

Greenhouse gas emissions

Our carbon footprint in tonnes of equivalent carbon dioxide (CO₂e):

Scope 1	2020		2019		2018		2017 (current baseline)	
	Consumption	tCO ₂ e	Consumption	tCO ₂ e	Consumption	tCO ₂ e	Consumption	tCO ₂ e
Gas buses (kWh)	5,640,483	1,037	6,015,533	1,106	6,075,632	1,118	3,721,896	685
Gas premises (Bus) (kWh)	25,327,060	4,657	23,811,076	4,381	22,081,195	4,062	19,100,488	3,518
Gas premises (Rail) (kWh)	23,026,795	4,234	24,922,178	4,582	31,305,147	5,759	34,172,777	6,293
Bus diesel (10% biodiesel blend)(ltrs)	136,608,713	347,810	142,617,090	369,964	137,374,506	360,875	138,863,052	361,066
Gas oil (Rail) (ltrs)	4,325,028	11,927	5,381,957	14,845	11,698,766	34,751	18,475,417	54,567
Total scope 1 (tCO₂e)		369,665		394,878		406,564		426,130
Scope 2								
Traction electricity (kWh)	1,477,645,807	344,498	1,356,323,985	346,676	1,389,289,129	393,266	1,371,415,035	482,135
Mains electricity premises (Bus) (including Singapore and Ireland) (kWh)	19,264,512	5,179	18,789,409	3,953	18,374,050	5,387	17,722,995	6,231
Mains electricity premises (Rail) (kWh)	71,999,941	16,814	74,410,676	19,019	82,862,076	23,456	90,511,067	31,820
Mains electricity premises (Head Office) (kWh)	122,954	29	183,629	47	162,890	46	95,683	34
Mains electricity electric bus (kWh)	4,729,277	1,110	2,352,029	601	1,726,965	489	822,497	289
Solar electricity generated and consumed in premises (Bus) (kWh)	211,301	0	175,415	0	102,836	0	114,661	0
Solar electricity generated and consumed in premises (Rail) (kWh)	734,430	0	431,706	0	0	0	0	0
Solar electricity generated and consumed in premises (Total) (kWh)	945,731	0	607,121	0	102,836	0	114,661	0
Total scope 2 – location (tCO₂e)		367,439		370,297		422,644		520,508
Total scope 2 – market (tCO₂e)		62,596		61,971		63,306		61,037
Scope 3								
Electricity – transmission and distribution								
Total (tCO₂e)		31,554		31,510		36,012		48,666
Breakdown by division								
Scope 1, 2 and 3	Location	Market	Location	Market	Location	Market	Location	Market
Bus (tCO ₂ e)	360,275	355,629	380,465	383,211	372,415	373,668	372,399	372,072
Rail (tCO ₂ e)	410,352	108,184	416,169	105,084	492,755	132,155	622,869	163,728
Group (tCO ₂ e)	31	2	51	63	50	60	37	33
Total (tCO₂e)	770,658	463,815	796,685	488,357	865,220	505,882	995,304	535,833
Scopes 1-3 by country	Location	Market	Location	Market	Location	Market	Location	Market
UK (tCO ₂ e)	690,460	371,863	742,066	433,685	819,356	460,018	957,787	498,316
Singapore (tCO ₂ e)	46,791	46,791	48,283	48,283	45,864	45,864	37,517	37,517
Ireland (tCO ₂ e)	11,875	11,921	6,336	6,391	0	0	0	0
Norway (tCO ₂ e)	806	517	0	0	0	0	0	0
Germany (tCO ₂ e)	20,727	32,723	0	0	0	0	0	0
Total (tCO₂e)	770,658	463,815	796,685	488,359	865,220	505,882	995,304	535,833
Out of scopes								
Biogenic content of biodiesel (tCO ₂ e)	15,188		12,436		7,858		9,373	
Scope 1, 2 and 3 and Out of Scopes	Location	Market	Location	Market	Location	Market	Location	Market
Total (tCO ₂ e)	785,846	479,003	809,121	500,795	873,078	513,740	1,004,677	545,207
YoY % change	-2.88%	-4.35%	-7.33%	-2.52%	-13.10%	-5.77%	n/a	n/a
% change on 2016/17 baseline	-21.78%	-12.14%	-19.46%	-8.15%	n/a	n/a	n/a	n/a
Total vehicle miles operated	733,702,870		706,393,581		683,223,210		684,511,871	
Total bus & rail mileage								
All scopes kg CO ₂ e/vehicle mile	1.0711	0.6529	1.1454	0.7089	1.2779	0.7519	1.4677	0.7965
YoY % change	-6.49%	-7.91%	-10.37%	-5.72%	-12.93%	-5.59%	n/a	n/a
% change on 2016/17 baseline	-27.03%	-18.03%	-21.96%	-10.99%	-12.93%	-5.59%	n/a	n/a
Total global energy consumption (kwhs)	3,032,726,257		2,983,369,795		3,042,437,920		3,207,016,101	

*Annual emissions figures for prior years have been restated to reflect the collation of subsequent changes in consumption data and the correction of emissions.

