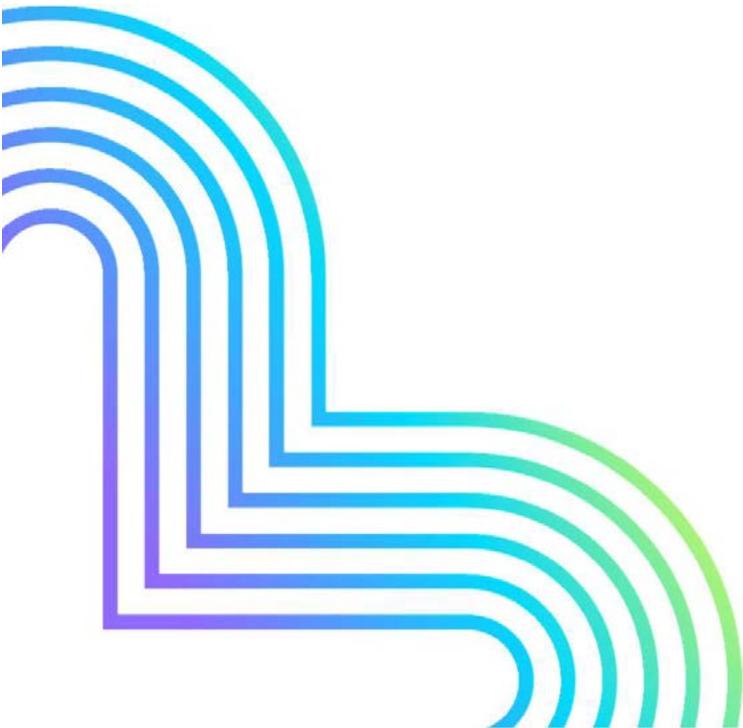


# ESG Performance Index

## 2021

Sustaining energy and  
water for life



ESG Performance Index published on June 29, 2022.

\* Has been noted on select metrics where numbers  
have been updated or corrected since first publication.



**Algonquin**



# 2021 Algonquin ESG performance index <sup>1</sup>

## Summary

		2021	2020	2019
<b>Environment</b>				
Greenhouse Gas (GHG) emissions (Mt CO <sub>2</sub> e) <sup>2</sup>	Scope 1	2,281,126	2,580,834	3,306,596
	Scope 2	83,210	72,831	77,736
	Intensity (Mt CO <sub>2</sub> e/\$USD revenue)	0.0011	0.0013	0.0017
Energy consumption intensity	Power generation assets: MWh consumed/MWh generated	0.88	1.13	1.29
	Algonquin/Liberty: MWh consumed/\$USD revenue	0.0047	0.0066	0.0076
	Regulated business: MWh consumed/Customer connections	8.65	11.56	14.54
Water Usage (thousand m <sup>3</sup> )	Water Delivered	106,737	73,130	57,553
	Withdrawal	145,250	69,033	54,046
	Discharge	73,642	26,188	-
<b>Social</b>				
Total number of employees		3,464	3,429	2,467
Female Representation	Board	37.5%*	33.3%	33.3%
	Executive Team	40.0%	37.5%	37.5%
	Leadership Roles <sup>3</sup>	30.0%	32.2%	32.7%
	Workforce	32.9%	32.8%	31.5%
Health & Safety	AQN Fatalities	0	0	0
	United States and Canada Lost Time Injury Rate (LTIR)	0.00	0.04	0.04
	United States and Canada Recordable Injury Rate (RIR)	0.56	0.90	1.27
Service delivery and reliability	System Average Interruption Duration Index (SAIDI)	187.36	115.92	218.96
	System Average Interruption Frequency Index (SAIFI)	1.30	1.01	1.36
Community Investment (\$USD millions)		34.9	18.1	19.0
<b>Governance</b>				
Incidents of corruption		0	0	0
Legal actions for anti-competitive practices		0	1	0
Violations involving rights of indigenous peoples		0	0	0
Substantiated complaints received regarding customer privacy		0	0	0

<sup>1</sup> Scope of disclosure: Unless explicitly noted, annual data herein is presented for the fiscal year beginning on January 1 and ending on December 31 of the specified year, and data reflecting a specific point in time is given as at December 31 of the specified year. Unless explicitly noted, all relevant metrics include ESSAL in Chile and Ascendant (BELCO) in Bermuda. Unless explicitly noted, all relevant metrics are provided for operationally-controlled assets only, and data is provided on a 100% basis for each such asset. Historical data that was not available is represented by "-".

<sup>2</sup> 2019 and 2020 GHG emissions have been recalculated following Algonquin's GHG Base Year Recalculation Policy, to include full-year emissions from BELCO, ESSAL, St. Lawrence Gas, and New Brunswick Gas. Consequently, previously published emission figures (2017-2019) will differ. See footnotes 21 and 22 for details.

