

Sustainability Performance Indicators

Corporate Statistics

Environment Health & Safety Management Systems	2020	2019	2018
Facilities with ISO 14001 and/or OHSAS 18001-based management systems (percentage) ⁽¹⁾	97	97	97
Management system audits ⁽²⁾	8	12	17

Environmental Performance ⁽³⁾	2020	2019	2018
Resource or energy use⁽⁴⁾			
Coal combustion (tonnes)	6,637,000	9,092,000	10,001,000
Natural gas combustion (GJ)	83,046,000	77,007,000	62,355,000
Diesel combustion (L)	6,954,000	10,179,000	9,553,000
Gasoline consumption: vehicle (L)	935,000	1,099,000	1,408,000
Diesel consumption: vehicle (L)	10,976,000	21,531,000	38,361,000
Propane consumption: vehicle (L)	5,000	96,000	75,000
Electricity: building operations (MWh)	188,000	226,000	273,000
Natural gas: building operations (GJ)	48,000	52,000	71,000
Propane: building operations (L)	190,000	177,000	170,000
Kerosene: building operations (L)	48,000	84,000	116,000
Total resource or energy use (GJ)⁽⁵⁾	279,027,000	345,609,000	358,435,000
Greenhouse gas emissions⁽⁶⁾			
Carbon dioxide (tonnes CO ₂ e) ✓	16,264,000	20,436,000	20,596,000
Methane (tonnes CO ₂ e) ✓	36,000	51,000	69,000
Nitrous oxide (tonnes CO ₂ e) ✓	80,000	111,000	115,000
Sulphur hexafluoride (tonnes CO ₂ e)	110	2,000	10
Total greenhouse gas emissions⁽⁷⁾ (tonnes CO₂e) ✓	16,380,000	20,599,000	20,781,000
Greenhouse gas emission intensity ⁽⁸⁾ (tonnes CO ₂ e / MWh) ✓	0.67	0.75	0.77
Scope 1 emissions (% of total GHG emissions)	99	99	99
Scope 2 emissions (% of total GHG emissions)	1	1	1
Scope 1 emissions reported to national regulatory bodies (%)	100	100	100
Air emissions⁽⁹⁾			
Total sulphur dioxide emissions (tonnes) ✓	12,000	16,000	19,000
Sulphur dioxide emission intensity ⁽¹⁰⁾ (kg / MWh) ✓	0.49	0.58	0.73
Total nitrogen oxide emissions (tonnes) ✓	21,000	26,000	29,000
Nitrogen oxide emission intensity ⁽¹⁰⁾ (kg / MWh) ✓	0.88	0.96	1.08
Total particulate matter emissions (tonnes) ✓	5,000	8,000	8,000
Particulate matter emission intensity ⁽¹⁰⁾ (kg / MWh) ✓	0.20	0.28	0.32
Total mercury emissions (kilograms) ✓	60	60	70
Mercury emission intensity ⁽¹⁰⁾ (mg / MWh) ✓	2.34	2.36	2.51

