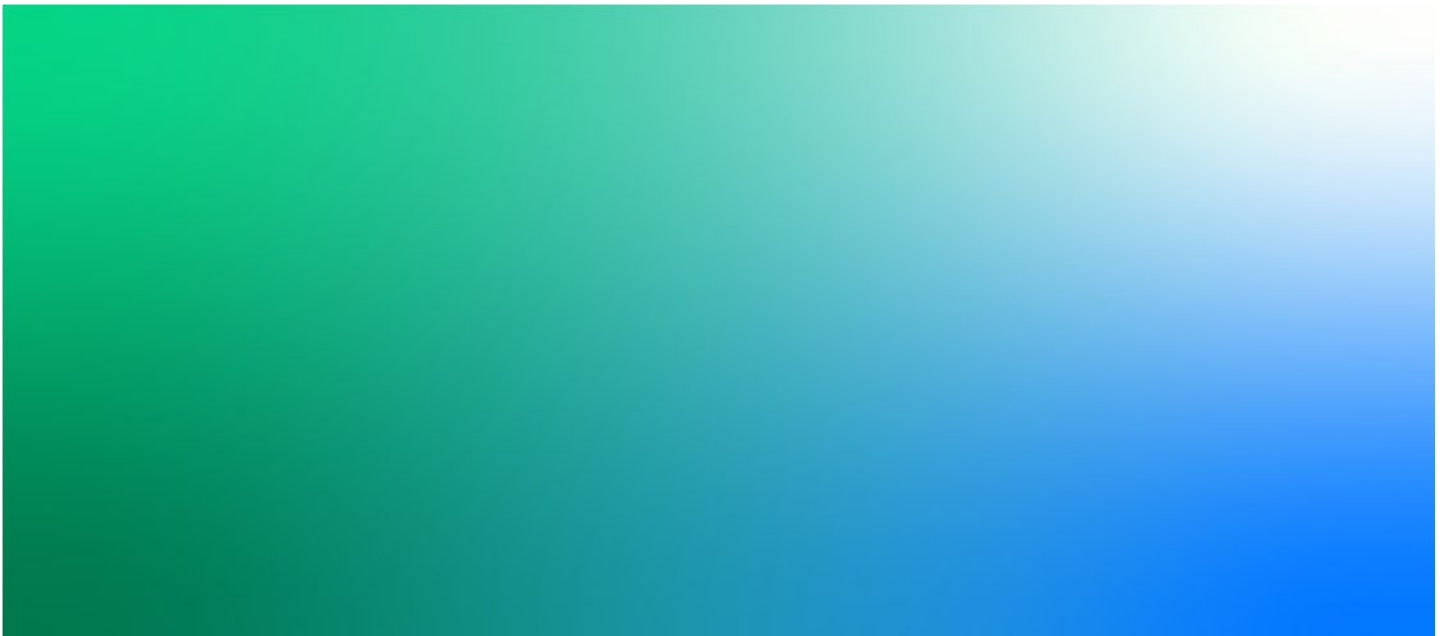


Diageo Lebanon Distillery
PAS 2060 Qualifying Explanatory Statement

June 26, 2020

Diageo



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PAS 2060 Qualifying Explanatory Statement


Diageo Lebanon Distillery Qualifying Explanatory Statement

This Qualifying Explanatory Statement (QES) demonstrates that the Diageo Lebanon Distillery is committed to achieving carbon neutrality in line with PAS 2060:2014 *specifications for the demonstration of carbon neutrality*.

Diageo is a global leader in beverage alcohol with a vast collection of brands across spirits and beer, whose products are sold in more than 180 countries around the world. Diageo's brands include Johnnie Walker, Crown Royal, J&B, Buchanan's and Windsor whiskies, Smirnoff, Cîroc and Ketel One vodkas, Captain Morgan, Baileys, Don Julio, Tanqueray, and Guinness. The company is listed on both the New York Stock Exchange (DEO) and the London Stock Exchange (DGE). Thanks to its wide range of innovative technical services, Diageo can proudly serve its customers high-quality, lower emissions products.

Carbon Neutrality Declaration

"Carbon neutrality of Diageo's new Lebanon, Kentucky Distillery site for all Scope 1 and 2 emissions from site operations will be achieved by Diageo in accordance with PAS 2060 for the period commencing with the first grain delivery to completion of distilling operations, certified by Jacobs Engineering Group Inc"

DocuSigned by:

4E3924A241D740C

6/24/2020

Perry Jones
Diageo President North American Supply

Date

This QES contains all the required information on the carbon neutrality of the given subject. All information provided within this report has been reviewed by an independent third party, Jacobs, for accuracy. If provided with any new information affecting the validity of the following statements, this document will be updated accordingly to reflect Diageo's current status towards carbon neutrality. This QES document will be made publicly available on Diageo's website. This is the first declaration of commitment from Diageo Lebanon Distillery.

The commitment to carbon neutrality statement has been verified by an independent third party, Jacobs Engineering, Inc, who confirms that the Commitment to Carbon Neutrality Declaration set out in this QES is appropriately reported in accordance with the requirement of PAS 2060. The assurance letter from Jacobs can be found in Appendix D of this report.

1. Introduction

This document forms the QES to state the commitment of the Diageo Lebanon Distillery site to achieve carbon neutrality for Scope 1 and Scope 2 emissions arising from operations at the site, beginning from the first day of operations, defined as the first day grain enters the silo. Diageo has quantified their Scope 1 and Scope 2 carbon footprint in accordance with PAS 2060:2014. Scope 3 emissions are not included in this site-specific commitment to carbon neutrality because Scope 3 emissions are being addressed at the corporate level. Scope 3 emission targets are covered by a corporate commitment to a 30 percent reduction in Scope 3 emissions across the total supply chain by 2020 from 2007 through the Science-based Target initiative (SBTi).