<sup>3</sup> Leadership roles refer to employees in the following job levels: executive, senior vice president, vice president, president, senior director, director, and senior manager.

## Operational metrics

2021

2020

2019

### Utility connections

Electricity		307,000	306,000	267,000
Natural gas		373,000	371,000	369,000
Water and wastewater		413,000	410,000	168,000
	<b>Total</b>	<b>1,093,000</b>	<b>1,087,000</b>	<b>804,000</b>

### Energy delivered to our customers

Electricity (GWh) - Regulated (retail)		6,471	5,892	6,433
Electricity (GWh) - Unregulated (contractual agreements)		6,851	5,046	4,749
	Total electricity (GWh)	13,322	10,937	11,182
	Total electricity (PJ)	48.0	39.4	40.3
Natural gas (PJ)		41.6	41.8	37.9
	<b>Total (PJ)</b>	<b>89.5</b>	<b>81.1</b>	<b>78.1</b>

### Water and wastewater services provided to our customers

Water provided (thousand m3)		106,737	73,130	57,553
Wastewater treated (thousand m3)		10,478	9,596	8,850

## Operational metrics (continued)

2021

2020

2019

Electricity generation capacity (MW) <sup>4,\*</sup>

Coal <sup>5</sup>	0	0	213
Natural gas <sup>6</sup>	1,496	1,496	1,496
Diesel <sup>7</sup>	140	140	0
Wind	2,537	1,452	1,100
Hydroelectric	134	134	134
Solar	329	258	175
<b>Total</b>	<b>4,636</b>	<b>3,479</b>	<b>3,117</b>
Renewable energy total	3,000	1,843	1,409
Renewable energy portfolio (%)	65%	53%	45%

## Net electricity generated (GWh)

Coal	0	0	823
Natural gas	3,784	4,635	4,086
Diesel	563	85	0
Wind	7,332	3,833	3,652
Hydroelectric	583	543	567
Solar	575	404	349
<b>Total</b>	<b>12,838</b>	<b>9,499</b>	<b>9,477</b>
Renewable energy total	8,490	4,779	4,568
Renewable energy portfolio (%)	66%	50%	48%

<sup>4</sup> MW capacity is based on installed generator nameplate capacity. Facilities that are not operationally controlled by Algonquin are excluded.

<sup>5</sup> Algonquin's Asbury coal power plant facility was retired in March 2020.

<sup>6</sup> Includes 100% nameplate capacity of the State Line natural gas facility.

<sup>7</sup> The diesel-powered generation is attributed to the 2020 acquisition of Ascendant.

**Operational metrics (continued)**

	2021	2020	2019
<b>Customer satisfaction</b>			
JD Power CSAT Score <sup>8</sup>	703	686	665
Percentage of customers interviewed	25%	25%	25%
<b>Energy reliability</b>			
SAIDI - System Average Interruption Duration Index (minutes)	187.36	115.92	218.96
SAIFI - System Average Interruption Frequency Index (rate)	1.30	1.01	1.36
CAIDI - Customer Average Interruption Duration Index (minutes)	143.81	114.77	161.24
<b>Electricity transmission and distribution</b>			
Length of transmission lines (km)	2,021	2,279	2,287
Length of distribution lines (km)	13,780	13,616	13,383
Transmission losses in %	2.90%	2.90%	2.87%
Technical distribution losses in %	4.20%	4.20%	4.43%
<b>Natural gas transmission and distribution</b>			
Length of transmission lines (km)	16	20	21
Length of distribution lines (km)	13,623	13,486	12,276
Leakage rate in distribution infrastructure	0.0100	0.0146	0.0098
<b>Water utility water mains and sewer pipes<sup>9</sup></b>			
Length of water mains (km)	7,181	3,208	3,976
Length of sewer pipes (km)	3,153	980	1,037

<sup>8</sup> Algonquin's JD Power Customer Satisfaction (CSAT) score is calculated internally based on JD Power CSAT scores for each of Algonquin's individual utilities. Scores are consolidated into an enterprise-wide value based on a customer connection weighting.

<sup>9</sup> The increase in the length of water mains and sewer pipes in 2021 was due to the inclusion of ESSAL.

