	669	0
Mississauga, ON, Canada	184	0
Ottawa, ON, Canada	2	0
Windsor, ON, Canada	90	0
Sarnia, ON, Canada	4332	0
Centralia, WA, USA	9865	0
Centralia, WA, USA	4956	0
Hydro Facilities, Canada	29712	0
Wind Facilities, Canada	446	0

Facility	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Corporate, Calgary, Canada	9527	0
Corporate, Perth, Australia	26	0

---

#### CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Building Operations	182349	0

---

#### Further Information

**Page: CC10. Scope 2 Emissions Breakdown - (1 Jan 2015 - 31 Dec 2015)**

---

#### CC10.1

Do you have Scope 2 emissions sources in more than one country?

Yes

---

#### CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Canada	171276	0	202461	0
United States of America	15017	0	18208	0
Australia	97	0	91	0

#### CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

- By business division
- By facility
- By activity

#### CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Coal	147254	0

<b>Business division</b>	<b>Scope 2, location-based (metric tonnes CO2e)</b>	<b>Scope 2, market-based (metric tonnes CO2e)</b>
Natural Gas	18	0
Hydro	29776	0
Wind	142	0
Corporate	9201	0

**CC10.2b**

**Please break down your total gross global Scope 2 emissions by facility**

<b>Facility</b>	<b>Scope 2, location-based (metric tonnes CO2e)</b>	<b>Scope 2, market-based (metric tonnes CO2e)</b>
Sundance, AB, Canada	27797	0
Keephills, AB, Canada	19149	0
Keephills 3, AB, Canada	4801	0
Highvale, AB, Canada	80220	0
Fort Saskatchewan, AB, Canada	0	0
Mississauga, ON, Canada	0	0
Ottawa, ON, Canada	0	0
Windsor, ON, Canada	0	0
Sarnia, ON, Canada	0	0
Centralia, WA, USA	10381	0
Centralia, WA, USA	4636	0
Hydro Facilities, Canada	29776	0
Wind Facilities, Canada	142	0
Corporate, Calgary, Canada	9121	0
Corporate, Perth, Australia	79	0

---

**CC10.2c**

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Building Operations	186390	0

---

**Further Information**

**Page: CC10. Scope 2 Emissions Breakdown - (1 Jan 2016 - 31 Dec 2016)**

---

**CC10.1**

Do you have Scope 2 emissions sources in more than one country?

Yes

---

**CC10.1a**

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Canada	207957	0	304322	0
United States of America	45267	0	54886	0
Australia	89	0	93	0

#### CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By business division  
 By facility  
 By activity

#### CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Coal	177000	0
Natural Gas	18	0
Hydro	57576	0
Wind	10747	0

<b>Business division</b>	<b>Scope 2, location-based (metric tonnes CO2e)</b>	<b>Scope 2, market-based (metric tonnes CO2e)</b>
Corporate	7972	0

---

**CC10.2b**

**Please break down your total gross global Scope 2 emissions by facility**

<b>Facility</b>	<b>Scope 2, location-based (metric tonnes CO2e)</b>	<b>Scope 2, market-based (metric tonnes CO2e)</b>
Sundance, AB, Canada	28647	0
Keephills, AB, Canada	19094	0
Keephills 3, AB, Canada	3208	0
Highvale, AB, Canada	80783	0
Fort Saskatchewan, AB, Canada	0	0
Mississauga, ON, Canada	0	0
Ottawa, ON, Canada	0	0
Windsor, ON, Canada	0	0
Sarnia, ON, Canada	0	0
Centralia, WA, USA	21016	0
Centralia, WA, USA	24251	0
Hydro Facilities, Canada	57576	0
Wind Facilities, Canada	10747	0
Corporate, Calgary, Canada	7902	0
Corporate, Perth, Australia	71	0

---

**CC10.2c**

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
Building Operations	253313	0

---

#### Further Information

Sustainability conducted a deeper dive on scope 2 emissions with each business unit to ensure business units were following the correct operation boundaries. We discovered a few supporting facilities at Centralia and Hydro, which should be in scope of scope 2 emissions. Hence data from both of these business areas has increased.

#### Page: CC11. Energy

---

#### CC11.1

What percentage of your total operational spend in the reporting year was on energy?