Environmental Performance (continued)	2020	2019	2018
Water management⁽¹¹⁾			
Water withdrawal –water utility/municipality/customer (million m ³)	–	–	–
Water withdrawal –surface water (million m ³)	240	260	250
Water withdrawn –all sources (million m³) ✓	240	260	250
Water discharge –all sources (million m³) ✓	200	220	210
Water consumption (million m³) ✓	40	40	40
Water intensity (m ³ /MWh) ⁽¹²⁾ ✓	1.50	1.55	1.40
Waste management			
Non-hazardous⁽¹³⁾			
Landfill (tonnes) ✓	1,000	1,000	2,000
Landfill (L) ✓	39,000	35,000	68,000
Ash disposal: mine (tonnes) ⁽¹⁴⁾ ✓	408,000	641,000	715,000
Ash disposal: lagoon (tonnes) ⁽¹⁵⁾ ✓	98,000	117,000	277,000
Recycled (tonnes) ⁽¹⁶⁾ ✓	6,000	2,000	1,000
Recycled (L) ✓	1,869,000	3,605,000	3,722,000
Reuse (tonnes) ⁽¹⁷⁾ ✓	533,000	746,000	740,000
Storage (tonnes) ✓	53,000	–	–
Compostable (tonnes) ✓	10	N/A	N/A
Hazardous⁽¹⁸⁾			
Landfill (tonnes) ✓	30	60	10
Landfill (L) ✓	58,000	53,000	45,000
Recycled (tonnes) ✓	20	80	170
Recycled (L) ✓	20,220,000	18,931,000	16,257,000
Land use and reclamation			
Land used in mining activities – disturbed (cumulative hectares) ✓	12,600	12,600	12,400
Land used in mining activities – reclaimed (cumulative hectares) ✓	4,800	4,800	4,700
Land reclamation (% of land disturbed) ✓	38	38	38
Land used in mining activities: disturbed minus reclaimed (hectares) ✓	7,700	7,700	7,700
Land used by facilities, offices and equipment (hectares) ✓	3,900	3,900	3,900
Total land use (cumulative hectares) ✓	11,700	11,700	11,700
Environmental incidents⁽¹⁹⁾			
Total environmental incidents ✓	8	9	7
Significant environmental incidents	6	3	1
Regulatory non-compliance environmental incidents	2	6	6
Environmental enforcement actions ⁽²⁰⁾	–	1	1
Environmental fines (\$ thousands)	–	4	6
Spills⁽²¹⁾			
Volume of significant spills (m ³)	4	530	5

Social Performance	2020	2019	2018
Workplace practices			
Employees	1,476	1,543	1,883
Number of full-time employees	1,392	1,471	1,810
Number of part-time employees	16	18	22
Number of contingent employees	68	54	51
Employees represented by independent trade union organizations ⁽²²⁾ (%)	41	45	50
Voluntary employee turnover rate ⁽²³⁾ (%)	9.05	13.59	20.22
Diversity			
Women in workforce (% of all employees)	21	20	20
Women in senior management (%)	43	50	50
Women on Board of Directors (%)	45	33	40
Health and safety			
Health and safety enforcement actions ⁽²⁴⁾	—	3	—
Health and safety fines (\$ thousands)	—	—	—
Employee & contractor fatalities ✓	—	—	—
Lost-time incident (LTI) (absence from work) ⁽²⁵⁾ ✓	5	5	1
Medical aid (MA) incidents (no absence from work) ⁽²⁶⁾ ✓	9	7	12
Restricted Work Injuries (RWI) incidents (no absence from work) ⁽²⁷⁾ ✓	2	3	12
First Aid (FA) incidents (no absence from work) ⁽²⁸⁾ ✓	17	8	23
Total injuries to employees & contractors ✓	33	23	48
Exposure hours ⁽²⁹⁾	3,948,000	4,108,000	5,014,000
Total Injury Frequency (TIF) (employees and contractors) ⁽³⁰⁾ ✓	1.67	1.12	1.91
Total Recordable Injury Frequency (TRIF) (employees and contractors) ⁽³¹⁾	0.81	0.73	1.00
Community relations			
Community investments (\$ millions) ⁽³²⁾	2.2	2.1	2.4

✓ 2020 data has been third-party assured to a limited assurance level by Ernst & Young LLP. Please see "Discussion and Notes on Numbers" for footnote explanations.

Alignment of Sustainability Performance Indicators with Best Practice Sustainability Reporting Frameworks

The following outlines our sustainability or ESG performance indicator alignment with key criteria of the Global Reporting Initiative ("GRI") and Sustainability Accounting Standards Board ("SASB").