## Operational metrics (continued)

2021

2020

2019

## Cybersecurity

Substantiated complaints received concerning breaches of customer privacy	0	0	0
Identified leaks, thefts, or losses of customer data	0	0	1

## Economic value generated and distributed (\$USD millions)

Economic value generated (EVG) - Revenue	2,561.5	1,849.9	1,806.2
Economic value distributed (EVD)			
Operation Costs	1,174.2	740.6	667.9
Employee wages and benefits	352.8	294.7	259.9
Payments to providers of capital	535.1	453.1	376.4
Payments to government (US and Canada)	5.0	5.6	14.5
Community Investments	1.4	0.8	1.0
Economic value retained (regulated)	391.9	241.9	199.1
Economic value retained (unregulated)	101.0	113.1	106.5
<b>Total economic value retained</b>	<b>492.9</b>	<b>355.1</b>	<b>305.7</b>

## Community engagement

Operations with local community engagement	100%	100%	100%
Payments under community contribution agreements, land rentals, or municipal taxes (\$USD millions)	34.9	18.1	19.0
Cash contributions	1,185,000	1,672,000	-
Management overheads	188,961	158,471	-
Liberty days used - hours volunteered by employees	5,334	3,375	5,499

## Workforce and social indicators

Health and safety <sup>10,11</sup>		2021	2020	2019
<b>Work-related injury</b>				
Fatalities from work-related injury	Employees	0	0	0
	Non-employees	0	0	0
Recordable injuries	Employees	19	21	31
	Non-employees	2	2	3
Recordable Injury Rate (RIR)	United States and Canada	0.56	0.90	1.27
	Bermuda	0.84	-	-
	Chile	0.00	-	-
Work-related injuries included:		The primary work-related injuries identified for employees in 2021 are muscle strains, cuts, and abrasions. The primary work-related injuries identified for non-employees in 2021 are arc flash burns and broken bones.		
High-consequence work-related injuries (number)	Employees	0	1	1
	Non-employees	2	2	3
Lost Time Injury Rate (LTIR)	United States and Canada	0.00	0.04	0.04
	Bermuda	0.56	-	-
	Chile	0.00	-	-
Near Miss Frequency Rate (NMFR)		30.00	32.97	27.75
Work-related hazards posing high-consequence injury risk:		Identified through job safety analysis and pre-job inspections, primary high-consequence work-related injuries include electrical shocks, falls from heights, and struck against injuries. High-consequence work-related injuries included in this reporting period are potential for electric shock or burn and manual work with ergonomic stressors.		
Injury elimination/mitigation strategy:		Algonquin's injury elimination/mitigation strategy follows local action plans and a 5-year occupational health and safety plan following the hierarchy of controls methodology.		
Total hours worked (employees)		7,368,526	5,204,161	4,886,529

<sup>10</sup> Only 2021 Health and Safety metrics include Bermuda and Chile operations.

<sup>11</sup> Algonquin does not have total hours worked by contractors and cannot normalize OH&S metrics. Algonquin will be seeking to improve OH&S disclosure for contractors.

**Work-related ill health**

Fatalities from work-related ill health	Employees	0	0	0
	Non-employees	0	0	0
Recordable work-related ill health cases	Employees	0	0	1
	Non-employees	0	0	0

Work-related hazards posing ill health risks: Identified through job safety analysis and pre-job inspections, primary work-related hazards posing ill-health risks include soft muscle injury and chemical exposure. Zero work-related ill health injuries were reported in 2021.

Injury elimination/mitigation strategy: Algonquin's injury elimination/mitigation strategy follows local action plans and a 5-year occupational health and safety plan following the hierarchy of controls methodology.

**Workers covered by an EHS management system**

Workers covered by EHS system		100%	100%	100%
Workers covered by internally audited EHS system (United States and Canada)	Employees	40%	35%	30%
	Non-employees	100%	100%	100%
Employees covered by externally audited EHS system <sup>12</sup>	United States and Canada	5%	5%	5%
	Bermuda	100%	-	-
	Chile	100%	-	-

<sup>12</sup> Our Chile operation is ISO 45001 certified while our United States, Canada and Bermuda operations have internal management systems in place.

## Employee demographics

2021

2020

2019

## Number and geographic location of employees

Canada	Permanent	564	500	339
	Temporary	25	21	17
United States	Permanent	2,064	2,113	2,103
	Temporary	13	15	8
Bermuda	Permanent	345	341	-
	Temporary	12	-	-
Chile	Permanent	422	439	-
	Temporary	19	-	-
<b>Total Algonquin/Liberty workers</b>		<b>3,464</b>	<b>3,429</b>	<b>2,467</b>
Algonquin/Liberty employees		67.5%	72.6%	87.4%
Non-employees		32.5%	27.4%	12.6%

## By age group

Age ranges	< 30 years	11.0%	11.5%	-
	30-50 years	55.3%	52.4%	-
	> 50 years	33.8%	36.1%	-

## Average age (years)

Female employees	45	45	46
Male employees	44	45	46
<b>All employees</b>	<b>44</b>	<b>45</b>	<b>46</b>

Employee demographics (continued)

2021

2020

2019

Gender and employment categories

			2021	2020	2019
Employee function by gender	Office	Female	40.5%	42.7%	42.2%
		Male	59.5%	57.3%	57.8%
	Field	Female	3.1%	3.3%	6.7%
		Male	96.9%	96.7%	93.3%
Employee level by gender	Senior managers and above <sup>13</sup>	Female	30.4%	32.2%	32.7%
		Male	69.6%	67.8%	67.3%
	Junior managers <sup>14</sup>	Female	31.3%	35.8%	31.3%
		Male	68.8%	64.2%	68.7%