More than 60% but less than or equal to 65%

---

#### CC11.2

Please state how much heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year

Energy type	MWh
Heat	17658

Energy type	MWh
Steam	0
Cooling	0

---

**CC11.3**

**Please state how much fuel in MWh your organization has consumed (for energy purposes) during the reporting year**

146389444

---

**CC11.3a**

**Please complete the table by breaking down the total "Fuel" figure entered above by fuel type**

Fuels	MWh
Sub bituminous coal	128101352
Natural gas	17358552
Diesel/Gas oil	913387
Propane	1450
Kerosene	575
Motor gasoline	14129

---

**CC11.4**

Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor in the market-based Scope 2 figure reported in CC8.3a

Basis for applying a low carbon emission factor	MWh consumed associated with low carbon electricity, heat, steam or cooling	Emissions factor (in units of metric tonnes CO2e per MWh)	Comment
No purchases or generation of low carbon electricity, heat, steam or cooling accounted with a low carbon emissions factor	0	0	Our current focus is in providing low carbon electricity generation for our clients. As we grow our renewable portfolio we will look at the opportunity to self-retail or procure energy from our own facilities.

#### CC11.5

Please report how much electricity you produce in MWh, and how much electricity you consume in MWh

Total electricity consumed (MWh)	Consumed electricity that is purchased (MWh)	Total electricity produced (MWh)	Total renewable electricity produced (MWh)	Consumed renewable electricity that is produced by company (MWh)	Comment
359301	359301	38157000	5369000	0	

#### Further Information

Page: **CC12. Emissions Performance**

#### CC12.1

How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to the previous year?

Decreased

**CC12.1a**

Please identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Emissions reduction activities			
Divestment			
Acquisitions			
Mergers			
Change in output	4.7	Decrease	Reduced coal activity (ongoing) as we continue our transition to gas and renewables
Change in methodology			
Change in boundary			
Change in physical operating conditions			
Unidentified			
Other			

**CC12.1b**

Is your emissions performance calculations in CC12.1 and CC12.1a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

CC12.2

Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
30714633	metric tonnes CO2e	2397000000	Location-based	9.9	Decrease	Increased revenue from gas & renewables business, while reduction in coal activity (ongoing) as we transition to focus strictly on gas & renewables

CC12.3

Please provide any additional intensity (normalized) metrics that are appropriate to your business operations

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
30714633	metric tonnes CO2e	full time equivalent (FTE) employee	2341	Location-based	3.1	Decrease	Reduced coal activity (ongoing) as we transition to focus on gas and renewables
30714633	metric tonnes CO2e	megawatt hour (MWh)	36358001	Location-based	3.4	Decrease	Reduced coal activity (ongoing) as we transition to focus on gas and

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
							renewables

**Further Information**

**Page: CC13. Emissions Trading**

**CC13.1**

**Do you participate in any emissions trading schemes?**

Yes

**CC13.1a**

**Please complete the following table for each of the emission trading schemes in which you participate**

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership
Alberta Emissions Trading Regulation	Fri 01 Jan 2016 - Sat 31 Dec 2016	0	500000	500000	Facilities we own and operate
California's Greenhouse Gas Cap and Trade Program	Fri 01 Jan 2016 - Sat 31 Dec 2016	0	200000	200000	Facilities we own and operate

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership

**CC13.1b**

**What is your strategy for complying with the schemes in which you participate or anticipate participating?**

One of the four pillars of TransAlta's climate change strategy is the "Development of emissions offsets portfolios to achieve emissions reductions at competitive costs". The procurement of carbon related compliance mechanisms is managed by the TransAlta trading group. The risk and oversight systems that TransAlta uses to manage participation in other commodity markets also apply to carbon schemes. The trading group purchases spot allowances and also participates in the futures market. In addition to sourcing compliance units from third parties, TransAlta also develops its own compliance units for the SGER (Alberta Emissions Trading Regulation) through the verification of wind offset credits. TransAlta made an early entry into the CDM market in 2004 by entering into a long term purchase agreement for Certified Emission Reductions from a project in Chile. TransAlta closed off its participation in the project in 2013.