Environment Health & Safety Management Systems	GRI Standards	SASB Standards
Facilities with ISO 14001 and/or OHSAS 18001-based management systems (percentage)		
Management system audits		
Environmental Performance	GRI Standards	SASB Standards
Resource or energy use	302-1	
Coal combustion (tonnes)	302-1	
Natural gas combustion (GJ)	302-1	
Diesel combustion (L)	302-1	
Gasoline consumption: vehicle (L)	302-1	
Diesel consumption: vehicle (L)	302-1	
Propane consumption: vehicle (L)	302-1	
Electricity: building operations (MWh)	302-1	
Natural gas: building operations (GJ)	302-1	
Propane: building operations (L)	302-1	
Kerosene: building operations (L)	302-1	
Total resource or energy use (GJ)	302-1	
Greenhouse gas emissions		
Carbon dioxide (tonnes CO ₂ e)	305-1, 305-2	IF-EU-110a.1
Methane (tonnes CO ₂ e)	305-1, 305-2	IF-EU-110a.1
Nitrous oxide (tonnes CO ₂ e)	305-1, 305-2	IF-EU-110a.1
Sulphur hexafluoride (tonnes CO ₂ e)	305-1, 305-2	IF-EU-110a.1
Total greenhouse gas emissions (tonnes CO₂e)	305-1, 305-2	IF-EU-110a.1
<i>Greenhouse gas emission intensity (tonnes CO₂e / MWh)</i>	305-4	
Scope 1 emissions (% of total GHG emissions)	305-1	IF-EU-110a.1
Scope 2 emissions (% of total GHG emissions)	305-2	
Scope 1 emissions reported to national regulatory bodies (%)		IF-EU-110a.1
Air emissions		
Total sulphur dioxide emissions (tonnes)	305-7	IF-EU-120a.1
<i>Sulphur dioxide emission intensity (kg / MWh)</i>		
Total nitrogen oxide emissions (tonnes)	305-7	IF-EU-120a.1
<i>Nitrogen oxide emission intensity (kg / MWh)</i>		
Total particulate matter emissions (tonnes)	305-7	IF-EU-120a.1
<i>Particulate matter emission intensity (kg / MWh)</i>		
Total mercury emissions (kilograms)	305-7	IF-EU-120a.1
<i>Mercury emission intensity (mg / MWh)</i>		

Environmental Performance <i>(continued)</i>	GRI Standards	SASB Standards
Water management		
Water withdrawal – water utility/municipality/customer (million m ³)	303-3	IF-EU-140a.1
Water withdrawal – surface water (million m ³)	303-3	IF-EU-140a.1
Water withdrawn – all sources (million m³)	303-3	IF-EU-140a.1
Water discharge – all sources (million m³)	303-4	
Water consumption (million m³)	303-5	IF-EU-140a.1
Water intensity (m ³ /MWh)		
Waste management		
Non-hazardous		
Landfill (tonnes)	306-2	
Landfill (L)		
Ash disposal: mine (tonnes)	306-2	
Ash disposal: lagoon (tonnes)	306-2	
Recycled (tonnes)	306-2	
Recycled (L)		
Reuse (tonnes)	306-2	IF-EU-150a.1
Storage (tonnes)	306-2	
Hazardous		
Landfill (tonnes)	306-2	
Landfill (L)		
Recycled (tonnes)	306-2	
Recycled (L)		
Land use and reclamation		
Land used in mining activities – disturbed (cumulative hectares)	304-1	
Land used in mining activities – reclaimed (cumulative hectares)	304-3	
Land reclamation (% of land disturbed)	304-3	
Land used in mining activities: disturbed minus reclaimed (hectares)	304-1	
Land used by plants, offices and equipment (hectares)	304-1	
Total land use (cumulative hectares)	304-1	
Environmental incidents		
Total environmental incidents	307-1	
Significant environmental incidents	307-1	
Regulatory non-compliance environmental incidents	307-1	
Environmental enforcement actions	307-1	
Environmental fines (\$ thousands)	307-1	
Spills		
Volume of significant spills (m ³)	306-3	

