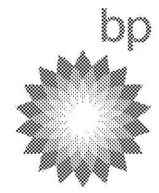


bp<sup>x</sup> energy



bp<sup>x</sup> Carbon Steering Table

December 16, 2020

HORN

ENGINE TRAPPED DOWN

OVERHEAD BLIND

BEANVIEW MIRROR

HARDHAT GOGGLES

HEADLIGHTS

SCOOTERS

BULLETPROOF VESTS TO PROTECT AGAINST DEER JANTERS

EAR PROTECTORS TO MUFFLE THE ROAR OF PASSING JETS

CONTROL SLIDE ENTRY PROTECTS FROM CLIMBING DOWN CHIMNEYS

SAFETY BELT WITH NON-SLIP TIES

2 | bpx energy

$$\text{H}_2\text{N}-\text{CH}(\text{CH}_3)-\text{CH}_2-\text{CH}_2-\text{NH}_2$$

Source: [Cartoonists.com](http://Cartoonists.com)

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## Agenda

Introduction and context, including performance	Faye Gerard	10 mins
Aim 1 progress updates/decisions	Faye Gerard/All	15 mins
Aim 4 progress updates/decisions	Faye Gerard/All	15 mins
Other specific updates as required, e.g. bp	bp P&O Carbon Table and Aim 1 & 4 Steer Co Table updates	10 mins
Action review	All	10 mins

## High level summary – November 11, 2020 Meeting



- Attendees: Faye Gerard, Jack Collins, Gabrielle Sitomer, Sam Knaizer, Andrew Dingee, Kim Krieger, Kyle Koontz
- Purpose of Carbon Steering Table
- Terms of Reference introduced and socialized to the group.
  - Meet every five weeks to performance manage aims against plans for 2025 and to socialize what is happening with other tables.
  - Connectivity underway with other parts of bp, but worth noting bpx is separate for purposes of delivery of Aims 1 and 4.
  - Fuzzy expects us to performance manage and deliver but okay with independent delivery.
- Aim 1 Discussion
  - Commitment to reduce 2019 internal GHG emissions of 2.6 million tonnes of CO<sub>2</sub>e by 50% by 2025
    - Using internal numbers to ensure consistent comparison with other bp businesses
    - Need to reduce 1.3 million tonnes CO<sub>2</sub>e by 2025
  - ACTION: Forecasting tool - can the tool be leveraged while ensuring EPA Subpart W compliance? (Faye)
- Aim 4 Discussion
  - Technology discussions
  - ACTION: LC&S/innovation working on ToR to assess methane data for predictive maintenance and translate into operational forecasting (Faye/Grant)
- Aim 7 Discussion
  - ACTION: 2021 SER contribution landed at 200k

# Redacted - First Amendment

- Carbon Fund overview
  - \$75M committed - \$15-\$20M left
  - ACTION: Application for Carbon Fund that will be distributed to the team - request will be in range of \$14-16M for base well interconnects in Permian (ER Team)
- Actions:
  - KPIs (one to three) - what are we going to performance management and measure ourselves. (Faye)
  - 2021 SER commitment and baseline updates based on North divestment (Faye)
  - Performance contracts- is LC&S a component? (All)



## Proposed KPI (internal)

1. (Aim 1) Implement GHG forecasting model and deliver a cumulative reduction of at least 25% of the 1.3 Mt CO<sub>2</sub>e target (50% of the 2019 2.6 Mt CO<sub>2</sub>e GHG emissions baseline).  
*Due: 4Q2021    Goal: 355 k CO<sub>2</sub>e*
2. (Aim 1) Reduce flaring emissions in the Permian by at least 25% from the 2019 baseline by implementing at least 2 flaring reduction projects.  
*Due: 4Q2021    Goal: 150 k CO<sub>2</sub>e*
3. (Aim 4) Select and deploy at least one new technology and/or processes to progress the methane measurement goal.  
*Due: 3Q2021    Goal: one technology (i.e., satellites, continuous monitoring, etc.)*