**CC13.2**

**Has your organization originated any project-based carbon credits or purchased any within the reporting period?**

Yes

**CC13.2a**

**Please provide details on the project-based carbon credits originated or purchased by your organization in the reporting period**

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits canceled	Purpose, e.g. compliance
Credit origination	Wind	Ardenville Wind Farm Offset Project Blue Trail Wind Farm Offset Project Macleod Flats Wind Turbine Offset Project Summerview and Waterton South Wind Farms Offset Project Summerview Wind Farm Offset Project Wintering Hills Wind Farm Offset Project	Other: Alberta Specified Gas Emitters Regulation: Wind Offset Protocol	731443	731443	No	Voluntary Offsetting

#### Further Information

Page: **CC14. Scope 3 Emissions**

#### CC14.1

Please account for your organization's Scope 3 emissions, disclosing and explaining any exclusions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
------------------------------	-------------------	--------------------	-----------------------------------	---	-------------

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Relevant, calculated	375309	GHG Protocol Quantis Scope 3 Evaluator	100.00%	Our accounting group provides our annual spend analysis annually for sustainability to further categorize and add to the Quantis Scope 3 Evaluator.
Capital goods	Relevant, calculated	262731	GHG Protocol Quantis Scope 3 Evaluator	100.00%	Capital expenditures are split out from annual spend data and to the GHG Protocol and Quantis Scope 3 calculator.
Fuel-and-energy-related activities (not included in Scope 1 or 2)	Relevant, calculated	336527	Used Alberta Environment emissions factors for extraction and production of gasoline, diesel, natural gas, propane and kerosene. Applied emission intensity (mining emissions/coal combusted) from our own coal mine in Alberta to derive coal extraction emissions for our US coal operations.	100.00%	TransAlta purchases natural gas for its gas power generation facilities. Gas extraction and production is included in this calculation. Emissions from coal extraction in AB are accounted for in scope 1, as we operate the mine adjacent to our coal facilities. The extraction of coal combusted at our Centralia plant is also included in this calculation as we rely on coal deliveries at this plant. This calculation also includes diesel extraction and production. Diesel is occasionally combusted in our plants. We also use diesel, gasoline for transportation requirements and propane and kerosene for heating. These have also been included.
Upstream transportation and distribution	Relevant, calculated	105579	Diesel usage from locomotives (delivering coal) multiplied by mobile combustion source diesel rail emission factors (taken from Environment Canada National Inventory Report – EPA emission factors not clear)	100.00%	Coal is transported in diesel locomotive freight trains from Montana and Wyoming to our Centralia coal power plant in Washington. CO2e is calculated using a calculator: <a href="http://www.railcan.ca/environment/calculator">http://www.railcan.ca/environment/calculator</a> per trip. We track the distance, number of train cars and weight in order to help determine CO2e. Different weights are applied for the return journey, empty cars, hence the weight of the car only. Natural gas is distributed in pipelines. We have tie-in points at all of our operations. Some fugitive emissions are associated with natural gas transportation. We consider these to be negligible. Emissions from extraction and production of natural gas are calculated in 'Fuel and energy related activities'
Waste	Relevant,	2726	GHG Protocol Quantis Scope 3	100.00%	As part of our annual sustainability reporting we track all

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
generated in operations	calculated		Evaluator		environmental expenditures, including waste management expenditures. The total was applied in the Scope 3 evaluator to derive at an estimate of our waste emissions
Business travel	Relevant, calculated	735	Travel provider methodology. Sourced from GRASP Reporting. 17. GREEN PORTFOLIO FRAMEWORK ADDITIONAL RESOURCES - GHG FACTORS Common GHG conversion factors for determining GHG emissions performance based on energy use & travel. Air travel1 Short haul (<281 miles): 0.2897 kg CO2/passenger mile Medium haul (281-994 miles): 0.2028 kg CO2/passenger mile Long haul (>994 miles): 0.1770 kg CO2/passenger mile *disregard class of service Rail2 Intercity rail (Amtrak) 0.1909 kg CO2/passenger mile	50.00%	Travel provider provided this data and in addition we conservatively double this figure to account for internally booked flights (outside of our travel provider)
Employee commuting	Relevant, calculated	2975	GHG Protocol Quantis Scope 3 Evaluator	100.00%	GHG Protocol Quantis Scope 3 tool takes total employee numbers and applies a methodology. Company size 1000-2500 employees.
Upstream leased assets	Not relevant, explanation provided	0		0.00%	TransAlta accounts for emissions from leased assets in its scope 2 emissions
Downstream	Not	0		0.00%	Our primary product, electricity, does not have downstream and