Social Performance	GRI Standards	SASB Standards
Workplace practices		
Employees	102-7	
<i>Number of full-time employees</i>		
<i>Number of part-time employees</i>		
<i>Number of contingent employees</i>		
Employees represented by independent trade union organizations (%)	102-41	
Voluntary employee turnover rate (%)		
Diversity		
Women in workforce (% of all employees)	405-1	
Women in senior management (%)	405-1	
Women on Board of Directors (%)	405-1	
Health and safety		
Health and safety enforcement actions		
Health and safety fines (\$ thousands)		
Employee & contractor fatalities	403-9	IF-EU-320a.1
Lost-time incident (LTI) (absence from work)	403-9	IF-EU-320a.1
Medical aid (MA) incidents (no absence from work)	403-9	IF-EU-320a.1
First Aid (FA) incidents (no absence from work)	403-9	
Restricted Work Injuries (RWI) incidents (no absence from work)	403-9	IF-EU-320a.1
Total injuries to employees & contractors	403-9	IF-EU-320a.1
Exposure hours	403-9	IF-EU-320a.1
Total Injury Frequency (TIF) (employees and contractors)	403-9	
Total Recordable Injury Frequency (TRIF) (employees and contractors)	403-9	IF-EU-320a.1
Community relations		
Community investments (\$ millions)	201-1	

Discussion and Notes on Numbers

TransAlta continually strives to improve the accuracy and scope of our sustainability performance data. We continually review our processes and controls relating to the measurement and calculation of key sustainability data annually. Several footnotes appear throughout the statistical summary and are intended to provide clarity on specific boundary conditions, changes in methodology and definitions. For questions or clarity on any key performance indicators, please contact us at sustainability@transalta.com.