Greenhouse gas emissions continued

Methodology, scope and exclusions

We report on greenhouse gas (GHG) emissions in accordance with the GHG Protocol Corporate Accounting and Reporting Standard, and the UK Government's Environmental Reporting Guidance methodologies and are also in line with SASB recommendations.

In line with the GHG Protocol and guidance, we have reported all Scope 1 and 2 emissions other than fugitive emissions from air conditioning equipment in our premises and vehicles due to the difficulty in obtaining this data. A screening exercise was carried out that established that these emissions account for less than 0.5% of our total GHG emissions and are therefore not considered material. We do not currently report on our scope 3 emissions other than those arising from losses within the electricity transmission and distribution systems. A screening exercise is currently underway to quantify our scope 3 emissions and consideration will be given to incorporating material scope 3 emissions into future GHG reporting and targets. We also report our out of scopes CO₂e emissions which relate to the biogenic content of biodiesel that is used in our diesel bus fleet.

All scope 1 emissions are calculated by using the correct CO₂e conversion factor for each energy source.

We report our Scope 2 emissions on both a 'location' and a 'market' basis. This dual reporting applies to CO₂e emissions arising from our electricity consumption only. The location-based method uses the national average carbon factors for mains electricity which takes the total mix of fuels used to generate electricity across all the countries we operate in. The correct location based CO₂e conversion factors for each country that we operate in have been used to calculate our location based CO₂e emissions. The market based method uses supplier or product-specific carbon factors (where available), which reflect supply contract specifications agreed between supplier and customer. In some instances, particularly for traction electricity where we do not contract directly with the supplier, supplier or product specific market based CO₂ conversion factors are not available. Where this occurs, we follow the hierarchy of market based factors as specified in the GHG Reporting Protocol and have used national mix residual factors instead. All the above emissions sources fall within the businesses included in our consolidated financial statements.

We define our organisational reporting boundary by applying the financial control approach with a materiality threshold set at 5%.

Emissions are expressed in terms of equivalent carbon dioxide (CO₂e). Our relative performance metric is kilogrammes of CO₂e per vehicle mile operated. This metric ensures there is a direct correlation between our performance and the purchase of increasing numbers of ultra-low carbon vehicles as well as the measures we are taking to improve our energy efficiency. For 2020, the mileage figures provided by our German and Norwegian rail operations (1.1% of total mileage) are for fleet mileage rather than for vehicle mileage, resulting in the total vehicle mileage figure for 2020 being slightly understated. As our performance metric is CO₂e per vehicle mile, understating the mileage has a negative impact on performance, so performance has also been slightly understated. Correct vehicle mileage figures for 2019/20 will be obtained and overall kg CO₂e/vehicle mile will be restated in next year's reporting.

To maintain transparency and enable stakeholders to see our performance trends over time, we provide historical data for both our absolute CO₂e emissions and for our relative performance metric. We restate figures for historical CO₂e emissions and our relative performance when there has been a subsequent change in energy consumption data or if methodologies change or accounting errors were made.

Context

Performance over time must be seen in the context of the changes in the composition of the Group since our 2017 baseline year. The loss of the London Midland rail franchise in December 2017 resulted in a significant absolute reduction in our energy consumption and CO₂e from that date onwards. However, that reduction has been offset by the additional energy consumption and CO₂e caused by the acquisition or start-up of Go-Ahead Singapore (September 2016), East Yorkshire Motor Services (June 2018), Go-Ahead Ireland (September 2018) and Go North West (June 2019) as well as the start of rail services in Germany and Norway in 2019 and 2020, respectively. Additionally, the significant expansion of Govia Thameslink Railway operations between 2018 and 2019 increased in traction electricity consumption. The net effects of these changes in the Group since 2017 cancel themselves out. Lower CO₂e conversion factors for grid electricity since 2017 have also contributed to our performance.

Performance

Overall, in absolute terms, on a location basis, our equivalent CO₂e emissions in 2020 were 2.9% lower year on year and are 21.8% lower than in our baseline year 2017.

Last year, we have ourselves a target to achieve a 25% reduction on CO₂e per vehicle mile by 2021 from our 2017 baseline performance. In 2020 we achieved a 6.5% year on year reduction in CO₂e per vehicle mile, a reduction of 27.0% against our 2017 baseline, achieving our target a year ahead of schedule. CO₂ reduction performance has largely been driven by improved fleet energy efficiency with bus fuel efficiency improved by 2.6% year on year and by 6.9% since 2017.