Demonstration of the achievement of carbon neutrality and purchased carbon credits to offset the Diageo Lebanon Distillery’s Scope 1 and Scope 2 carbon footprint for the period commencing with the first grain delivery to completion of distilling operations will be publicly available upon completion. The Diageo Lebanon Distillery has a carbon management plan in place to reduce their carbon intensity footprint and demonstrate commitment to carbon neutrality for Scope 1 and Scope 2 emissions in accordance with PAS 2060:2014. Table 1 documents the information required by PAS 2060 for a QES supporting a declaration of commitment to carbon neutrality.

Table 1. PAS 2060 Qualifying Explanatory Statement Information Summary

Entity making PAS 2060 declaration	Diageo Lebanon Distillery
Individual(s) responsible for the evaluation and provision of data necessary for the substantiation of the declaration (including that of preparing, substantiating, communicating and maintaining the declaration)	Pietro Di Pilato, SVP, Technical North America Andrew Jarrick, Environment & Sustainability Manager
Subject of PAS 2060	Scope 1 and 2 operational emissions of Diageo Lebanon Distillery site. Refer to “Scope of Commitment.”
Function of subject	The function of the Diageo Lebanon Distillery is to produce bourbon and whisky for a variety of brands under the Diageo company.
Activities required for subject to fulfill its function	Activities include grain storage and preparation, fermentation, distillation, dry house operations, and warehousing.
Rationale for selection of the subject	The subject reflects Diageo Lebanon Distillery’s owned emissions that the business has control over. This enables the business to have direct influence over the reduction of emissions and take necessary steps to achieving carbon neutrality.
Methodology for Footprint Calculation	Carbon dioxide equivalent (CO ₂ e) emissions are calculated based on the direct measurement of energy use (e.g. meter reads/ invoices/ purchasing records). Scope 1 emissions (i.e. direct CO ₂ e emissions) cover on-site energy consumption of fossil

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fuel sources, as well as fugitive gas (refrigerants). Scope 2 emissions (i.e. indirect CO₂e emissions) are from purchased electricity and report both Market and Location based emissions.

Type of conformity assessment undertaken	I3P-3 – Independent third -party certification unified
Baseline date for PAS 2060	July 2021
Achievement period	July 2021 - June 2022
Commitment period	2021 – 2031

2. Scope of Commitment

The commitment to achieve carbon neutrality covers all Scope 1 and Scope 2 emissions that arise from the operations of the Diageo Lebanon Distillery site in Lebanon, Kentucky. These are emissions the Diageo Lebanon Distillery has direct control over and can impact through design and operations at this facility.

Diageo currently reports and accounts for those activities that are relevant to the business and goals, and for which there is reliable information. Scope 3 emissions are not included in this site-specific commitment to carbon neutrality because Scope 3 emissions are being addressed at the corporate level. Scope 3 emission targets are covered by a corporate commitment to a 30 percent reduction in Scope 3 emissions across the total supply chain by 2020 from 2007 through the Science-based Target initiative (SBTi).

3. Carbon Footprint

3.1 Baseline

Diageo's fiscal year 2019 global total emissions are reported as Scope 1 emissions of 553,270 tCO₂e and Scope 2 emissions of 179,307 tCO₂e (location-based) and 73,771 tCO₂e (market-based).

The baseline emissions from the Diageo Lebanon Distillery site are expected to be 165 tCO₂e for the fiscal first year of operation, 2021 (see Appendix B). The site has been specifically designed to minimize fossil fuels and reduce energy consumption beyond business as usual. Carbon emissions are reduced compared to a typical existing distillery through the design and specifications of plant equipment. However, the first year of operations, 2021, will be the baseline for recognizing reductions in carbon emissions going forward.

The electrification of the Diageo Lebanon Distillery is built into the design and will therefore allow the site to be operated at near net zero GHG emissions. Purchased electricity is renewable per the terms of the Industrial Power Agreement. The site has minimal capacity to burn fossil fuels and only to provide emergency backup power. The only other source of GHG emissions for site operations are refrigerants used to moderate room temperatures.

3.2 Methodology

Greenhouse gas (GHG) emissions are calculated in accordance with the World Business Council for Sustainable Development and World Resources Institute's GHG Protocol Corporate Standard, Scope 2 Guidance (amendment to the GHG Protocol Corporate Standard, 2015), Scope 3 Calculation Guidance (Corporate Value Chain [Scope 3]) and the Intergovernmental Panel on Climate Change (IPCC) methodology in relation to ozone-depleting substances and fluorinated gases.

Carbon emissions data are externally reported in carbon dioxide equivalent (CO₂e) metric tons; this measure is used to compare the emissions from the six main greenhouse gases based on their global warming potential. Emissions data are calculated based on the direct measurement of energy use (e.g. meter reads/invoices). Fuel consumption is reported by fuel type and then converted to energy consumption (in kilowatt-hours) by fuel type and multiplied by the relevant CO₂e emission factor to derive the total CO₂e emissions.

Scope 1 emission factors for fuels are typically the latest available (at the start of the reporting year), United Kingdom's Department for Environment, Food and Rural Affairs (DEFRA) average fuel CO₂e emissions factors, and calorific values; however, where product-specific factors are available, these are applied.