# Aim 1 Commitment

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Net Zero  
operations



## Commitment (emissions reductions):

- \* Reduce 2019 internal GHG emissions of 2.6 million tonnes CO<sub>2</sub>e by 50% by 2025
  - .... Reduction of 1.3 million tonnes CO<sub>2</sub>e
- \* How do we start? (2020/2021)
  - .... Working with BUs on a more detailed scenarios/options plan, which will include forecasted emissions reduction and projected costs
  - .... Building forecasting tool to project 5 to 10 years emissions profile

Aim 1 is to be net zero across our entire operations on an absolute basis by 2050 or sooner. This aim relates to Scope 1 and 2 GHG emissions. (Around 55MTe CO<sub>2</sub>e in 2019.)

## Aim 1 Updates

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Actions	Current status / update
Project hopper for all BUs investigated	Project hopper to reside in LC&S
Identified \$136 mm CAPEX infusion over 5 years	2 Carbon Fund applications across bpx for a total of \$5.7mm with 56.7 ktCO <sub>2</sub> e GHG reduction potential
Engineering study on flaring in Permian and Eagle Ford	Drafts completed
Reduction of 1.3 million tonnes CO <sub>2</sub> e	2020 reduction will be finalized by January 31, 2021
Forecasting tool	3 mo proof of concept \$50k

7 | bpx energy

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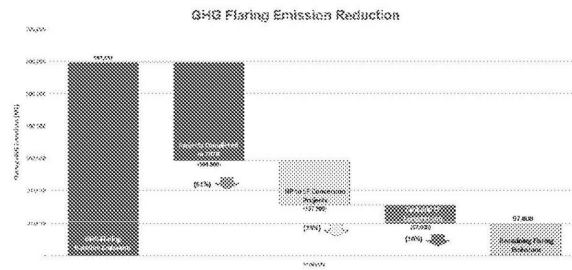
EF is \$1.3mm and 14.1ktCO<sub>2</sub>e per Carbon Fund  
WES is \$4.4mm and 42.6 ktCO<sub>2</sub>e per Carbon Fund

WES Permian projects has 42.6 ktCO<sub>2</sub>e total GHG reduction potential (per Carbon Funds), however only 36.3 ktCO<sub>2</sub>e of that is due to Flare reduction (per detailed excel sheet provided by Kishan)

# Draft GHD flare study results in Permian

## 1.1 GHG Flaring Emissions Reduction Summary

The following graph summarizes overall GHG reduction projects identified during the study:



Graph Notes:

Bar Color	Description	RY 2019 Emissions (tCO2e)	GHG Emissions Reduction (tCO2e)	% GHG Flaring Reduction
Brown	GHG Flaring Baseline Emissions RY 2019	697,661		
Blue	Projects completed during 2020		334,800	61%
Yellow	HP to LP conversion Projects		137,500	23%
Grey	Tank and LP Compression Projects		57,000	10%
Orange	Overall Emission Reduction		499,300	84%
Green	Remaining Flaring GHG Emissions		97,000	16%

8 | bpx energy

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Permian study showed a path for 84% total flare reduction if all proposed projects executed:

bpx has connected 5 tankless well pads to Grand Slam Centralized Delivery Plant (CDP) which do not require a flare and plan to connect most of new pads to CDPs via pipelines, resulting in flare avoidance for wedge wells.

Operational strategies were implemented for base wells resulting in a 51% flare reduction by 3Q2020. (green bar)

Ongoing and identified HP to LP Midstream conversion projects could result in 23% flare reduction (~135 ktCO2e) and require a total of \$130 million to complete. (orange bars)

HP to LP Midstream conversion projects have other operational benefits such as production uplift and increased facility reliability.

LP flash and tank flash compression projects could further reduce flare by 10% (~60 ktCO2e) and require \$6 million to complete. (purple bars).

LP flash and tank flash compression projects add facility and operational complexity.