1. ISO 14001 and ISO 18001 are the world's most recognized standards for Environmental Management and Health and Safety Management systems. TransAlta has ownership in 75 facilities.
2. Internal audits are conducted against ISO management systems, regulatory frameworks and the Alberta Certificate of Recognition standard.
3. Historical environmental performance figures have been rounded based on the following methodology: i) All environmental data are rounded to the nearest one thousand except where values are <100, in which case they are rounded to the nearest 10; ii) Land use data, which is smaller in magnitude compared with other environmental indicators, is rounded to the nearest 100 to represent a more accurate picture of management and progress.
4. Energy use is calculated and reported from TransAlta-operated facilities, following the same approach we use for greenhouse gas (GHG) emissions reporting, which is the application of an 'Operational Control' boundary as per guidance from the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard.
5. A number of 2018 and 2019 historical energy use volumes from our wind & solar, hydro, Alberta thermal and natural gas business segments were revised in 2020. Minor adjustments were made to 2019 volumes for natural gas combustion, diesel combustion, propane use (for building operations and vehicle use), diesel use for vehicles, gasoline use for vehicles, natural gas use for buildings and electricity use for building operations. Minor adjustments were made to 2018 volumes for diesel use for vehicles, gasoline use for vehicles, propane use for building operations, natural gas use for buildings and electricity use for building operations. A number of 2019 changes were a result of accrual adjustments from the previous year. Changes to 2018 and 2019 data were also a result of process improvement changes - in 2020 we incorporated a number of remote offices into our reporting boundary. Although these offices are small and associated energy use is minor, these revisions did adjust historical totals for gasoline and diesel vehicle use, electricity, gas and propane use in building operations in 2018 and 2019. These adjustments also resulted in a change to our reported total energy use volumes in 2018 and 2019.
6. GHG emissions are calculated and reported from TransAlta-operated facilities in line with carbon compliance regulations from the geographic jurisdiction where the facility is located. For GHG emissions that are not calculated using jurisdictional carbon compliance guidance we follow guidance from the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (specifically 'Setting Organizational Boundaries: Operational Control' methodology). As per the operational control methodology, TransAlta reports 100 per cent of GHG emissions from facilities at which we are the operator. GHG emissions include emissions from stationary combustion, transportation use, building use and fugitive emissions. We report both scope 1 and scope 2 emissions. An estimate of our scope 3 emissions can be found in our 2020 MD&A and our 2020 CDP climate change report. Global warming potentials can vary with respect to regional compliance guidance. We compile our corporate GHG inventory using our business segment GHG calculations. The Clean Energy Regulator in Australia amended global warming potentials in August of 2020 and the use of global warming potentials in our Australia Gas GHG calculations differ from the rest of our fleet as a result of these amendments. Applying harmonized global warming potentials across our fleet would result in a minor variance to our overall calculated GHG totals.
7. Gross GHG emissions or gross carbon dioxide equivalent (CO₂e) emissions is the sum of carbon dioxide, methane, nitrous oxide and sulphur hexafluoride (SF₆). Consequently, the sum of scope 1 and 2 emissions will equate to gross CO₂e emissions or gross GHG emissions. Minor adjustments were made to historical 2018 and 2019 GHG emissions data primarily from our wind & solar, hydro and natural gas business segments as a result of adjusted historical energy use volumes. A minor adjustment was made to 2019 SF₆ emissions as a result of an internal discrepancy at our Sarnia facility. An SF₆ leak from late in 2019 was not reported in our system until 2020.
8. GHG emission intensity is calculated by dividing total operational emissions by 100 per cent of production (MWh) from operated facilities, irrespective of financial ownership.
9. Air emissions are calculated and reported from TransAlta-operated facilities, following the same approach we use for greenhouse gas (GHG) emissions reporting, which is the application of an 'Operational Control' boundary as per guidance from the GHG Protocol: A Corporate Accounting and Reporting Standard. Air emissions are expressed in tonnes, except for mercury emissions, which are represented in kilograms. Total particulate matter emissions (TPM) include both PM_{2.5} and PM₁₀. Historical 2018 and 2019 NO_x incurred minor revisions in 2020 to include NO_x emissions from our Highvale facility. The revision increased 2018 NO_x from 28,000 to 29,000 tonnes. Minor revisions were made to 2018 and 2019 air emissions data at our Highvale facility and natural gas facilities in Ontario. The 2019 changes were as a result of accrual adjustments from the previous year. Changes to 2018 and 2019 data were also a result of process improvement changes - including conducting more precise calculations in 2020, such as for TPM emissions due to road dust at our Highvale facility.
10. Air emission intensities are calculated by dividing total operational emissions by 100 per cent of production (MWh) from operated facilities, irrespective of financial ownership. Historical adjustments to 2018 and 2019 air emissions data (see Note 9) resulted in minor adjustments to air emission intensity data.
11. Water use is calculated and reported from TransAlta-operated facilities, following the same approach we use for greenhouse gas (GHG) emissions reporting, which is the application of an 'Operational Control' boundary as per guidance from the GHG Protocol: A Corporate Accounting and Reporting Standard. Total water consumed is measured by total water withdrawal minus water discharge. Water is used primarily for cooling by our thermal power plants. Evaporative losses from cooling ponds and cooling towers account for the majority of consumptive loss. The water lost to evaporation is not returned directly to the water body, but the water remains in the hydrologic cycle. Water use at our new Ada facility was not reported in 2020 as it was acquired in August of 2020. The integration of water for ESG reporting will occur in 2021. Given the size of Ada, 29 MW (relatively small), we anticipate a minor impact to overall water consumption. Minor revisions were made to 2018 and 2019 water use data at our Ottawa facility, head office, and wind & solar business segment due to accruals and internal discrepancies, which did not affect reported totals. Leinster 2018 and 2019 water data were revised as a result of an internal discrepancy affecting the withdrawal amount, but reported totals were not affected. Centralia 2019 water data was revised in 2020 as a result of identified discrepancies, which resulted in overreported raw water intake or water withdrawal for sustainability reporting. The issue was specific to 2019 data only. Water from our Centralia facility is also reported to the Department of Ecology ("DOE") in Washington State. There were no issues with our data submitted to the DOE, as the information generated for sustainability reporting followed a separate data collection process. As a result, Centralia 2019 water withdrawal was revised from approximately 52 million m³ to 26 million m³. The Centralia business unit has performed a full review of its water reporting process and our corporate function will review its internal assurance process to support avoidance of any future reoccurrence of this event.
12. Water intensity is calculated by dividing total operational water consumption (m³) by 100 per cent of production (MWh) from operated facilities, irrespective of financial ownership. Water intensity was not tracked for our Ada facility in 2020 as it was acquired in August of 2020 but will be tracked in 2021. Historical adjustments to 2019 water use data (see Note 11) resulted in adjustments to 2019 water intensity data.
13. Non-hazardous waste includes, but is not limited to, the disposal of water treatment chemicals, coal refuse (including ash byproducts), metals, paper, cardboard and building materials. Adjustments were made to historical 2019 landfill (tonnes) and landfill (L) waste volumes to reflect accrued volumes from 2019. Adjustments were made to historical 2018 recycled (tonnes) and recycled (L). Changes to 2018 and 2019 data were also a result of process improvement changes - in 2020 we incorporated a number of remote offices into our reporting boundary.
14. Ash disposal: mine is fly ash and bottom ash from coal production, which is treated and then returned to its original source, the mine, for landfill/disposal.
15. Ash disposal: lagoon is fly ash and bottom ash from Keephills coal production, which is treated and then sent to ash lagoons for disposal.
16. In 2020, we revised our categorization of waste. As a result our reported 2018 and 2019 non-hazardous recycled (tonnes) were adjusted. Specifically, volumes of fly ash waste from our Sundance and Keephills facilities were recategorized to non-hazardous reuse (tonnes). This decreased our total for non-hazardous recycled (tonnes).
17. In 2020, we revised our categorization of waste. As a result our reported 2018 and 2019 non-hazardous reuse (tonnes) were adjusted. Specifically, volumes of fly ash waste from our Sundance and Keephills facilities were recategorized as non-hazardous recycled (tonnes) to non-hazardous reuse (tonnes). This increased our total for non-hazardous recycled (tonnes). In 2020, an internal discrepancy was noted in 2018 non-hazardous recycled (tonnes) at our Sundance facility and the value was changed from 178.6 tonnes to 178,558 tonnes. This revision resulted in an increase to non-hazardous reuse (tonnes) totals. We define reuse as waste that we are able to sell to a third party for use.
18. Hazardous wastes can be harmful to people, plants, animals or the environment, either in the short or the long term, and TransAlta is required in all of its operating jurisdictions to follow proper procedures for landfill/recycling of these materials. Historical 2018 and 2019 hazardous recycled (L) and landfill (tonnes) waste volumes were adjusted in 2020 to reflect data system errors at our gas and renewables business unit. Historical recycled (tonnes) from 2018 were reported as 200 tonnes in 2019 due to rounding. The actual amount was 166 tonnes. In 2020, we have reported this volume as 170 tonnes to follow our new rounding methodology.
19. Environmental incidents are separated into two categories: significant environmental incidents and regulatory non-compliance environmental incidents. We define regulatory non-compliance environmental incidents as events that involved a non-compliance event but did not have an impact on the environment. For example, a technical issue with a computer system for gathering real-time data could cause us to be out of compliance with local regulation or our EMS, but there is no direct consequence for the physical environment. All other events are captured as significant environmental incidents and these are where we deem there to be a material impact to the environment.
20. Environmental enforcement actions are a violation or non-compliance to regulations or exceedance of limits in company operating approvals that result in enforcement action including stop work orders, fines or suspension of operating approvals.
21. Spills generally happen in low environmental impact areas and are almost always contained and fully recovered. It is extremely rare that we experience large spills, which could adversely impact the environment and the Corporation.
22. TransAlta has approximately 600 unionized workers working primarily in our operational business units.
23. Voluntary turnover is aligned with our Human Resources voluntary turnover reporting methodology. As per this methodology, voluntary turnover is any full-time, part-time or contingent employee initiated exit, excluding retirement. Summer students and temporary workers are not considered within voluntary turnover.
24. Health and safety enforcement actions are a violation or non-compliance to regulations or exceedance of limits in company operating approvals that result in enforcement action including stop work orders, fines or suspension of operating approvals.
25. Lost-time injuries (LTIs) are injuries that resulted in the worker being away from work beyond the day of the injury.
26. Medical aids (MAs) are injuries that resulted in medical treatment beyond first aid.
27. Restricted work injuries (RWIs) are injuries that resulted in the worker being unable to perform all normally scheduled and assigned work activities.
28. First Aids (FAs) are an injury that is limited to treatment of minor scratches, cut, scrapes, burns, splinters, etc. which does not require further medical treatment.
29. Exposure hours are total hours worked by all TransAlta employees and contractors.
30. Total Injury Frequency (TIF) tracks the total number of injuries (medical aids, lost-time injuries, restricted works and first aids) per 200,000 hours worked.
31. Total Recordable Injury Frequency (TRIF) measures restricted work, medical aid and lost-time injuries per 200,000 hours worked.
32. Cumulative of donations and sponsorship totals in the respective calendar year. This investment figure does not include donations from our employees.