Carbon emissions from electricity (Scope 2) are reported as both Market emissions and Location emissions in line with the GHG Protocol Scope 2 Guidance. Diageo's CO₂e reduction targets and reporting protocols since 2007 are based on Market emissions applying emissions factors specified in energy attribute certificates, contracts, power purchase agreements and supplier utility emissions as detailed in GHG Protocol Scope 2 guidance¹. Where renewable electricity is used at a site, evidence supporting the contractual instrument or energy attribute certificate is maintained and updated annually. All contractual instruments or energy attribute certificates should meet the quality criteria detailed in the GHG Protocol Scope 2 guidance.

The reporting of Location (gross) emissions has been added to Diageo's protocols since Fiscal Year 2014. For Location-based reporting of grid electricity consumption, regional or subnational factors are used where available for example the Commission for Regulation of Utilities (Ireland), DEFRA (United Kingdom), National Inventory Report (Canada), Emissions & Generation Resource Integrated Database (USA), Indian power sector report (India), in all other cases country or sub-region factors are provided by the International Energy Agency.

¹ https://ghgprotocol.org/scope_2_guidance

Emission reductions made prior to the baseline have been proactively avoided through design and technology use. These avoided emissions have taken place in 2020 through to 2021 during the construction phase. Avoided emissions have not been calculated or quantified and are not being claimed.

Assumptions made in calculations are around the consumption of refrigerants and fossil fuels within the generators on the site. As the site is under construction, consumption can only be estimated based upon expected outputs. This has been undertaken in alignment with the Greenhouse Gas Protocol.

Diageo's carbon accounting methodology was chosen to follow the most widely accepted and publicly available protocols and guidance currently available. The methodology will be reviewed annually, and the Carbon Management Plan will be revised annually to ensure targets are achieved.

3.3 Offset and Renewable Energy Strategy

Diageo's strategy for achieving carbon neutrality will be to validate the Scope 1 and market-based Scope 2 carbon emissions from the site, and then procure the required amount of carbon offset credits for residual Scope 1 emissions. Diageo also intends to buy 100 percent renewable electricity for this site through use of a Utility Renewable Energy Program.

3.3.1 Scope 1 Emissions

As there will be residual emissions from the refrigerants and emergency generator fuel, Diageo Lebanon will need to purchase carbon credits to offset and achieve carbon neutrality. Under PAS 2060, these carbon credits must be from specified and audited sources, such as the Clean Development Mechanism (CDM), Gold Standard and Verified Carbon Standard (VCS), to ensure no double counting occurs and that the projects are actively removing carbon emissions.

Diageo will evaluate a mixed portfolio for their carbon credits to spread the positive benefits as well as minimize potential risk (e.g. investing wholly in one forestry project which may later burn or may be found non-compliant). Due to the potential for updates to CDM, Diageo will watch market changes with regards to future Certified Emission Reductions (CER) use.

Diageo will also consider the land which they own and operate – afforestation projects can generate carbon offset credits while also delivering social benefits to the local area. This is known as insetting, and is like offsetting but done in areas the supply chain operates in. If accredited through one of the accepted channels, this could add significant value and reduce reliance on the carbon market for the site; the Intergovernmental Panel on Climate Change (IPCC) have predicted a tonne of carbon to be worth upwards of \$100 USD by 2050 therefore reliance upon this market could be a risk.

3.3.2 Scope 2 Electricity Emissions

Diageo's carbon reduction strategy for Scope 2 emissions will be achieved through their purchase of 100 percent renewable energy through their Industrial Power Agreement with East Kentucky Power Cooperative, Inc. (EKPC), and Inter-County Energy Cooperative Corporation (Cooperative). Under market-based Scope 2 accounting, the emission factor for renewable electricity is 0 tCO₂e/kWh, as they are zero-carbon energy sources. The 15-year power agreement is structured to provide validated renewable energy certificates and/or renewable energy for 100 percent of site electricity beginning with the start of facility operations in 2021.

Renewable electricity will be provided by EKPC and Cooperative via renewable energy and unbundled RECs purchased in accordance with EKPC's Rate H – Wholesale Renewable Energy Program and Cooperative's Rate Renewable Energy Program per the Industrial Power Agreement entered by and between EKPC, Cooperative, and Diageo Americas Supply fully executed on June 25, 2020.

3.3.3 Scope 3 Emissions

Diageo currently reports and accounts for those activities that are relevant to the business and goals, and for which there is reliable information. Scope 3 emissions are not included in this site-specific commitment to carbon neutrality because Scope 3 emissions are being addressed at the corporate level. Scope 3 emission targets are covered by a corporate commitment to a 30 percent reduction in Scope 3 emissions across the total supply chain by 2020 from 2007 through the Science-based Target initiative (SBTi).

Although Scope 3 emissions are not included in the site-specific carbon neutrality commitment at this time, efforts to minimize Scope 3 emissions have been incorporated with the site selection and design as follows:

- Corn used will be locally sourced from within approximately 100 miles from Lebanon, KY.
- Barrels used for maturation will be sourced from Kentucky and the surrounding states and once used the barrels will be then be repurposed across our supply network.
- There will be zero waste to landfill (ZWL) for operations
- Third-party logistics miles are minimized when trucks delivering grain to the site are able to collect the dried distiller's grains and take them offsite thus minimizing empty load miles.