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
transportation and distribution	relevant, explanation provided				distribution emissions. Transmission line loss emissions are accounted for in fuel and energy related activities
Processing of sold products	Not relevant, explanation provided	0		0.00%	Our primary product, electricity, is not processed. Fly ash, a by-product, is also not processed but added directly to cement mixture
Use of sold products	Relevant, not yet calculated	0		0.00%	Our customers, which includes industrial, commercial and residential (indirectly) use our product (electricity). We encourage the use smarter energy, i.e. taking advantage of new energy efficiency incentives
End of life treatment of sold products	Not relevant, explanation provided	0		0.00%	There is no end of life treatment required for our primary products: wholesale and retail electricity
Downstream leased assets	Not relevant, explanation provided	0		0.00%	TransAlta does not have any applicable downstream leased assets
Franchises	Not relevant, explanation provided	0		0.00%	TransAlta has no franchises
Investments	Relevant, calculated	5014090	Specified Gas Emitters Regulation methodology (AB carbon markets)	100.00%	GHG emissions from sites that we have a financial ownership percentage, but are not the operator.
Other (upstream)	Not evaluated	0	No additional upstream exposure	0.00%	No additional upstream exposure
Other	Not	0	No additional downstream	0.00%	No additional downstream exposure

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
(downstream)	evaluated		exposure		

**CC14.2**

**Please indicate the verification/assurance status that applies to your reported Scope 3 emissions**

Third party verification or assurance process in place

**CC14.2a**

**Please provide further details of the verification/assurance undertaken, and attach the relevant statements**

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 3 emissions verified (%)
Annual process	Complete	Reasonable assurance	<a href="https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC14.2a/G3 2016">https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC14.2a/G3 2016</a>	1	ISO14064-3	27

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 3 emissions verified (%)
Annual process	Complete	Reasonable assurance	SoV.pdf <a href="https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC14.2a/Sheerness 2016 SoV.pdf">https://www.cdp.net/sites/2017/28/19328/Climate Change 2017/Shared Documents/Attachments/CC14.2a/Sheerness 2016 SoV.pdf</a>	1	ISO14064-3	35

**CC14.3**

Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?

Yes

**CC14.3a**

Please identify the reasons for any change in your Scope 3 emissions and for each of them specify how your emissions compare to the previous year

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Purchased goods & services	Change in output	25.5	Decrease	In 2016 we focused efforts on trimming back non-essential cost or creating efficiency from purchase of goods and services. This is part of project Greenlight, which is scheduled to deliver \$50 million of realized free cash flow in 2018.

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Capital goods	Other: Plant construction	109.4	Increase	In 2016 construction of our South Hedland Power Plant in Western Australia ramped up.
Fuel- and energy-related activities (not included in Scopes 1 or 2)	Change in output	1.9	Decrease	No significant change.
Upstream transportation & distribution	Change in methodology	25.4	Increase	Revised return GHG emissions from train travel. Coal is transported to our Centralia facility in Washington State by rail. On the return trip we were only calculating the emissions from one empty rail car, but on average there are 125 empty rail cars.
Waste generated in operations	Unidentified	7.7	Decrease	Reduced waste expenditure in 2016
Business travel	Other: Plant construction and Australia business unit growth	22.8	Increase	Growth in our Australia business unit and plant construction at South Hedland led to greater travel requirements in 2016.
Employee commuting	Other:	0	No change	
Investments	Unidentified	4	Increase	Slight increase, not significant, business as usual.

#### CC14.4

**Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)**

Yes, our customers

Yes, other partners in the value chain

#### CC14.4a

**Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success**

We offer green product services to our customers. Specifically zero carbon electricity, which is procured from our renewable energy assets and offered as a zero carbon financial product. We also educate our customers on new green offerings or incentives (government related) in our areas of business as part of our engagement strategy.

TransAlta also flows through costs of emissions reporting and compliance from our coal plants in Alberta, under the terms of Power Purchase Arrangement (PPA). The PPA customer purchases a large amount of TransAlta generation. Pursuant to the PPAs we have an obligation to limit the cost and environmental impact of our activities. We track and forecast emission and emission intensities monthly, we do this through a monthly accrual process, which we send to the PPA customer. For example, for our coal operations we track the per cent of carbon content in coal (we send our coal to 3 different labs weekly), coal burn and generation. We are able to forecast (one month in advance) emissions and emission intensities and produce a monthly accrual to communicate with our PPA customers. This way they have an idea of how the plant is performing from an emissions perspective and how to budget accordingly.