Age and employment categories

			2021	2020	2019
Employee function by age	Office	< 30 years	11.2%	11.2%	10.2%
		30-50 years	55.2%	52.5%	48.5%
		> 50 years	33.7%	36.2%	41.3%
	Field	< 30 years	10.0%	12.3%	10.1%
		30-50 years	55.9%	52.0%	48.1%
		> 50 years	34.1%	35.7%	41.8%
Employee level by age	Senior managers and above	< 30 years	0.0%	0.0%	0.0%
		30-50 years	37.7%	49.7%	41.4%
		> 50 years	62.3%	50.3%	58.6%
	Junior managers	< 30 years	0.0%	2.8%	2.7%
		30-50 years	51.4%	59.9%	51.1%
		> 50 years	48.6%	37.3%	46.2%

<sup>13</sup> "Senior managers and above" refers to employees in the following job levels: executive, senior vice president, vice president, president, senior director, director, and senior manager.

<sup>14</sup> "Junior managers" refer to employees in the following job level: manager.

**Collective bargaining agreement coverage**

Percentage of employees who are salaried		73%	73%	71%
Percentage of employees covered by collective bargaining agreements		27%	27%	29%

**Gender and self-identification**

Women		32.9%	32.8%	31.5%
Men		67.1%	67.2%	68.5%
Self-identified minorities		13.7%	9.8%	8.3%
Self-identified veterans		3.1%	2.0%	1.7%
Self-identified employees with disability		0.3%	0.5%	-

**By employment contract**

Permanent employees	Female	860	857	778
	Male	1,768	1,756	1,664
Temporary employees	Female	18	13	7
	Male	20	23	18

**By employment type**

Full-time employees	Female	869	865	779
	Male	1,777	1,766	1,669
Part-time employees	Female	8	5	6
	Male	6	8	5
Casual employees	Female	1	0	0
	Male	5	5	8

## Employee demographics (continued)

	2021	2020	2019
<b>Female representation</b>			
All management positions	33.2%	34.3%	-
Junior manager positions	35.9%	35.8%	31.3%
Senior manager and above	30.4%	32.2%	32.7%
Revenue-generating positions	31.3%	31.9%	-
STEM-related positions	25.5%	26.3%	-
<b>Leadership roles (senior manager and above)</b>			
Women	30.0%	32.2%	32.7%
Men	70.0%	67.8%	67.3%
Self-identified minorities	10.7%	8.6%	4.4%
<b>Executive team</b>			
Members	10	8	8
Women	40.0%	37.5%	37.5%
Men	60.0%	62.5%	62.5%
Self-identified minorities	10.0%	12.5%	-
<b>Self-identification of employees working in the United States<sup>15</sup></b>			
Percentage of employees working in the United States	60.0%	80.3%	-
Share of racial, ethnic, and indigenous self-identifications	Asian	1.8%	1.5%
	Black or African American	4.0%	2.1%
	Hispanic or Latino	6.8%	4.7%
	Caucasian	83.7%	62.5%
	Indigenous or Native	1.1%	1.1%
	Other	2.6%	28.2%

<sup>15</sup> Self-identification declarations are voluntary in Canada.

## Employee demographics (continued)

2021

2020

2019

## Employee pay ratios

Pay ratio of CEO total compensation to median employee compensation		54.15	45.17	34.72
Base pay ratio (highest paid to median) by region	Canada	9.23	9.50	9.67
	United States	3.56	3.62	3.68
Salary growth ratio (highest paid to median) by region	Canada	(0.23)	0.73	-
	United States	0.63	0.61	-

## Employee compensation by gender and level

Equal pay ratio (female/male) by level	Executive (base pay only)	0.94	0.85	-
	Executive (base pay + other)	-	0.61	-
	All managers and above (base pay only)	0.93	0.92	-
	All managers and above (base pay + other)	0.92	0.91	-
	Non-managers (base pay only)	0.75	0.75	-
Equal pay ratio (female/male) by function	Office	0.77	0.77	0.77
	Field	0.91	0.89	0.76
Equal pay ratio (female/male) by region	Canada	0.90	0.88	0.77
	United States	0.80	0.80	0.78
Women in top 10% of salaries		27.0%	28.7%	29.7%

## Ratios of entry level wage to local minimum wage (by region and gender)

Canada	Female	1.80	1.76	1.67
	Male	1.53	1.46	1.62
United States	Female	1.18	1.26	1.90
	Male	1.83	2.52	2.47

