

Operator Energy Consumption

The following table presents estimates for direct and indirect energy usage, which can be attributed to our interests, for a majority of our revenue-generating mineral properties, as available from Skarn Associates for calendar years 2018 through 2023. The table also details the GHG emissions associated with each unit of direct and indirect energy and provides a weighted average performance for the portfolio. Entries labeled “NR” means the data was not reported in the Skarn Associates database, and those labeled “—” are for periods when Royal Gold did not have royalty or stream revenue from the mineral property. Skarn Associates may update prior year information, which we may have presented in prior reports. We use the most current data available from Skarn Associates and adjust our presentation of data and calculations accordingly.

Mineral Property/Operator	Year ¹	Royal Gold Net GEOs ² (%)	Total Energy Intensity (GJ/GEO) Quartile Ranking ⁸	RGLD Attributed Energy Estimates ^{4,5}			Energy Emission Factor			Electrical Power Consumption (kW-hr/t Ore Treated)
				Direct	Indirect	Total	Direct	Indirect	Total	
				(Tera Joule)			(tCO ₂ e/Tera Joule)			
Principal Properties										
Andacollo	2018	15.3%		78	262	340	71	116	106	25
Teck Resources Limited	2019	17.2%		98	319	417	71	113	103	26
	2020	13.4%		81	253	334	71	76	75	25
	2021	11.4%		103	338	441	71	—	16	30
	2022	8.4%		81	254	335	71	—	17	30
	2023	8.4%	4th	82	213	295	71	—	20	27
Cortez ³	2018	1.5%		10	4	13	71	83	74	18
Nevada Gold Mines LLC	2019	4.3%		47	18	65	71	81	74	19
	2020	6.1%		85	27	112	71	81	73	18
	2021	11.0%		179	54	234	71	71	71	12
	2022	10.6%		130	45	175	71	91	76	26
	2023	18.8%	2nd	223	79	302	71	21	58	16
Mount Milligan	2018	22.6%		151	354	505	71	3	23	35
Centerra Gold Inc.	2019	23.3%		187	386	573	70	8	29	33
	2020	24.8%		203	459	662	70	11	29	30
	2021	23.5%		202	443	645	70	3	24	29
	2022	27.0%		252	473	725	70	3	26	27
	2023	23.5%	4th	237	491	728	70	3	25	27

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				Direct	Indirect	Total	Direct	Indirect	Total	
				(Tera Joule)			(tCO ₂ e/Tera Joule)			
Pueblo Viejo Barrick Gold Corporation	2018	16.8%		1,117	—	1,117	77	—	77	253
	2019	17.3%		1,251	—	1,251	77	—	77	266
	2020	16.9%		1,404	17	1,422	62	156	64	308
	2021	14.1%		1,646	24	1,669	60	164	62	355
	2022	12.4%		1,326	19	1,346	60	163	61	305
	2023	10.6%	4th	821	74	849	52	149	55	230
Non-Principal Properties										
Allan/Borax Nutrien Ltd.	2018	0.3%		NR	NR	NR	NR	NR	NR	NR
	2019	0.3%		NR	NR	NR	NR	NR	NR	NR
	2020	0.3%		NR	NR	NR	NR	NR	NR	NR
	2021	0.3%		NR	NR	NR	NR	NR	NR	NR
	2022	0.3%		NR	NR	NR	NR	NR	NR	NR
	2023	0.3%	NR	NR	NR	NR	NR	NR	NR	NR
Bald Mountain ³ Kinross Gold Corporation	2018	0.5%		8	1	9	71	98	73	2
	2019	0.2%		5	0	5	71	196	82	3
	2020	0.0%		1	0	1	71	196	82	3
	2021	0.2%		4	0	5	71	155	78	3
	2022	0.4%		8	1	9	71	102	74	3
	2023	0.3%	4th	8	1	10	71	92	74	3
Bogoso and Prestea Future Global Resources Ltd.	2018	2.6%		18	15	33	71	37	55	36
	2019	1.4%		13	16	29	71	36	51	79
	2020	0.9%		3	6	9	71	94	86	79
	2021	0.4%		1	3	5	71	97	89	79
	2022	0.6%		5	4	10	71	98	83	79
	2023	0.5%	2nd	5	4	9	71	94	80	79