Independent Practitioner’s Assurance Report

To the Board of Directors and Management of TransAlta Corporation (“TransAlta”)

Scope of EY Engagement

We have been engaged by TransAlta to perform a ‘limited assurance engagement’, as defined by International Standards on Assurance Engagements, here after referred to as the engagement, over selected sustainability performance indicators as reported in TransAlta’s Annual Integrated Report (the “Report”) for the calendar year ending December 31, 2020. The scope of our engagement, as agreed with management, included the following performance indicators:

- Carbon dioxide emissions (tonnes CO₂e)
- Methane emissions (tonnes CO₂e)
- Nitrous oxide emissions (tonnes CO₂e)
- Total greenhouse gas emissions and emissions intensity (tonnes CO₂e, tonnes CO₂e/MWh)
- Sulphur dioxide emissions and emission intensity (tonnes, kg/MWh)
- Nitrogen oxide emissions and emission intensity (tonnes, kg/MWh)
- Particulate matter emissions and emission intensity (tonnes, kg/MWh)
- Mercury emissions and emission intensity (kg, mg/MWh)
- Waste management – Non-hazardous:
 - Landfill (tonnes, L)
 - Ash disposal: mine, lagoon (tonnes)
 - Recycled (tonnes, L)
 - Reuse (tonnes)
 - Storage (tonnes)
- Waste management – Hazardous:
 - Landfill (tonnes, L)
 - Recycled (tonnes, L)
- Water withdrawal (million m³)
- Water discharge (million m³)
- Water consumption and consumption intensity (million m³, m³/MWh)
- Mining land use – disturbed (Ha)
- Mining land use – reclaimed (Ha)
- Mining land use – % of land disturbed
- Mining land use – disturbed minus reclaimed (Ha)
- Plants, offices and equipment land use (Ha)
- Total land use (Ha)
- Employee and contractor fatalities
- Lost-time incidents for employees and contractors
- Medical aids for employees and contractors
- Restricted work injuries for employees and contractors
- First aids for employees and contractors
- Total TIF injuries to employees and contractors
- Total injury frequency for employees and contractors (injuries/200,000 hours)
- Total environmental incidents

The selected performance indicators are collectively referred to as the “Subject Matter” and are presented under the section Sustainability Performance Indicators of the Report on pages 204 to 206.

Other than as described in the preceding paragraph, which sets out the scope of the engagement, our assurance engagement does not extend to any other information included in, or linked to from, the Report and accordingly, we do not express a conclusion on this other information.