## Employee attraction and retention

2021

2020

2019

## Hiring rates

Percentage of open positions filled by internal candidates		26.0%	20.0%	20.0%
Total number of employee hires		443	458	320
Employees hired by age	< 30 years	0.29	0.32	0.31
	30-50 years	0.56	0.49	0.54
	> 50 years	0.15	0.19	0.15
Employees hired by gender	Female	0.39	0.39	0.38
	Male	0.61	0.61	0.62
Employees hired by region	Canada	0.44	0.32	0.30
	United States	0.56	0.68	0.70

## Turnover rates

Total employee turnover rate		0.15	0.07	0.10
Volunteer employee turnover rate		0.13	0.05	0.07
Employee turnover rate by age	< 30 years	0.23	0.08	0.27
	30-50 years	0.11	0.07	0.09
	> 50 years	0.20	0.08	0.10
Employee turnover rate by gender	Female	0.18	0.08	0.15
	Male	0.14	0.07	0.10
Employee turnover rate by region	Canada	0.16	0.05	0.12
	United States	0.15	0.08	0.11
	Bermuda	-	-	-
	Chile	0.10	-	-

**Employee attraction and retention**
**2021**
**2020**
**2019**
**Parental leave**

Employees entitled to parental leave	Female	990	842	773
	Male	2,046	1,720	1,663
Employees that took parental leave	Female	32	13	6
	Male	15	4	4
Employees that took parental leave and returned	Female	18	7	3
	Male	14	4	2
Return to work rate	Female	0.56	0.54	0.50
	Male	0.93	1.00	0.50
Employees that took parental leave and were retained	Female	18	7	3
	Male	14	4	2
Parental leave retention rate	Female	0.50	0.46	0.50
	Male	0.80	1.00	0.50

**Defined benefit plan**

Salary contributed by employee/employer	Employee	0%	0%	0%
	Employer	4% - 8%	4% - 8%	4% - 8%
Level of participation in retirement plans		100%	100%	100%

Defined benefits plan and other retirement plans:

- Plan's liabilities are met by organization's general resources
- Separate fund exists to pay for the plan's pension liabilities
- Scheme's liabilities are 100% covered, estimated on actuarial basis calculated annually

**Employee engagement**

Employee engagement score	62%	73%	68%
Percentage of employees covered	83%	88%	87%

## Training

		2021	2020	2019
Average training hours by gender	Female	18.0	13.6	12.3
	Male	17.0	14.6	15.0
Average training hours by level	Senior managers and above	21.0	13.5	26.5
	Junior managers	26.0	17.3	18.5
Average training hours by job function	Office	18.0	13.1	13.5
	Field	16.0	17.8	15.8
Average training hours per employee		15.0	14.0	15.0
Average amount spent per employee on training (\$USD/employee)		1,469	1,361	938
Amount invested in employee training (\$USD) <sup>16</sup>		2,792,187	2,047,115	2,798,632

## Performance reviews

Percentage of employees who received performance review	100%	100%	100%
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## Non-Discrimination

## Discrimination incidents

Number of incidents of discrimination	3	8	-
Number of incidents reviewed by Algonquin	3	8	-
Number of incidents no longer subject to action	3	8	-

Remediation plans implemented and/or being implemented:

Recommendations in response to the incidents included additional workplace civility training, mediation sessions, coaching and workplace assessments. All actions that were recommended were completed.

<sup>16</sup> Investments in employee training only include hard costs (costs directly related to the production, development, and administration of training initiatives).

## Governance and policy

### Board of directors

2021

2020

2019

#### Experience and background

Independent directors		8	8	7
Average tenure (years)		5.3	7	8.2
Directors with utility/energy experience		7	9	8
Directors with governance and risk management experience		9	9	8
Directors with senior executive experience		8	7	6
	<b>Total Board members</b>	<b>9</b>	<b>10</b>	<b>9</b>

#### Demographics

By gender	Female*	37.5%	33.3%	33.3%
	Male*	62.5%	66.7%	66.7%
By age	< 30 years	0%	0%	0%
	30-50 years	0%	0%	0%
	> 50 years	100%	100%	100%

### Compliance

#### Indigenous relations

Violations involving rights of indigenous peoples		0	0	0
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#### Human rights

Operations subject to human rights reviews and impact assessments	Canada	100%	100%	100%
	United States	100%	100%	100%

**Anti-corruption**

Operations assessed for corruption related risks (government relations, conflicts of interest, and foreign interests)	100%	100%	100%
Board of directors and employees who received anti-corruption communications and received anti-corruption policy training	100%	100%	100%
Incidents of corruption and actions taken	0	0	0
Percentage of employees who completed annual Code of Business Conduct and Ethics training	100%	100%	100%
Number of times Ethics Reporting Line was used	23	10	5
Number of times Ombudsperson was contacted	23	9	12

**Anti-competitive behaviour**

Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	0	1	0
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**Social and economic compliance**

Total monetary value of significant fines (\$USD millions)	3.7	1	0
Number of non-monetary sanctions	0	0	0

**Political spending**

Amount spent on Lobbying (\$USD)	745,000	807,397	511,200
Amount spent on local, regional, national campaigns (\$USD)	-	-	20,500
Amount spent on trade associations (\$USD)	1,042,000	785,000	762,441

<sup>17</sup> The metric on 'contractors who have received anti-corruption communications' included in Algonquin's 2020 ESG Performance Index has been omitted from this 2021 ESG Performance Index due to ongoing internal review and data gathering.