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				Direct	Indirect	Total	Direct	Indirect	Total	
				(Tera Joule)			(tCO ₂ e/Tera Joule)			
Canadian Malartic ³ Agnico Eagle Mines Ltd.	2018	2.5%		29	22	51	69	—	39	33
	2019	1.8%		23	15	38	70	—	42	28
	2020	1.6%		23	16	39	70	1	41	28
	2021	1.5%		18	11	29	70	1	43	24
	2022	1.0%		12	9	21	69	1	39	34
	2023	0.3%	3rd	4	3	6	71	1	42	34
Dolores Pan American Silver Corporation	2018	2.0%		35	10	44	70	126	82	13
	2019	1.9%		37	10	48	70	128	83	15
	2020	1.5%		35	10	45	70	127	83	15
	2021	2.0%		27	12	39	70	98	79	14
	2022	1.9%		21	12	32	70	44	61	13
	2023	1.6%	1st	13	11	24	70	44	58	13
Don Mario Orvana Minerals Corporation	2018	0.5%		NR	NR	NR	NR	NR	NR	NR
	2019	0.2%		NR	NR	NR	NR	NR	NR	NR
	2020	—%		—	—	—	—	—	—	—
	2021	—%		—	—	—	—	—	—	—
	2022	—%		—	—	—	—	—	—	—
	2023	—%	NR	—	—	—	—	—	—	—
Don Nicolas ³ Cerrado Gold, Inc.	2018	0.0%		2	—	2	63	—	63	76
	2019	—%		—	—	—	—	—	—	NR
	2020	0.4%		18	—	18	59	—	59	76
	2021	0.2%		6	—	6	63	—	63	76
	2022	0.2%		5	—	5	63	—	63	76
	2023	0.1%	3rd	2	—	2	63	—	63	76

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				Direct	Indirect	Total	Direct	Indirect	Total	
				(Tera Joule)			(tCO ₂ e/Tera Joule)			
El Limón Calibre Mining Corporation	2018	0.6%		16	5	21	74	83	76	103
	2019	0.6%		15	5	20	74	83	76	103
	2020	0.9%		17	6	23	74	83	76	103
	2021	1.0%		19	8	27	74	83	76	113
	2022	1.2%		12	10	22	73	—	39	141
	2023	1.1%	3rd	13	10	24	70	—	40	150
Gold Hill ³ Kinross Gold Corporation (Round Mountain Complex)	2018	0.3%		4	1	5	71	94	77	8
	2019	0.2%		3	1	4	71	85	74	9
	2020	0.2%		4	1	5	71	93	76	9
	2021	0.2%		4	1	5	71	159	94	12
	2022	0.2%		4	1	5	71	187	101	8
	2023	0.0%	3rd	1	—	1	71	174	40	8
Goldstrike ³ Nevada Gold Mines LLC (Goldstrike and Carlin were combined by Nevada Gold Mines for reporting purposes starting in 2019 and are referred to as Carlin.)	2018	1.0%		23	9	32	71	83	74	121
	2019	0.9%		41	18	59	77	59	72	288
	2020	0.7%		26	8	33	79	81	79	143
	2021	0.6%		26	7	33	78	77	78	114
	2022	0.7%		23	4	27	88	145	96	163
	2023	0.3%	4th	14	3	17	74	17	63	246
Gwalia ³ Genesis Minerals Limited	2018	1.5%		16	—	16	63	—	63	109
	2019	1.0%		18	—	18	62	—	62	134
	2020	0.9%		21	—	21	61	—	61	164
	2021	0.9%		21	—	21	60	—	60	130
	2022	0.8%		21	—	21	60	—	60	130
	2023	0.7%	3rd	18	—	18	61	—	61	130



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				Direct	Indirect	Total	Direct	Indirect	Total	
				(Tera Joule)			(tCO ₂ e/Tera Joule)			
Holt ³	2018	3.1%		13	37	50	74	4	23	187
Agnico Eagle Mines Ltd.	2019	2.7%		13	36	49	74	4	23	187
	2020	1.3%		8	19	27	74	4	25	206
	2021	—%		—	—	—	—	—	—	—
	2022	—%		—	—	—	—	—	—	—
	2023	—%	—	—	—	—	—	—	—	—
Khoemacau	2018	—%		—	—	—	—	—	—	—
MMG Limited (formally Khoemacau Copper)	2019	—%		—	—	—	—	—	—	—
	2020	—%		—	—	—	—	—	—	—
	2021	0.7%		5	6	11	74	259	172	52
	2022	3.1%		22	25	46	74	259	172	52
	2023	5.4%	1st (Cu)	36	38	74	71	233	157	49
King of the Hills	2018	—%		—	—	—	—	—	—	—
Vault Minerals Limited	2019	0.4%		NR	NR	NR	NR	NR	NR	NR
	2020	0.2%		NR	NR	NR	NR	NR	NR	NR
	2021	0.0%		NR	NR	NR	NR	NR	NR	NR
	2022	0.2%		10	—	10	64	—	64	35
	2023	0.8%	4th	27	—	27	62	—	62	42
LaRonde Zone 5 ³	2018	0.1%		—	1	1	59	1	15	183
Agnico Eagle Mines Ltd.	2019	0.5%		2	5	7	59	1	18	147
	2020	0.4%		2	5	6	60	—	16	152
	2021	0.4%		2	5	6	61	—	17	147
	2022	0.6%		3	7	9	61	—	17	162
	2023	0.5%	2nd	2	6	9	61	—	157	162