Appendix A. Additional Information

Table A-1: Tick-list of Compliance from PAS 2060 Specification

Items	Status
1 Identify the individual responsible for the evaluation and provision of data necessary for the substantiation of the declaration including that of preparing, substantiating, communicating, and maintaining the declaration.	✓
2 Identify the entity responsible for making the declaration.	□
3 Identify the subject of the declaration.	□
4 Explain the rationale for the selection of the subject. (The selection of the subject should ideally be based on a broader understanding of the entire carbon footprint of the entity so that the carbon footprint of the selected subject can be seen in context; entities need to be able to demonstrate that they are not intentionally excluding their most significant greenhouse gas [GHG] emissions [or alternatively can explain why they have done so]).	□
5 Define the boundaries of the subject.	□
6 Identify all characteristics (purposes, objectives, or functionality) inherent to that subject.	□
7 Identify and take into consideration all activities material to the fulfilment, achievement or delivery of the purposes, objectives, or functionality of the subject.	□
8 Select which of the 3 options within PAS 2060 you intend to follow.	□
9 Identify the date by which the entity plans to achieve the status of “Carbon Neutrality” of the subject and specify the period for which the entity intends to maintain that status.	□
10 Select an appropriate standard and methodology for defining the subject, the GHG emissions associated with that subject and the calculation of the carbon footprint for the defined subject.	□
11 Provide justification for the selection of the methodology chosen. (The methodology employed shall minimize uncertainty and yield accurate, consistent, and reproducible results.)	□
12 Confirm that the selected methodology was applied in accordance with its provisions and the principles set out in PAS 2060.	□
13 Describe the actual types of GHG emissions, classification of emissions (Scope 1, 2, or 3) and size of carbon footprint of the subject exclusive of any purchases of carbon offsets.	□
a) All greenhouse gases shall be included and converted into tCO ₂ e.	□
b) 100% Scope 1 (direct) emissions relevant to the subject shall be included when determining the carbon footprint.	□
c) 100% Scope 2 (indirect) emissions relevant to the subject shall be included when determining the carbon footprint.	□
d) Where estimates of GHG emissions are used in the quantification of the subject carbon footprint (particularly when associated with Scope 3 emissions) these shall be determined in a manner that precludes underestimation.	□
e) Scope 1, 2 or 3 emission sources estimated to be more than 1% of the total carbon footprint shall be taken into consideration unless evidence can be provided to demonstrate that such quantification would not be technically feasible or cost effective. (Emission sources estimated to constitute less than 1% may be excluded on that basis alone.)	□
f) The quantified carbon footprint shall cover at least 95% of the emissions from the subject.	□
g) Where a single source contributes more than 50% of the total emissions, the 95% threshold applies to the remaining sources of emissions.	□
h) Any exclusion and the reason for that exclusion shall be documented.	□
14 Where the subject is an organization/ company or part thereof, ensure that:	□
a) Boundaries are a true and fair representation of the organization’s GHG emissions (i.e. shall include all GHG emissions relating to core operations including subsidiaries owned and operated by the organization). It will be important to ensure claims are credible – if an entity chooses a very narrow subject and excludes its carbon intensive activities or if it outsources its carbon intensive activities, then this needs to be documented.	□

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	b) Either the equity share or control approach has been used to define which GHG emissions are included. Under the equity share approach, the entity accounts for GHG emissions from the subject according to its share of equity in the subject. Under the control approach, the entity shall account for 100% of the GHG emissions over which it has financial and/or operational control .	✓
15	Identify if the subject is part of an organization or a specific site or location and treat as a discrete operation with its own purpose, objectives and functionality.	<input type="checkbox"/>
16	Where the subject is a product or service, include all Scope 3 emissions (as the lifecycle of the product/service needs to be taken into consideration).	<input type="checkbox"/>
17	Describe the actual methods used to quantify GHG emissions (e.g. use of primary or secondary data), the measurement unit(s) applied, the period of application and the size of the resulting carbon footprint. (The carbon footprint shall be based as far as possible on primary activity data.) Where quantification is based on calculations (e.g. GHG activity data multiplied by greenhouse gas emission factors or the use of mass balance/lifecycle models) then GHG emissions shall be calculated using emission factors from national (Government) publications. Where such factors are not available, international or industry guidelines shall be used. In all cases the sources of such data shall be identified.	<input type="checkbox"/>
18	Provide details of, and explanation for, the exclusion of any Scope 3 emissions.	<input type="checkbox"/>
19	Document all assumptions and calculations made in quantifying GHG emissions and in the selection or development of greenhouse gas emission factors. (Emission factors used shall be appropriate to the activity concerned and current at the time of quantification.)	<input type="checkbox"/>
20	Document your assessments of uncertainty and variability associated with defining boundaries and quantifying GHG emissions including the positive tolerances adopted in association with emission estimates. (The statement could take the form of a qualitative description regarding the uncertainty of the results, or a quantitative assessment of uncertainty if available [e.g. carbon footprint based on 95% of likely greenhouse gas emissions; primary sources are subject to variation over time; footprint is best estimate based on reasonable costs of evaluation]).	<input type="checkbox"/>
21	Document Carbon Footprint management plan:	<input type="checkbox"/>
	a) Make a statement of commitment to carbon neutrality for the defined subject.	<input type="checkbox"/>
	b) Set timescales for achieving carbon neutrality for the defined subject.	<input type="checkbox"/>
	c) Specify targets for GHG reduction for the defined subject appropriate to the timescale for achieving carbon neutrality including the baseline date, the first qualification date and the first application period.	<input type="checkbox"/>
	d) Document the planned means of achieving and maintaining GHG emissions reductions including assumptions made and any justification of the techniques and measures to be employed to reduce GHG emissions.	<input type="checkbox"/>
	e) Specify the offset strategy including an estimate of the quantity of GHG emissions to be offset, the nature of the offsets and the likely number and type of credits.	<input type="checkbox"/>
22	Implement a process for undertaking periodic assessments of performance against the Plan and for implementing corrective action to ensure targets are achieved. The frequency of assessing performance against the Plan should be commensurate with the timescale for achieving carbon neutrality.	<input type="checkbox"/>
23	Where the subject is a non-recurring event such as weddings or concert, identify ways of reducing GHG emissions to the maximum extent commensurate with enabling the event to meet its intended objectives before the event takes place and include post event review to determine whether the expected minimisation in emissions has been achieved.	<input type="checkbox"/>
24	For any reductions in the GHG emissions from the defined subject delivered in the period immediately prior to the baseline date and not otherwise taken into account in any GHG emissions quantification (historical reductions), confirm: (a) the period from which these reductions are to be included; (b) that the required data are available and that calculations have been undertaken using the same methodology throughout; and (c) that assessment of historical reduction has been made in accordance with this PAS, reporting the quantity of historical reductions claimed in parallel with the report of total reduction.	<input type="checkbox"/>
25	Record the number of times that the declaration of commitment has been renewed without declaration of achievement.	<input type="checkbox"/>
26	Specify the type of conformity assessment: a) independent third-party certification b) other party validation c) self-validation	<input type="checkbox"/>