This target was supported by secondary targets over the same timescale to improve bus fuel efficiency (fleet average miles per gallon) by 5% and to improve traction electricity energy efficiency (fleet average vehicle miles/kwh) at GTR by 15% (excluding Southeastern which was scheduled to end in April 2020). GTR's traction electricity efficiency has improved by 5.2% year on year and by 22.6% since 2017, achieving our secondary targets.

Actions that were implemented during 2019/20 to improve energy efficiency include:

- On-going investment in our bus fleet: The majority of new buses purchased in the year were Euro VI and 172 new buses entered service with our operating companies in the year. In line with the Group's vehicle procurement policy to only purchase diesel buses certified as Low Emission Buses (LEB) other than in exceptional circumstances, virtually all of these new buses are certified as LEBs. Thirty of these new buses were next generation extended range electric/diesel hybrid buses, certified as ultra-low emission buses, that were purchased by Brighton & Hove Bus Company. They use 'geo-fencing' to enable them to operate in purely electric, zero-emissions mode throughout the city's Ultra-Low Emission Zone. These buses are fully electric with an electric motor which drives the bus at all times. They use a small on-board Euro 6 diesel generator for recharging the buses' batteries, when needed, which enables them to operate longer routes than standard plug-in battery electric buses. All of these new buses are significantly more fuel efficient than those they have replaced and contributed to an overall improvement in fleet average miles per gallon of 2.6% year on year and 6.9% better than in 2017.
- Notwithstanding the above, we also introduced over 100 electric buses to our fleet, bringing the total number of electric buses operated by the Group to nearly 200 and making the Group the largest operator of electric buses in the UK. This increase in the size of our electric bus fleet, and the number of services operated on them, accounts for the significant increase in electric bus electricity consumption in 2020. However, these ultra-low emission electric buses also contributed to lower overall CO₂e emissions from the fleet as they have generally replaced diesel buses. Additionally, following extensive feasibility studies carried out in 2019, Go-Ahead successfully bid for funding to assist with the purchase of 20 new hydrogen buses. Following delays caused by issues with the manufacturer and COVID-19, these buses will now be delivered to Brighton & Hove Bus Company in 2021 if funding arrangements can be carried forward. The purchase of these buses, as well as those such as the extended range electric/diesel hybrids with 'geo-fencing', clearly demonstrate the Group's innovative and sector leading approach to adopting low carbon vehicle technologies that also contribute to reducing air pollution.
- Trial of solar panels installed on 18 bus roofs at Go South Coast with the trial shortly to be extended to buses at Go-Ahead London and Brighton & Hove Bus Company. The electricity generated by the panels will reduce the load on the vehicles' alternators/drivetrain and contribute to a marginal improvement in fuel efficiency. One of these trial buses is also fitted with a roof mounted filter designed to remove particulates from the air, contributing to improving air quality.
- New rolling stock, which is significantly more energy efficient than the units it replaced, have continued to be introduced on the GTR franchise. Excluding London Midland from 2017 and the new German and Norwegian rail operations, this new rolling stock contributed to an overall year on year improvement in electric fleet energy efficiency (vehicle miles/kwh) of 1.5% (6.4% better than in 2016/17). For GTR only, the year on year improvement was 5.2% and against the 2017 baseline, a 22.6% improvement was achieved, exceeding the 15% improvement target a year earlier than planned.
- Solar PV was installed at four Southeastern Railway depots, Thames Travel's Didcot bus depot and Go North East's Hownsgill depot in 2019 adding to the existing installations at Oxford and Hull bus depots, increasing the amount of self-generated, zero-carbon electricity that we consumed. Additionally, we have continued to roll out LED lighting to reduce electricity consumption within our premises.
- From 1 July 2019, all electricity supplied to Group premises within our central Group electricity supply contract was entirely generated from fully renewable sources (wind, solar, hydro, etc.) and is zero rated for CO₂e under a market based reporting approach.
- Go-Ahead's bus division achieved ISO 50001 certification in September 2018. The scope of the certification was extended during 2020 to include East Yorkshire Motor Services and Go North West bus operations and, with the existing certifications held by the Group's two train operating companies, all of Go-Ahead's UK operations are now covered by ISO 50001 certification, recognised as best practice for energy management.
- During 2019, Go-Ahead has also carried out a review of the climate change risks and opportunities, including scenario planning, as recommended by the Task Force on Climate-related Financial Disclosures (TCFD). We are currently working on incorporating the review findings into a new Group climate change strategy which will also feature a long term science based CO₂ reduction target and a commitment to achieve net zero by a specified date. These workstreams are still ongoing and the outcomes will be included in our 2021 Annual Report when our current energy and CO₂ reduction targets expire.
- Go-Ahead also continued to collaborate with partners on a variety of innovative 'future of transport' initiatives such as demand-responsive transport (DRT) services and potential tie-ups with logistics companies that will achieve net reductions in carbon emissions as well as reducing air pollution from transport and congestion.