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				Direct	Indirect	Total	Direct	Indirect	Total	
				(Tera Joule)			(tCO ₂ e/Tera Joule)			
Las Cruces First Quantum Minerals Ltd.	2018	1.4%		10	15	26	68	68	68	184
	2019	0.9%		6	12	18	67	68	68	165
	2020	1.1%		3	13	16	60	43	46	169
	2021	0.3%		3	8	11	70	42	48	215
	2022	0.2%		2	7	9	70	42	48	206
	2023	0.1%	4th (Cu)	1	3	4	70	42	48	79
Leeville (North) ³ Nevada Gold Mines LLC (Scope 1 emissions included portions of emissions from the Western 102 and TS power plants.)	2018	0.8%		52	20	73	79	59	73	180
	2019	0.3%		15	6	21	77	59	72	288
	2020	0.3%		12	4	16	79	81	79	143
	2021	1.0%		45	12	57	78	77	78	114
	2022	0.9%		31	6	37	88	145	96	163
	2023	1.1%	4th	49	12	61	74	42	63	246
Marigold ³ SSR Mining Inc.	2018	1.6%		30	3	32	71	181	79	1
	2019	1.5%		27	2	29	70	81	68	1
	2020	1.7%		39	3	42	70	81	64	2
	2021	1.6%		43	3	46	70	97	63	2
	2022	1.3%		32	2	34	70	98	65	2
	2023	1.0%	3rd	19	2	21	74	92	72	3
Meekathara ³ Westgold Resources Ltd.	2018	0.7%		23	—	23	70	—	70	56
	2019	0.7%		20	—	20	70	—	70	56
	2020	0.8%		24	—	24	70	—	70	56
	2021	0.7%		22	—	22	70	—	70	53
	2022	0.6%		17	—	17	70	—	70	55
	2023	0.4%	3rd	12	—	12	70	—	70	63



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				Direct	Indirect	Total	Direct	Indirect	Total	
				(Tera Joule)			(tCO ₂ e/Tera Joule)			
Mulatos Alamos Gold Inc.	2018	3.0%		60	—	60	74	—	74	7
	2019	0.8%		22	—	22	74	141	74	6
	2020	—%		—	—	—	—	—	—	—
	2021	—%		—	—	—	—	—	—	—
	2022	—%		—	—	—	—	—	—	—
	2023	—%	—	—	—	—	—	—	—	—
Peñasquito Newmont Corporation	2018	5.1%		83	79	162	74	122	98	35
	2019	4.1%		67	61	127	74	129	100	51
	2020	7.1%		63	66	129	74	127	101	41
	2021	8.2%		87	81	168	74	111	91	41
	2022	7.6%		85	75	160	74	117	94	39
	2023	3.4%	4th	44	74	119	74	71	72	67
Rainy River New Gold Inc.	2018	3.7%		75	32	107	70	2	50	33
	2019	5.5%		106	54	160	70	2	47	32
	2020	4.7%		89	53	142	70	6	46	31
	2021	5.2%		111	65	176	70	6	46	32
	2022	5.0%		94	59	154	70	8	46	34
	2023	5.8%	4th	101	64	165	70	11	47	35
Red Chris Newmont Corporation	2018	—%		—	—	—	—	—	—	—
	2019	—%		—	—	—	—	—	—	—
	2020	—%		—	—	—	—	—	—	—
	2021	—%		—	—	—	—	—	—	—
	2022	0.5%		11	9	20	65	7	37	34
	2023	0.6%	4th	15	13	28	69	5	39	36