## Aim 4 Commitment

- \* Permian BU has meters on the flare leg
- \* Permian, Eagle Ford and Haynesville BUs perform **monthly drone flights** to detect and repair emission sources (new and existing) – top down
- \* Continue trial of low-cost Nimbus acoustic and methane detection technology for **continuous monitoring** of emissions sources
- \* **Quarterly aerial quantification** survey
- \* Determine high level cost of installation of currently available continuous monitoring technology across bpx sites – **completed July 2020**
- \* Collaborating with Group (S+OR) to design installation of Rebellion Photonics continuous monitoring in Permian and Karnes CDP – **no longer applicable**
- \* Exploring trial of low-cost continuous emissions monitoring system SOOFIE (Systematic Observation of Facility Intermittent Emissions)

Aim 4 is to install methane measurement at all our existing major oil and gas processing sites by 2023, publish the data, and then drive a 50% reduction in methane intensity of our operations. *And we will work to influence our joint ventures to set their own methane intensity targets of 0.2%.*



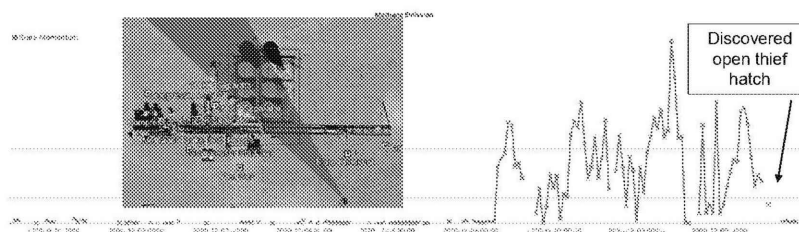
## Aim 4 updates (methane measurement)

- \* **Monthly drone surveillance across all sites – ongoing**
  - ... Review data to determine path forward on frequency
- \* Continue trial of low-cost Nimbus acoustic and methane detection technology for **continuous monitoring** of emissions sources – **ongoing**
  - ... Acoustic sensor trial ongoing in Haynesville
  - ... Added methane sensors to Nimbus and conducted controlled release testing at METEC in Sep 2020
  - ... Field trial being scheduled in Permian with both acoustic and methane sensors – 1Q2021
- \* Expand **quarterly aerial quantification** survey to Haynesville, Eagle Ford and possibly North – **3Q 2020**
  - ... Completed Permian, Haynesville & Eagle Ford surveys for 3Q and 4Q 2020,
  - ... In addition, Permian surveyed quarterly 4Q2019, 1Q 2020 and 2Q 2020
  - ... **Request from bp: all aerial data to verify their satellite data received to date**
- \* Exploring trial of low-cost continuous emissions monitoring system SOOFIE (Systematic Observation of Facility Intermittent Emissions) – **3Q 2020**
  - ... Starting 6-mo field trial in Nov 2020 in Permian (3 sites)
    - \* Operational and providing monitoring at 2 sites
    - \* Troubleshooting reception issues at 3<sup>rd</sup> site



## Scientific Aviation SOOFIE Update

- ✧ Sensors deployed and gathering data since 11/24/20
  - XXXX Troubleshooting sensors at CDP with poor/intermittent reception
- ✧ Initial Results
  - XXXX Received email alert from one well site and added it to work priority list
  - XXXX Discovered open thief hatch – emission reading on dashboard immediately dropped to negligible after closed





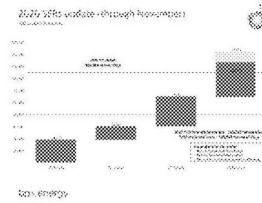
## Aim 7 update (SER delivery per ACB)

### 2020 Progress:

On target to exceed goal of 150k tCO<sub>2</sub>e; 166k tCO<sub>2</sub>e achieved through November

P&O Entity	1Q 2020 SER Forecast (kts CO <sub>2</sub> e)	Current 2020 SER Forecast (kts CO <sub>2</sub> e)
Production	134	424
Wells	56	128
bpX	150	159
Refining	25	172
PurChemu	15	11
<b>TOTAL</b>	<b>478</b>	<b>895</b>

Continued



### 2021 Goal:

200 k tCO<sub>2</sub>e

- 2021 SER is achieved
- Finalize 2021 SER forecast and ensure it is aligned with the 2021 goals.
  - High-level SER forecast for 2021 is in place and aligned with the 2021 goals.
  - 2021 SER forecast is in place and aligned with the 2021 goals.
  - 2021 SER forecast is in place and aligned with the 2021 goals.
  - 2021 SER forecast is in place and aligned with the 2021 goals.