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27	Include statements of validation where declarations of commitment to carbon neutrality are validated by a third -party certifier or second party organizations.	<input checked="" type="checkbox"/>
28	Date the Qualifying Explanatory Statement (QES) and have it signed by the senior representative of the entity concerned (e.g. CEO of a corporation; Divisional Director, where the subject is a division of a larger entity; the Chairman of a town council or the head of the household for a family group).	<input type="checkbox"/>
29	Make QES publicly available and provide a reference to any freely accessible information upon which substantiation depends (e.g. via websites).	<input type="checkbox"/>
30	Update the QES to reflect changes and actions that could affect the validity of the declaration of commitment to carbon neutrality.	<input type="checkbox"/>

Appendix B. Carbon Footprint

The baseline market-based carbon emissions from the Diageo Lebanon Distillery site are expected to be 165 tCO₂e for the fiscal first year of operation, 2021, as shown in Table B-1.

Table B-1: Estimated Annual Carbon Emissions for Diageo Lebanon Distillery

Source	Location-based tCO ₂ e	Market-based tCO ₂ e
Scope 1		
– Stationary Combustion	16	16
– Refrigeration	149	149
Total Scope 1	165	165
Scope 2 – Electricity	82,738	0
Total Scope 1 and Scope 2	82,903	165

Scope 1 Emissions

The Scope 1 emissions from the Lebanon site are expected to be 165 tCO₂e for the first year of operation, 2021. The Scope 1 emission sources from operations are expected to be from stationary combustion of diesel fuel for the emergency generators and fugitive refrigerant emissions from refrigeration and air conditioning units.

Stationary Combustion Emissions

Estimated stationary combustion emissions of 16 tCO₂e are based on estimated fuel use for the emergency generators and stationary combustion emission factors. Estimated fuel use is calculated based on the assumptions provided in Table B-2. Estimated carbon emissions from stationary combustion are provided in Table B-3.

Table B-2: Stationary Combustion Fuel Use

Parameter	Assumption
No. of Diesel Generators	2
Run Time per Week	30 min each
Combined Run Time per week	1-hour total
No. of Weeks	52
Annual hours of run time	52
Diesel consumption per hour ¹	30 gallons
Total annual diesel consumption	1,560 gallons

¹ Assumes each generator running at maximum capacity.

Table B-3: Estimated Annual Carbon Emissions from Stationary Combustion

Fuel	Amount (gals)	CO ₂ Emission Factor (kg/l)	CH ₄ Emission Factor (kg/l)	N ₂ O Emission Factor (kg/l)	Emissions (tCO ₂ e/yr) ¹
Diesel	1,560	2.68	3.61E-04	2.17E-05	16

¹ GWP for CH₄ and N₂O are 28 and 265, respectively from IPCC Fifth Assessment Report (AR5).

Refrigerant Emissions

Estimated refrigerant carbon emissions are based on estimated amounts of refrigerant lost due to annual leakage. The amount of refrigerant is then converted to equivalent tons of CO₂ by multiplying the amount lost by the corresponding GWP factor. The refrigerant losses are calculated based on average annual leakage rates and equipment capacities for the refrigeration or air conditioning equipment planned for this site. Average leak rates are based on the Climate Registry Table 16.2 Default Factors for Calculating Emissions from Refrigeration/Air Conditioning Equipment which cites IPCC, Guidelines for National Greenhouse Gas Inventories (2006), Volume 3: Industrial Processes and Product Use, Table 7.9.

Actual annual refrigerant use and therefore GHG emissions will be based on amount of refrigerant added each year according to maintenance records. Estimated leak rates and carbon emissions from refrigerants are provided in Table B-4.

Table B-4: Estimated Annual Carbon Emissions from Refrigerants

Equipment	Type of Refrigerant	GWP of Refrigerant	Refrigerant Charge (kilograms)	Annual Leakage Rate (%)	Emissions (tCO ₂ e/yr)
2 Chillers	HFC 134a	1300 ¹	340.19	15.0%	132.7
Rooftop unit	R-410A	1924 ²	14.51	10.0%	2.8
Ductless split system	R-410A	1924	6.71	10.0%	1.3
Packaged terminal HP	R-410A	1924	1.36	10.0%	0.3
Packaged terminal HP	R-410A	1924	1.36	10.0%	0.3
Split Condenser	R-448A	1273 ³	22.68	10.0%	2.9
Rooftop unit	R-410A	1924	14.97	10.0%	2.9
Rooftop unit	R-410A	1924	12.02	10.0%	2.3
Rooftop unit	R-410A	1924	14.97	10.0%	2.9
HVAC split system	R-410A	1924	3.49	10.0%	0.7
HVAC split system	R-410A	1924	1.95	10.0%	0.4
Total					149.3
<p>1 GWP from IPCC Fifth Assessment Report (AR5)</p> <p>2 GWP from ASHRAE Standard 34</p> <p>3 GWP from MSDS for Solstice® N40 (R448A) - Honeywell TDS</p>					

Scope 2 Electricity Emissions

The Lebanon site is expected to use approximately 175,734 MWh of electricity per year. Under market-based Scope 2 accounting the emission factor for renewable electricity is 0 tCO₂e/kWh, therefore the Scope 2 market-based emissions from the Lebanon site are expected to be 0 tCO₂e for the first year of operation, 2021. Estimated market-based and location-based carbon emissions from electricity consumption are provided in Table B-5.