Criteria applied by TransAlta

In preparing the Subject Matter, TransAlta applied relevant guidance in accordance with industry standards and as well as internally and externally developed criteria (together, the “Criteria”). The internally and externally developed criteria are identified in the Report on pages 207 to 210. The internally developed Criteria were specifically designed for the preparation of the Report. As a result, the Subject Matter information may not be suitable for another purpose.

TransAlta’s Responsibilities

TransAlta’s management is responsible for selecting the Criteria and for presenting the Subject Matter in accordance with that Criteria, in all material respects. This responsibility includes establishing and maintaining internal controls, maintaining adequate records and making estimates that are relevant to the preparation of the Subject Matter, such that it is free from material misstatement, whether due to fraud or error.

EY’s Responsibilities

Our responsibility is to express a conclusion on the presentation of the Subject Matter based on evidence we have obtained.

We conducted our engagement in accordance with the International Standard for Assurance Engagements Other Than Audits or Reviews of Historical Financial Information (‘ISAE 3000’). This standard requires that we plan and perform our engagement to obtain limited assurance about whether, in all material respects, the Subject Matter is presented in accordance with the Criteria, and to issue a report. The nature, timing, and extent of the procedures selected depend on our judgment, including an assessment of the risk of material misstatement, whether due to fraud or error.

We believe that the evidence obtained is sufficient and appropriate to provide a basis for our limited assurance conclusions.

Our independence and quality control

We have complied with the relevant rules of professional conduct / code of ethics applicable to the practice of public accounting and related to assurance engagements, issued by various professional accounting bodies, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality, and professional behavior.

The firm applies Canadian Standard on Quality Control 1, Quality Control for Firms that Perform Audits and Reviews of Financial Statements, and Other Assurance Engagements, and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements.

Description of procedures performed

Procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent, than for a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Our procedures were designed to obtain a limited level of assurance on which to base our conclusion and do not provide all the evidence that would be required to provide a reasonable level of assurance.

Although we considered the effectiveness of management's internal controls when determining the nature and extent of our procedures, our assurance engagement was not designed to provide assurance on internal controls. Our procedures did not include testing controls or performing procedures relating to checking aggregation or calculation of data within IT systems. A limited assurance engagement consists of making inquiries, primarily of persons responsible for preparing the Subject Matter and related information, and applying analytical and other appropriate procedures.

Our procedures included:

- Inquiries of a selection of management to gain an understanding of TransAlta's processes, policies and controls in place related to the Subject Matter;
- Inquiries of relevant staff who are responsible for the Subject Matter including, where relevant, observing and inspecting systems and processes for data aggregation and reporting;
- Evaluating the accuracy of calculations performed, on a sample basis, through analytical procedures and limited reperformance;
- Assessing risk of material misstatement due to fraud or errors relating to the selected performance indicators; and,
- Evaluating the presentation of the Subject Matter in the Report, including consistency of the Subject Matter.

We also performed such other procedures as we considered necessary in the circumstances.

Inherent limitations

Non-financial information, such as the Subject Matter, is subject to more inherent limitations than financial information, given the more qualitative characteristics of the subject matter and the methods used for determining such information. The absence of a significant body of established practice on which to draw allows for the selection of different but acceptable evaluation techniques which can result in materially different evaluation and can impact comparability between entities and over time.

Moreover, our scope of work did not include expressing conclusions in relation to:

- The materiality, completeness or accuracy of data sets or information relating to areas other than the selected performance indicators, and any site-specific information;
- Management's forward-looking statements; and,
- Any comparisons made by TransAlta against historical data.

Emphasis of matter – Restated comparative information

We draw attention to Notes 11, 16 and 17 on page 210, which explains that certain comparative information presented for the year ended December 31, 2020 has been restated. Our conclusion is not modified in respect of this matter.

Conclusion

Based on our procedures and the evidence obtained, nothing has come to our attention that causes us to believe that the selected performance indicators as reported in the Report for year-end December 31st, 2020 are not prepared, in all material respects, in accordance with the Criteria.



March 2, 2021
Calgary, Canada