P&O Entity	2021 SER Forecast (kts CO <sub>2</sub> e)
Production	220
Wells	10
bpX	200
Refining	470
<b>TOTAL</b>	<b>1000</b>

Continued

Aim 7 is to incentivize our global workforce to deliver on our aims and mobilize them to become advocates for net zero. This will include increasing the percentage of remuneration linked to emissions- reductions for leadership and around 37,000 employees.

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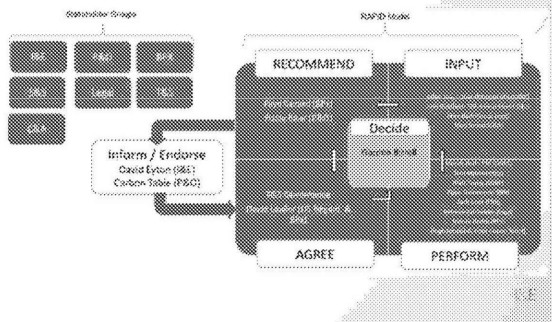


# P&O Carbon Table Update

## Discussion:

- ✧ **Scope 2 emissions reduction Phase 1**
  - ✧ Request to focus on increasing the profile of scope 2 emissions reduction came from business review with Bernard and Giulia.
  - ✧ Agile squad will be established to deliver this work, led by the new Net Zero Operations Manager. Terms of reference for the squad was developed, reviewed with EVPs and approved for execution. ToR was shared as pre-read and Andy reviewed in the meeting.
- ✧ **SER 2020 performance and 2021 lookahead**
  - ✧ P&O on track to deliver circa 0.9Mte SERs by end 2020, double what was committed to at the beginning of the year. Additional SERs due to new projects added to the hopper for delivery in 2020 as well as change in methodology with some existing projects.
  - ✧ P&O businesses propose to deliver 1.0Mte SERs in 2021, based on current planned and resourced activity (per Planfest) and is based on 0.32Mte from production, 0.2Mte from bpx, 0.01Mte from wells and 0.47Mte from refining.
  - ✧ P&O proposed that our ACB score of 1.0 be set at 0.95Mte in 2021, which allows for a 5% slippage of planned work during 2021.
- ✧ **P&O Carbon Digital Plan**
  - ✧ Current ways of working include multiple interfaces, multiple data streams with multiple stakeholders. Solutions tend to be siloed and corporate energy and opportunities lost in the gaps between working practices.
  - ✧ The vision is to develop a framework that focusses on consistent means of forecasting, aligned with existing processes, accurate raw data reporting and automation of data collection and analysis.
  - ✧ Super-sprint 1 in 1H 2021 will focus on development of the carbon digital program and creation (and approval) of an appropriate FM. The intent is to progress this work during SS2 in 2H 2021.
  - ✧ Carbon team within Strategy and Sustainability currently working to develop a forecasting and performance management model and digital carbon tracker process, with a pilot proposed for 2021. Will be good to understand alignment with this process where needed for P&O.