TransAlta partnered with the Alberta Council for Environment Education 2016. Our involvement and focus is to advance education on key environmental issues, Climate Change being extremely material. We are targeting both youth and educators. ACEE is working to implement a "sustainable future curriculum" in Alberta, which is focused on global best practice sustainable education models.

---

**CC14.4b**

To give a sense of scale of this engagement, please give the number of suppliers with whom you are engaging and the proportion of your total spend that they represent

Type of engagement	Number of suppliers	% of total spend (direct and indirect)	Impact of engagement
--------------------	---------------------	--	----------------------

---

**CC14.4c**

Please explain why you do not engage with any elements of your value chain on GHG emissions and climate change strategies, and any plans you have to develop an engagement strategy in the future

---

**Further Information**

**Module: Sign Off**

**Page: CC15. Sign Off**

---

**CC15.1**

Please provide the following information for the person that has signed off (approved) your CDP climate change response

Name	Job title	Corresponding job category
Dawn Farrell	President and Chief Executive Officer of TransAlta Corporation; and a director of TransAlta Corporation	Chief Executive Officer (CEO)

---

**Further Information**

**Module: Electric utilities**

**Page: EU0. Reference Dates**

---

**EU0.1**

Please enter the dates for the periods for which you will be providing data. The years given as column headings in subsequent tables correspond to the "year ending" dates selected below. It is requested that you report emissions for: (i) the current reporting year; (ii) one other year of historical data (i.e. before the current reporting year); and, (iii) one year of forecasted data (beyond 2021 if possible).

Year ending	Date range
2016	Fri 01 Jan 2016 - Sat 31 Dec 2016

Year ending	Date range
2015	Thu 01 Jan 2015 - Thu 31 Dec 2015

#### Further Information

**Page: EU1. Global Totals by Year**

#### EU1.1

In each column, please give a total figure for all the countries for which you will be providing data for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emission intensity (metric tonnes CO2e/MWh)
2016	8716	36358	30714633	0.84
2015	8730	36870	32227815	0.87

#### Further Information

**Page: EU2. Individual Country Profiles - Australia**

#### EU2.1

Please select the energy sources/fuels that you use to generate electricity in this country

Oil & gas (excluding CCGT)  
CCGT

---

**EU2.1a****Coal - hard**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO <sub>2</sub> e)	Emissions intensity (metric tonnes CO <sub>2</sub> e/MWh)
-------------	-------------------------	------------------	--	---

---

**EU2.1b****Lignite**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO <sub>2</sub> e)	Emissions intensity (metric tonnes CO <sub>2</sub> e/MWh)
-------------	-------------------------	------------------	--	---

---

**EU2.1c****Oil & gas (excluding CCGT)**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	425	1503	1060852	0.71
2015	425	1503	920003	0.61

---

#### EU2.1d

##### CCGT

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	150	0	0	0
2015	150	0	0	0

---

#### EU2.1e

##### Nuclear

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)
-------------	-------------------------	------------------

---

**EU2.1f**

**Waste**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

---

**EU2.1g**

**Hydro**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)
-------------	-------------------------	------------------

---

**EU2.1h**

**Other renewables**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)
-------------	-------------------------	------------------

---

**EU2.1i**

**Other**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO <sub>2</sub> e)	Emissions intensity (metric tonnes CO <sub>2</sub> e/MWh)
-------------	-------------------------	------------------	--	---

---

**EU2.1j**

**Solid biomass**

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO <sub>2</sub> e)	Emissions intensity (metric tonnes CO <sub>2</sub> e/MWh)
-------------	-------------------------	------------------	--	---

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	0	0	0	0
2015	0	0	0	0

---

#### EU2.1k

##### Total thermal including solid biomass

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	575	1503	1060852	0.71
2015	575	1503	920003	0.61

---

#### EU2.1l

##### Total figures for this country

Please enter total figures for this country for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	575	1503	1060852	0.71
2015	575	1503	920003	0.61

---

### Further Information

Our new CCGT facility is under construction and will be online in 2017

**Page: EU2. Individual Country Profiles - Canada**

---

### EU2.1

**Please select the energy sources/fuels that you use to generate electricity in this country**

Lignite  
Oil & gas (excluding CCGT)  
CCGT  
Hydro  
Other renewables

---

### EU2.1a

#### Coal - hard

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

### EU2.1b

#### Lignite

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	3593	21213	22673678	1.07
2015	3591	21638	23081947	1.07