Table B-5: Estimated Annual Carbon Emissions from Electricity Consumption

	eGrid Region/ Emission Factor Source	Amount (MWh)	CO ₂ Emission Factor (lb/MWh)	CH ₄ Emission Factor (lb/MWh)	N ₂ O Emission Factor (lb/MWh)	Emissions (tCO ₂ e/yr) ¹
Location Based Emission Factors	SERC Tennessee Valley	175,734	1,031.5	0.0970	0.0140	82,737
Market-Based Emission Factors	Utility Renewable Energy Program	175,734	0	0	0	0

1 GWP for CH₄ and N₂O are 28 and 265, respectively from IPCC Fifth Assessment Report (AR5)

Appendix C. Carbon Management Plan

C.1 Introduction

The purpose of this Carbon Management Plan (CMP) is to clearly define the carbon neutrality commitment for the Diageo Lebanon Distillery in Kentucky and document how the carbon emissions will be monitored and managed to reduce Scope 1 and 2 GHG emissions and obtain certification of carbon neutrality.

The commitment statement follows: “Carbon neutrality of Diageo’s new Lebanon, Kentucky Distillery site for all Scope 1 and 2 emissions from site operations will be achieved by Diageo in accordance with PAS 2060 for the period commencing with the first grain delivery to completion of distilling operations, certified by Jacobs Engineering Group Inc.”

The Diageo Lebanon Distillery in Kentucky is committed to reducing operational GHG emissions by making continual energy efficiency improvements to the site, utilizing renewable energy as opposed to fossil fuels and by offsetting any residual Scope 1 and Scope 2 emissions with high quality offsets in conformance with PAS 2060. Diageo will attain carbon neutrality and undergo certification through PAS 2060 at the start of operations in 2021.

This CMP and any related supporting documentation will be reviewed and updated at least annually by the Environment & Sustainability Excellence Manager with input from the local Governance Manager and Site Director where appropriate. The review and any updates made will reflect changes in legislation and industry good practice guidance issued. Amendments to this CMP will be made by the Environment & Sustainability Manager and a revised version of the CMP will be provided to the Environmental Steering Committee for formal approval.

C.2 Targets

Diageo is committed to protecting and minimizing the impact of their activities upon the local, regional and global environment. Diageo endeavors to carry out all reasonable measures to meet their responsibilities and sustainability targets. Diageo believes that environmental performance and high-quality products can be made without compromising operational requirements and doing so will not only support environmental improvements but also reputation.

Through its Global Environmental Policy, Diageo made a corporate-wide commitment to:

- 50% reduction in absolute carbon emissions from Scope 1 and Scope 2 in line with the Paris Agreement and 2°C by 2020 from 2007 baseline [Science Based Targets initiative (SBTi)];
- 30% reduction in Scope 3 emissions across the total supply chain by 2020 from 2007 (SBTi);
- £180 million commitment to sustainable energy and water infrastructure in Africa;
- Zero waste to landfill from operations;
- Signatory to RE100 with commitments of 50% renewable electricity by 2020, and 100% by 2030;
- Complete climate scenario analysis within 2 years from 2019;
- Low-carbon transition plan in development;

- Diageo has also committed to reporting in line with the Taskforce on Climate-Related Financial Disclosures (TCFD)².

Diageo aims to further these commitments through their industry-leading Lebanon Kentucky Distillery site. This will be through careful site planning, design and operations, achieving carbon neutrality for Scope 1 and Scope 2 emissions arising from operations, which commences the day that grain first enters the silo.

C.3 Benchmark

A carbon and energy benchmarking study³ was conducted by the Beverage Industry Environmental Roundtable⁴. Participants include Diageo and other distilleries such as Bacardi, Beam Suntory, Brown-Forman, Constellation brands and Pernod Ricard. The benchmarking study scope includes all process steps except for upstream agricultural growth and distribution of the finished product. The benchmarking boundary was set to look at the energy use throughout cooking, fermenting, distilling, storing/ maturing and blending/ bottling.

Results from this study established that in 2017, on average, a distillery facility's average emissions were found to be about 8,868 MT CO₂e. Distilleries typically use natural gas boilers during operation which is the predominant factor contributing to a facility's overall GHG emissions.

C.4 Scope 1 and 2 GHG Emissions

The Scope 1 and 2 emissions from the Lebanon site are expected to be 165 tCO₂e for the first year of operation, 2021. This value is set as the baseline GHG emissions because the facility is all new construction that has been designed beyond BAU to be very energy and carbon efficient. The only Scope 1 and 2 emission sources from operations are expected to be refrigerants and fuel for the emergency generators.

Refrigerants are necessary to maintain temperatures for the yeast rooms and control rooms. The only areas cooled/ heated areas are the administration area, control rooms, yeast room, server rooms, motor control center (MCC) areas, and guard house.