## Environment

Greenhouse gas (GHG) emissions <sup>18-22</sup>	2021	2020	2019
<b>Scope 1 emissions (Mt CO<sub>2</sub>e)</b>			
Power generation - thermal <sup>23-25</sup>	1,984,603	2,297,508	3,038,917
Power generation - hydroelectric	88	101	63
Power generation - solar	20	44	34
Power generation - wind	364	376	159
Utilities - electric, gas, and water/wastewater <sup>26</sup>	296,050	282,806	267,424
<b>Total Scope 1 emissions</b>	<b>2,281,126</b>	<b>2,580,834</b>	<b>3,306,596</b>
<b>Scope 2 emissions (Mt CO<sub>2</sub>e)</b>			
Power generation - thermal	392	278	422
Power generation - hydroelectric	446	397	423
Power generation - solar	827	596	540
Power generation - wind	1,644	910	953
Utilities - electric, gas, and water/wastewater	79,900	70,650	75,398
<b>Total Scope 2 emissions</b>	<b>83,210</b>	<b>72,831</b>	<b>77,736</b>
<b>Scope 1 and Scope 2 emissions</b>			
<b>Total Scope 1 + 2 emissions</b>	<b>2,364,335</b>	<b>2,653,666</b>	<b>3,384,332</b>
Total emissions from power generation (Mt CO <sub>2</sub> e)	1,988,386	2,300,210	3,041,511
Emission intensity - power generation (Mt CO <sub>2</sub> e from power generation/MWh power generation)	0.1997	0.2091	0.2798
Emission intensity - revenue (Mt CO <sub>2</sub> e/\$USD revenue)	0.0011	0.0013	0.0017
GHG reduction below 2017 baseline (%)	-38.3%	-30.8%	-11.7%

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<sup>18</sup> 2021 Greenhouse gases included in calculations: CO<sub>2</sub> (2,083,379 Mt CO<sub>2</sub>e), CH<sub>4</sub> (266,348 Mt CO<sub>2</sub>e), N<sub>2</sub>O (3,056 Mt CO<sub>2</sub>e), and SF<sub>6</sub> (11,551 Mt CO<sub>2</sub>e).

<sup>19</sup> GHG emissions are calculated following the Greenhouse Gas (GHG) Protocol Corporate Standard. Emission factors are sourced from recognized references such as the Canadian National Inventory Report (NIR, published in 2021), USEPA's GHG Emission Factors Hub (published in 2021), and IEA's Emissions Factors Database (published in 2021). Regarding emission factors for grid electricity, US facilities use 2019 eGRID factors published by USEPA in 2021, Chile facilities use 2019 factors published by IEA in 2021, and Canadian facilities use 2018 factors published in the 2021 NIR.

<sup>20</sup> GHG emissions are consolidated through an operational-control approach. Scope 2 emission figures are location-based.

<sup>21</sup> Historical emissions have been recalculated to include full-year emissions from BELCO, ESSAL, St. Lawrence Gas, and New Brunswick Gas. For BELCO, emissions were calculated using real historical fuel consumption data. For ESSAL, fugitive emissions from wastewater treatment plants were calculated based on the real historical customer connection values; emissions from fuel combustion and grid electricity consumption were estimated using the annual 2021 activity data. For St. Lawrence Gas and New Brunswick Gas, 2019 emissions remain the same, while base year emissions were recalculated. Fugitive emissions were calculated using real historical information for distribution mains and distribution services that were reported to the US Department of Transportation and the Canadian Energy Partnership for Environmental Innovation. Emissions from fuel combustion and grid electricity consumption were estimated using the annual 2021 activity data. Note that historical year emission intensities were not recalculated and remain the same.

<sup>22</sup> Base year identification: 2017. The recalculated Scope 1 and 2 emissions in 2017 are 3,757,781 Mt CO<sub>2</sub>e and 74,555 Mt CO<sub>2</sub>e, respectively. The recalculated Scope 1 and 2 emissions in 2018 are 3,402,869 Mt CO<sub>2</sub>e and 76,637 Mt CO<sub>2</sub>e, respectively.

<sup>23</sup> This category includes Windsor Locks, Sanger, State Line, Riverton, Energy Center, and BELCO.

<sup>24</sup> The State Line natural gas facility was off for approximately two months in 2021 due to maintenance/energy efficiency upgrade, which resulted in lower emissions than in 2020.