### EU2.1c

#### Oil & gas (excluding CCGT)

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	91	863	384198	0.43

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	54	913	372145	0.41

---

**EU2.1d**

**CCGT**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	807	2453	1528935	0.62
2015	844	2840	1667107	0.59

---

**EU2.1e**

**Nuclear**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)

---

**EU2.1f****Waste**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO <sub>2</sub> e)	Emissions intensity (metric tonnes CO <sub>2</sub> e/MWh)

---

**EU2.1g****Hydro**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)
2016	926	1958
2015	926	1747

---

**EU2.1h****Other renewables**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)
2016	1169	3179
2015	1185	2847

---

#### EU2.1i

##### Other

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)

---

#### EU2.1j

##### Solid biomass

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	0	0	0	0

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	0	0	0	0

#### EU2.1k

##### Total thermal including solid biomass

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	4491	24558	24586811	1.00
2015	4489	25930	25151199	0.99

#### EU2.1l

##### Total figures for this country

Please enter total figures for this country for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO <sub>2</sub> e)	Emissions intensity (metric tonnes CO <sub>2</sub> e/MWh)
2016	6586	29696	24587866	0.83
2015	6599	29984	25122001	0.84

---

### Further Information

**Page: EU2. Individual Country Profiles - United States of America**

---

### EU2.1

**Please select the energy sources/fuels that you use to generate electricity in this country**

Lignite  
Other renewables

---

### EU2.1a

#### Coal - hard

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO <sub>2</sub> e)	Emissions intensity (metric tonnes CO <sub>2</sub> e/MWh)

---

**EU2.1b****Lignite**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO <sub>2</sub> e)	Emissions intensity (metric tonnes CO <sub>2</sub> e/MWh)
2016	1340	4577	4623271	1.01
2015	1340	5023	5796121	1.15

---

**EU2.1c****Oil & gas (excluding CCGT)**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO <sub>2</sub> e)	Emissions intensity (metric tonnes CO <sub>2</sub> e/MWh)
-------------	-------------------------	------------------	--	---

---

**EU2.1d****CCGT**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

---

**EU2.1e**

**Nuclear**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)
-------------	-------------------------	------------------

---

**EU2.1f**

**Waste**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

---

**EU2.1g**

### Hydro

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)

---

### EU2.1h

#### Other renewables

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)
2016	215	583
2015	215	359

---

### EU2.1i

#### Other

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
-------------	-------------------------	------------------	---	--

#### EU2.1j

##### Solid biomass

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	0	0	0	0
2015	0	0	0	0

#### EU2.1k

##### Total thermal including solid biomass

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	1340	4567	4623271	1.01

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	1340	5023	5796121	1.15

## EU2.11

### Total figures for this country

Please enter total figures for this country for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2016	1555	5160	4623271	0.94
2015	1555	5382	5796121	1.08

## Further Information

### Page: EU3. Renewable Electricity Sourcing Regulations

## EU3.1

In certain countries, e.g. Italy, the UK, the USA, electricity suppliers are required by regulation to incorporate a certain amount of renewable electricity in their energy mix. Is your organization subject to such regulatory requirements?

No

---

**EU3.1a**

Please provide the scheme name, the regulatory obligation in terms of the percentage of renewable electricity sourced (both current and future obligations) and give your position in relation to meeting the required percentages

Scheme name	Current % obligation	Future % obligation	Date of future obligation	Position in relation to meeting obligations

---

**Further Information**

**Page: EU4. Renewable Electricity Development**

---

**EU4.1**

Please give the contribution of renewable electricity to your organization's EBITDA (Earnings Before Interest, Tax, Depreciation and Amortization) in the current reporting year in either monetary terms or as a percentage

Please give:	Monetary figure	%	Comment
Renewable electricity's contribution to EBITDA	277	24%	

---

**EU4.2**

Please give the projected contribution of renewable electricity to your organization's EBITDA at a given point in the future in either monetary terms or as a percentage

Please give:	Monetary figure	%	Year ending	Comment
Renewable electricity's contribution to EBITDA	328	30%	2017	

---

**EU4.3**

Please give the capital expenditure (capex) planned for the development of renewable electricity capacity in monetary terms and as a percentage of total capex planned for power generation in the current capex plan

Please give:	Monetary figure	%	End year of capex plan	Comment
Capex planned for renewable electricity development	0	0%	2017	

---

**Further Information**

**CDP 2017 Climate Change 2017 Information Request**