DNG 2.0 2021 Project Summary on a page





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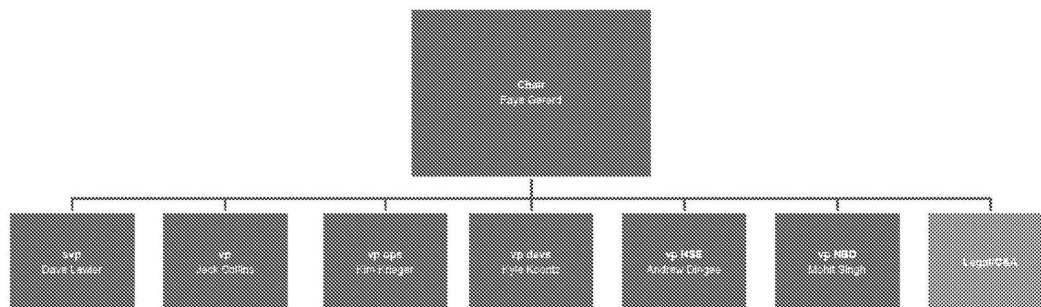
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Back up





# Carbon table structure



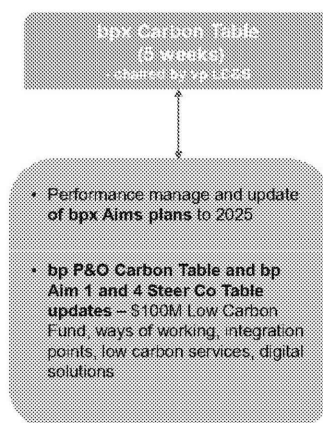
Business representatives

Other attendees invited as required for specific agenda items (e.g. legal, advocacy, etc.)



## Terms of Reference

- ✦ Chaired by vp LC&S
- ✦ Includes representatives from LT
- ✦ Vehicle through which progress against the bp Aims is performance managed and updated
  - ... Includes elements shown on right
  - ... Aim 1 and 4 working groups will continue to meet to inform inputs to Steer Co
- ✦ Outputs from this meeting (i.e., critical updates, risks and opportunities, and requests for intervention and support) will inform the pre-read and agenda of the bp P&O Carbon Table and bp Aim 1 and 4 Steer Co Table





## Terms of Reference (con't)

### Terms of Reference

Purpose of the new Carbon Table (governance):

1. Receive **updates and intervene** as required on:
  - o Emissions Reduction (**Aim 1**) and SER delivery per ACB (**Aim 7**)
  - o Progress on plans related to delivery of methane detection/monitoring (**Aim 4**).
  - o External initiatives and impact to BP Net Zero Ambition (**Aims 6 & 8**)
  - o Relevant aspects of **all other Aims** as relates to businesses and operations
2. Provide **steer/guidance** for the BU
3. **Decision making table:**
  - o Endorse CAPEX requests for selected low carbon activity
  - o Agree interventions and assign resources for risks identified
  - o Ratify products/processes developed or established in support of Aims (i.e., Aims 1 and 4).



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## Aims and Ambitions

Aim 1 is to be net zero across our entire operations on an absolute basis by 2050 or sooner. This aim relates to Scope 1 and 2 GHG emissions. (Around 55MTe CO<sub>2</sub>e in 2019.)

Aim 2 is to be net zero on an absolute basis across the carbon in our upstream oil and gas production by 2050 or sooner. This is our Scope 3 aim, and is on a BP equity share basis excluding Rosneft. (Around 360MTe CO<sub>2</sub>e in 2019.)

Aim 3 is to cut the carbon intensity of the products we sell by 50% by 2050 or sooner. This is a lifecycle carbon intensity approach, per unit of energy. It covers marketing sales of energy products and potentially, in future, certain other products e.g. associated with land carbon projects.

Aim 4 is to install methane measurement at all our existing major oil and gas processing sites by 2023, publish the data, and then drive a 50% reduction in methane intensity of our operations. And we will work to influence our joint ventures to set their own methane intensity targets of 0.2%.

Aim 5 is to increase the proportion of investment we make into our non-oil and gas businesses. Over time, as investment goes up in low and no carbon, we see it going down in oil and gas.

## Redacted - First Amendment

Aim 10 is to launch a new team to create integrated clean energy and mobility solutions. The team will help countries, cities and corporations around the world decarbonize.