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				Direct	Indirect	Total	Direct	Indirect	Total	
				(Tera Joule)			(tCO ₂ e/Tera Joule)			
Robinson KGHM International Ltd.	2018	2.0%		50	50	100	71	158	114	41
	2019	1.9%		46	46	92	71	158	114	41
	2020	2.2%		64	63	127	71	158	114	41
	2021	1.8%		44	44	88	71	158	114	41
	2022	1.9%		50	49	100	71	158	114	41
	2023	1.5%	4th	44	44	88	71	158	114	41
Skyline Wolverine Fuels, LLC	2018	0.3%		NR	NR	NR	NR	NR	NR	NR
	2019	0.3%		NR	NR	NR	NR	NR	NR	NR
	2020	0.3%		NR	NR	NR	NR	NR	NR	NR
	2021	0.1%		NR	NR	NR	NR	NR	NR	NR
	2022	0.0%		NR	NR	NR	NR	NR	NR	NR
	2023	0.3%	NR	NR	NR	NR	NR	NR	NR	NR
South Laverton ³ Northern Star Resources Ltd.	2018	1.3%		21	—	21	74	—	74	36
	2019	1.1%		18	—	18	74	—	74	36
	2020	2.2%		36	—	36	74	—	74	36
	2021	1.9%		46	—	46	70	—	70	49
	2022	1.3%		40	—	40	74	—	74	21
	2023	1.4%	3rd	31	—	31	73	—	73	29
Southern Cross Shandong Tianye Group	2018	0.4%		4	2	6	74	194	117	36
	2019	0.4%		4	2	6	74	192	116	36
	2020	0.3%		3	1	4	74	189	111	29
	2021	0.3%		3	2	5	74	187	116	34
	2022	0.3%		2	2	4	74	182	129	55
	2023	0.3%	1st	2	2	5	74	182	129	54



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				Direct	Indirect	Total	Direct	Indirect	Total	
				(Tera Joule)			(tCO ₂ e/Tera Joule)			
Taparko ³ (historic royalty, no ownership today)	2018	0.8%		24	—	24	75	—	75	11
	2019	0.4%		14	—	14	75	—	75	11
	2020	0.6%		18	—	18	75	—	75	12
	2021	0.5%		28	—	28	75	—	75	12
	2022	0.1%		7	—	7	75	—	75	12
	2023	—%	—	—	—	—	—	—	—	—
Twin Creeks ³ Nevada Gold Mines LLC (Twin Creeks combined production with Turquoise Ridge in 2019.)	2018	0.0%		—	—	—	71	77	73	99
	2019	0.1%		2	1	2	86	81	85	206
	2020	0.1%		2	1	3	86	81	85	183
	2021	0.0%		—	—	—	85	71	82	157
	2022	0.0%		—	—	—	78	105	84	564
	2023	0.0%	4th	—	—	—	80	25	67	229
Voisey's Bay Vale S.A.	2018	1.8%		12	—	12	71	—	71	52
	2019	2.0%		16	—	16	71	—	71	52
	2020	1.5%		11	—	11	71	—	71	52
	2021	2.6%		22	—	22	71	—	71	52
	2022	1.5%		21	—	21	71	—	71	60
	2023	0.8%	2nd (Cu)	19	—	19	71	—	71	57
Wassa Chifeng Jilong Gold Mining Co., Ltd.	2018	4.6%		20	20	41	71	37	54	44
	2019	4.4%		22	21	44	71	36	54	50
	2020	5.0%		23	26	50	71	37	53	46
	2021	4.9%		34	34	69	71	184	127	62
	2022	5.2%		34	34	68	71	184	128	62
	2023	5.2%	1st	22	30	51	74	188	140	56



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				Direct	Indirect	Total	Direct	Indirect	Total	
				(Tera Joule)			(tCO ₂ e/Tera Joule)			
Wharf Coeur Mining, Inc.	2018	0.6%		9	7	15	71	93	80	22
	2019	0.6%		9	7	16	71	114	88	22
	2020	0.7%		7	7	13	71	96	83	22
	2021	0.6%		14	7	21	71	43	62	22
	2022	0.5%		13	6	18	71	46	63	22
	2023	0.7%	3rd	17	2	20	62	113	68	7
Williams ⁷ Barrick Gold Corporation	2018	0.5%		5	6	11	66	12	35	71
	2019	0.6%		4	6	10	66	5	31	77
	2020	0.7%		4	5	9	65	8	32	101
	2021	0.4%		3	5	8	63	8	27	153
	2022	0.2%		1	2	4	64	8	28	155
	2023	(0.2%)	2nd	-1	-2	-3	62	8	27	140
Xavantina Ero Copper	2018	—%		—	—	—	—	—	—	—
	2019	—%		—	—	—	—	—	—	—
	2020	—%		—	—	—	—	—	—	—
	2021	1.2%		4	9	12	74	17	34	154
	2022	3.1%		9	18	27	74	17	36	141
	2023	4.1%	1st	6	12	18	62	17	36	141
Other Interests	2018	0.2%		NR	NR	NR	NR	NR	NR	NR
	2019	0.2%		NR	NR	NR	NR	NR	NR	NR
	2020	0.1%		NR	NR	NR	NR	NR	NR	NR
	2021	0.2%		NR	NR	NR	NR	NR	NR	NR
	2022	0.2%		NR	NR	NR	NR	NR	NR	NR
	2023	0.3%	NR	NR	NR	NR	NR	NR	NR	NR