Electricity consumption upon operation has been estimated to be 175,733,841 kWh per annum, sourced from renewable electricity under the Utility Renewable Energy Program with East Kentucky Power Cooperative, Inc., and Inter-County Energy Cooperative Corporation. Under market-based Scope 2 accounting the emission factor for renewable electricity is 0 tCO₂e/kWh.

CO₂ emissions from the fermentation process are excluded from Diageo's reported environmental data as these emissions are from a biological short cycle carbon source and are thus outside scopes 1, 2 and 3. Fermentation is a closed carbon cycle as CO₂ emitted will be re-absorbed in next year's growing cycle. The carbon dioxide emissions from corn ethanol are assumed to not increase the atmospheric CO₂ emissions as the biogenic carbon emitted is offset by the carbon uptake of new growth biomass.⁵

Total GHG emissions upon start of operation are estimated to be approximately 165 tCO₂e by doing the following calculation:

$$\frac{(fuel\ consumption * emission\ factor) + (refrigerant\ consumption * emission\ factor)}{1000} = tCO_2e$$

² https://www.diageo.com/PR1346/aws/media/6161/b0000391_diageo_ar2018_environment.pdf

³ <http://www.bieroundtable.com/wp-content/uploads/2018-Water-and-Energy-Use-Benchmarking-Study.pdf>

⁴ <https://www.bieroundtable.com/>

⁵ A Life-Cycle Analysis of the Greenhouse Gas Emissions of Corn-Based Ethanol, January 12, 2017 ICF for USDA. https://www.usda.gov/oc/climate_change/mitigation_technologies/USDAEthanolReport_20170107.pdf

The baseline will be the first year of operation, 2021. The site has been specifically designed to minimize fossil fuels and reduce energy consumption beyond business as usual. The reductions made through the design and specifications of plant equipment cannot be measured when the first year of operations is taken as the baseline. However, the first year of operations as the baseline allows for reporting accurate and representative reductions in emissions going forward.

C.5 Emission Reduction Strategy

Diageo's emission reduction strategy is a combination of electrification of process and mobile sources traditionally run on fossil fuels, energy efficiency improvements, renewable electricity purchases and offsetting residual Scope 1 emissions carbon offsets.

C.5.1 Emissions Reduction by Design

Through active consideration of the carbon neutrality target in the course of designing the facility, Diageo has incorporated energy efficiency and minimized the use of fossil fuels on site as follows:

- Instead of using either natural gas or coal in their steam boilers, Diageo will be generating steam with an electrode boiler that has a 99.6 percent efficiency rating.
- The exterior lighting for the building is all solar, either pole- or wall- mounted along with all interior lighting being light-emitting diodes (LEDs).
- In areas where it was deemed safe to, occupancy sensors will be installed to minimize electricity waste.
- The overall size of the facility was designed to maximize operational efficiency including minimization of air flow and heating/ cooling requirements, with lowered roofs to minimize unused space. Areas requiring heating and cooling facilities have been kept to a minimum and include only the admin area, control rooms, yeast room, server rooms, MCC areas, and guard house.
- All yard jockeys and fork trucks are electric with onsite battery charging.
- All variable frequency drive (VFD) pumps will be used wherever pumps are needed and high efficiency pump motors have been specified.
- All chemicals used onsite for cleaning and water treatment will be non GHG emitting chemicals
- The clean-in-place (CIP) system has been customized to provide necessary cleaning with minimal water use.
- The refrigerant systems have been evaluated to minimize GHG emissions from refrigerants where practical.
- The only equipment not designed to operate on electricity is the emergency power system which will be supplied by diesel backup generators for the following:
 - Egress lighting (safety)
 - Air vents (safety – CO₂)
 - Yeast room (critical temperature-controlled system)
 - Secondary fire suppression system (safety)
 - Required to test backup generators by running for 20 minutes each month
- Biodiesel fuel was evaluated for use in the backup generators but was deemed unsafe for critical systems (e.g. fire suppression) due to long-term stability issues

C.5.2 Future Reduction plans

- Smart meters are being considered as a future project.
- During and after construction of the facility Diageo will continue to review capital improvement projects to determine cost effectiveness concerning energy efficiency measures.;

C.6 Scope 3 Emissions

Although Scope 3 emissions are not included in the site-specific carbon neutrality commitment at this time, efforts to minimize Scope 3 emissions have been incorporated with the site selection and design as follows:

- Corn used will be locally sourced from within approximately 100 miles from Lebanon, KY under typical growing seasons
- Barrels used for maturation will be sourced from Kentucky and the surrounding states and once used barrels will be then be repurposed across our supply network.
- There will be zero waste to landfill (ZWL) for operations
- Third-party logistics miles are minimized when trucks delivering grain to the site are able to collect the dried distiller's grains and take them offsite thus minimizing empty load miles.

C.7 Offset and Renewable Energy Strategy

Diageo's strategy for achieving carbon neutrality will be to validate the Scope 1 and market-based Scope 2 carbon emissions from the site, and then procure the required amount of carbon offset credits for residual Scope 1 emissions. Diageo also intends to buy 100 percent renewable electricity for this site through the Utility Renewable Energy Program.

C.7.1 Scope 1 Emissions

Diageo Lebanon will purchase carbon credits to offset and achieve carbon neutrality for all Scope 1 emissions from refrigerants and emergency generator fuel. The Scope 1 emissions from the Lebanon site are expected to be 165 tCO₂e for the first year of operation, 2021.

Under PAS 2060, these carbon credits must be from specified and audited sources, such as the Clean Development Mechanism (CDM), Gold Standard and Verified Carbon Standard (VCS), to ensure no double counting occurs and that the projects are actively removing carbon emissions. Diageo will evaluate a mixed portfolio for their carbon credits to spread the positive benefits as well as minimize potential risk (e.g. investing wholly in one forestry project which may later burn or may be found non-compliant). Due to the potential for updates to CDM, Diageo will watch market changes with regards to future Certified Emission Reductions (CER) use.