<sup>25</sup> The Sanger natural gas facility operated at its maximum capacity due to forest fires in California, which resulted in higher emissions in 2021.

<sup>26</sup> This category includes Liberty Utilities' electric, gas, and water/wastewater utilities and ESSAL.

Scope 3 emissions (Mt CO<sub>2</sub>e)

		2021	2020	2019
Upstream	Purchased goods and services <sup>27</sup>	33,123	54,970	-
	Capital goods	62,134	170,544	-
	Upstream fuel production and extraction	368,568	371,413	373,872
	Generation of distributed electricity	335,552	353,434	-
	Production & transmission of distributed natural gas <sup>28</sup>	361,989	363,616	329,740
	Transmission & Distribution Losses for purchased grid electricity	3,186	1,710	1,369
	Upstream Emissions for purchased grid electricity <sup>29</sup>	12,081	-	-
	Upstream transportation and distribution <sup>30</sup>	10,338	-	5,897
	Waste generated in operations <sup>31</sup>	40,078	-	-
	Business travel	151	-	-
Employee commuting <sup>32</sup>	7,195	2,936	2,678	
Downstream	Downstream natural gas combustion <sup>33</sup>	2,092,670	2,102,071	1,906,237
	Investments <sup>34</sup>	1,856,525	1,698,910	1,201,220
<b>Total Scope 3 emissions</b>		<b>5,183,591</b>	<b>5,119,605</b>	<b>3,821,013</b>

<sup>27</sup> Water withdrawal is a new Scope 3 emission source captured in 2021, and is included under the category of purchased goods and services.

<sup>28</sup> This only includes natural gas that was delivered to industrial, commercial, and residential customers (i.e. transportation customers have been excluded). The 2019 and 2020 emissions have been updated following the same methodology.

<sup>29</sup> This includes upstream emissions for the generation of purchased grid electricity.

<sup>30</sup> This includes emissions associated with the transportation of fuel oils consumed by BELCO's (Bermuda) operations.

<sup>31</sup> This includes emissions associated with the treatment of waste generated by our operations.

<sup>32</sup> The 2021 emissions have included employee commuting in Canada, US, Bermuda, and Chile.

<sup>33</sup> See footnote 28.

<sup>34</sup> This includes emissions from a 7.5% and 12% ownership in the Plum Point and Iatan coal power plants respectively, and an approximately 44% ownership interest in Atlantica Sustainable Infrastructure PLC. 2019 emissions from investments do not include Atlantica Sustainable Infrastructure PLC.

**Other emissions (Mt)**

2021

2020

2019

**Other emissions from electricity generation (Mt)**

NOx emissions	483	493	1,162
SOx emissions	11	10	734
Mercury emissions	-	0.00003	0.00081
Particulate matter emissions	79	100	139
Lead emissions	-	0.0001	0.0001
Persistent organic pollutants	-	-	-
Volatile organic compounds	46	84	93
Hazardous air pollutants	5	5	6
Ozone-depleting substances	-	-	-

**Coal Combustion Residuals (CCR)**

Percentage of CCRs recovered	0.0%	0.0%	45.6%
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**Energy consumption and generation capacity**
**2021**
**2020**
**2019**
**Internal energy consumption (MWh)**

	Gasoline/Petrol	39,163	17,369	24,889
	Diesel	62,123	48,282	28,331
Non-renewable sources	Liquified Petroleum Gas (LPG)	1,850	5,246	6,090
	Coal	-	0	2,758,931
	Natural gas	8,624,164	10,583,263	9,469,790
	Fuel oil	1,488,153	164,138	42,717
Electricity consumption		155,334	91,954	70,805
	<b>Total internal energy consumption (MWh)</b>	<b>10,370,787</b>	<b>10,910,252</b>	<b>12,401,553</b>
Electricity sold		10,269,746	9,499,073	9,477,091
Energy consumption intensity	Power generation assets: MWh consumed/MWh generated	0.88	1.13	1.29
	Algonquin/Liberty: MWh consumed/\$USD revenue	0.0047	0.0066	0.0076
	Regulated business: MWh consumed/Customer connections	8.65	11.56	14.54

## Generation capacity

		2021	2020	2019
Nameplate capacity of generation assets by source (MW)*	Coal	0	0	213
	Natural gas	1,496	1,496	1,496
	Diesel	140	140	0
	Hydroelectric	134	134	134
	Solar	329	258	175
	Wind	2,537	1,452	1,100
	<b>Total generation capacity (MW)</b>	<b>4,636</b>	<b>3,479</b>	<b>3,117</b>
Energy capacity mix (%)*	Coal	0%	0%	7%
	Natural gas	32%	43%	48%
	Diesel	3%	4%	0%
	Hydroelectric	3%	4%	4%
	Solar	7%	7%	6%
	Wind	55%	42%	35%
<b>Total renewable generation capacity (%)</b>	<b>65%</b>	<b>53%</b>	<b>45%</b>	

**Water and effluents**<sup>35</sup>
**2021**
**2020**
**2019**
**Water withdrawal**

Water withdrawal by source (thousand m <sup>3</sup> )	Surface water	27,860	9,546	-
	Ground water	109,006	79,486	-
	Third-party water	8,380	9,599	-
	Other source	1	164	-
	<b>Total water withdrawal</b>	<b>145,248</b>	<b>98,795</b>	<b>-</b>
Water withdrawal from water stressed regions by source (thousand m <sup>3</sup> )	Surface water	-	-	-
	Ground water	13,560	-	-
	Third-party water	7,475	-	-
	Other source	-	-	-

**Water discharge**

Water discharge by source (m <sup>3</sup> )	Surface water	46,574,167	12,967,475	-
	Ground water	136,005	350,048	-
	Seawater <sup>36</sup>	25,358,995	7,805,834	-
	Third-party water	1,582,615	5,064,148	-
	<b>Total water discharge</b>	<b>73,651,782</b>	<b>26,187,505</b>	<b>-</b>
Water discharge in water stressed regions by source	Surface water	-	-	-
	Ground water	58	-	-
	Ocean / Sea Water	11	-	-
	Third-party water	935	-	-

**Water consumption**

Total water consumption (thousand m <sup>3</sup> )	50,189	25,665	-
Total water consumption in water stressed regions (thousand m <sup>3</sup> )	4,013	-	-

**Water Utility energy usage**

Water supplied to customers (thousand m <sup>3</sup> )	95,061	73,130	57,553
Energy used by water utilities (MWh)	143,567	81,313	63,120
Energy intensity of water supply (MWh/thousand m <sup>3</sup> )	1.51	1.11	1.10

<sup>35</sup> Water stress areas of operations have been reassessed in 2021. As a result, the 2020 figures have been excluded.

<sup>36</sup> Seawater discharge was from ESSAL operations.

Waste		2021	2020	2019
<b>Waste generation (Mt)</b>				
Waste generated	Hazardous waste	51,864	20,797	-
	Non-hazardous waste <sup>37</sup>	25,793	312,827	-
	<b>Total waste generated</b>	<b>77,657</b>	<b>333,624</b>	-
<b>Waste diverted (Mt)</b>				
Hazardous waste diverted by recovery type (offsite)	Reuse	-	2	-
	Recycling	6,104	9,678	-
	Other	40,044	-	-
	<b>Total hazardous waste diverted</b>	<b>46,148</b>	<b>9,680</b>	-
Non-hazardous waste diverted by recovery type (offsite)	Reuse	-	1,689	-
	Recycling	7,304	221,672	-
	Other	615	0.003	-
	<b>Total non-hazardous waste diverted</b>	<b>7,918</b>	<b>223,362</b>	-
<b>Waste directed to disposal (Mt)</b>				
Hazardous waste disposed by disposal operation (offsite)	Incineration with energy recovery	2	23	-
	Incineration without energy recovery	-	49	-
	Landfilling	5,714	10,754	-
	Other	-	292	-
	<b>Total hazardous waste disposed</b>	<b>5,716</b>	<b>11,117</b>	-
Non-hazardous waste disposed by disposal operation (offsite)	Incineration with energy recovery	3	549	-
	Incineration without energy recovery	-	0.15	-
	Landfilling	17,872	77,754	-
	Other	-	11,162	-
	<b>Total non-hazardous waste disposed</b>	<b>17,875</b>	<b>89,465</b>	-

<sup>37</sup> Construction waste generated by contractors was included in 2019 and 2020 figures, but has been excluded for 2021.

**Biodiversity**
**2021**
**2020**
**2019**
**Species impact**

		2021	2020	2019
Land developed for pollinators	Acres	25.0	32.5	25.1
	Square feet	43,144	47,542	38,552
IUCN Red List species and national conservation list species with habitats in areas affected by operations	Critical endangered	4	2	-
	Endangered	36	52	11
	Vulnerable	25	13	8
	Near threatened	9	2	7
	Least concern	14	-	-

**Fleet and Compliance**
**Fleet**

Percentage of vehicle fleet using low emission fuel	68%	45%	-
Number of Compressed Natural Gas (CNG) capable vehicles	275	279	266
Volume of CNG gas gallon equivalent used (GGE)	181	385	1,050
Electric chargers installed for employee vehicles	151	97	-
Percentage of employees with access to electric vehicle charging at office	61%	51%	-

**Compliance with environmental laws and regulations**

Number of violations with environmental laws and regulations	24	7	-
Monetary value of environmental fines (\$USD millions)	3.7	0.7	-
Environmental liability accrued at year end (\$USD millions)	69.2	-	-