Diageo will also consider the land which they own and operate – afforestation projects can generate carbon offset credits while also delivering social benefits to the local area. This is known as insetting, and is like offsetting but done in areas the supply chain operates in. If accredited through one of the accepted channels, this could add significant value and reduce reliance on the carbon market for the site; the Intergovernmental Panel on Climate Change (IPCC) have predicted a tonne of carbon to be worth upwards of \$100 USD by 2050 therefore reliance upon this market could be a risk.

C.7.2 Scope 2 Emissions

Diageo's carbon reduction strategy for Scope 2 emissions will be achieved through their purchase of 100 percent renewable energy through their industrial power agreement with East Kentucky Power Cooperative, Inc. (EKPC), and Inter-County Energy Cooperative Corporation (Cooperative). The 15-year Industrial Power Agreement is structured to provide validated renewable energy certificates and/or renewable energy for 100 percent of site electricity beginning with the start of facility operations in 2021.

The Lebanon site is expected to use approximately 175,734 MWh of electricity per year. Under market-based Scope 2 accounting the emission factor for renewable electricity is 0 tCO₂e/kWh, therefore the Scope 2 market-based emissions from the Lebanon site are expected to be 0 tCO₂e for the first year of operation, 2021.

Renewable electricity will be provided by EKPC and Cooperative via renewable energy and unbundled RECs purchased in accordance with EKPC's Rate H - Wholesale Renewable Energy Program and Cooperative's Rate Renewable Energy Program per the Industrial Power Agreement entered by and between EKPC, Cooperative, and Diageo Americas Supply on fully executed on June 25, 2020 .

Appendix D. 3rd Party Assurance Letter

June 26, 2020

Mr. Andrew Jarrick
Environmental and Sustainability Excellence Manager
Diageo, Inc.
24460 West 143rd Street
Plainview, IL 60544

Project Name: Diageo Lebanon, KY

Subject: Verification of Carbon Neutrality Commitment Statement for Lebanon, KY

Dear Mr. Jarrick:

CH2M HILL Engineers, Inc.¹ (Jacobs) was hired by Diageo, Inc. (Diageo) to assess their carbon neutrality commitment for their new distillery in Lebanon, KY.

This letter certifies that the Quality Explanatory Statement (QES) entitled:

Diageo Lebanon Kentucky Carbon Neutrality PAS 2060 Qualifying Explanatory Statement

Issued by Diageo on June 26, 2020 has been verified by Jacobs and complies with the requirements of the British Institute Standard PAS 2060:2014 "Specification for the demonstration of carbon neutrality".

Yours sincerely



Erin E Laude
Senior Sustainability Consultant
Wisconsin PE

Erin.laude@jacobs.com

¹ On December 15, 2017, CH2M HILL Companies Ltd. became part of Jacobs Engineering Group Inc. (Jacobs) and is now a wholly owned direct subsidiary of Jacobs. CH2M HILL Engineers, Inc. presently remains a separate legal entity and will continue to operate and conduct business.

Appendix E. Definition of Key Terms

Biogenic Emissions: biogenic carbon dioxide (CO₂) emissions are defined as CO₂ emissions related to the natural carbon cycle, as well as those resulting from the combustion, harvest, combustion, digestion, fermentation, decomposition or processing of biologically based materials.

Business as Usual (BAU): a future scenario where there have been no significant changes to policies, regulations or attitude towards climate change, with climate change projected at over 4°C globally

Carbon Dioxide Equivalent (CO₂e): the universal unit of measurement used to indicate the global warming potential of greenhouse gases (GHGs) expressed in the terms of the 100-year global warming potential of one metric ton of CO₂

Carbon Management Plan (CMP): plan for Diageo's carbon reporting and management strategy

Carbon Neutrality (or Net Zero Carbon): condition in which during a specified period the carbon emissions caused by a company are balanced out by an equivalent amount of carbon removed from the atmosphere

Clean-in-place (CIP): method of cleaning the interior of equipment without disassembly

Greenhouse Gas (GHG) Emissions: emissions arising from business activities, which includes CO₂, methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃)

- **Scope 1:** direct emissions from combustion of fuels at the site for business operations (i.e. natural gas heating, vehicle fuel)
- **Scope 2:** indirect emissions caused by a company's energy consumption that occur offsite (i.e. purchased electricity)
- **Scope 3:** indirect emissions from the value chain

PAS 2060: certification for achieving carbon neutrality

Power Purchase Agreement (PPA): a contract for the purchase of power and associated Renewable Energy Certificates (RECs) from a specific renewable energy generator (the seller) to a purchaser of renewable electricity (the buyer). Physical PPAs, which are usually 10 -20 year agreements, define all of the commercial terms for the sale of renewable electricity between the two parties, including when the project will begin commercial operation, schedule for delivery of electricity, penalties for under delivery, payment terms and termination. The project may be located onsite at the user's location or be offsite with the electricity being grid-delivered to the user.

Renewable Energy Certificates (RECs): an audited kilowatt hour (kWh) credit from renewable electricity sources which proves the source of the electricity purchased

Science Based Targets (SBTs): carbon emission reduction goals that are considered "science-based" if they show, through different emissions scenarios, that the goals are in line with the reduction pathways necessary to meet the goals of the Paris Agreement—to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C.

Start of Operations: the first day grain enters the silo

Zero Waste to Landfill (ZWL): Eliminating waste through recycling and reusing with the prevention of waste ending up in landfill