



## **Upstream Carbon Steering Meeting**

**12<sup>th</sup> November 2019**

## Upstream Carbon Steering Team Meeting

### Attendees – 12<sup>th</sup> November 2019

<b>Upstream Carbon Steering Team Members</b>	
Upstream COO, Production, Transformation, Carbon	Gordon Birrell
Head of Global Operations	Andy Collins
Upstream Senior Portfolio Advisor	Rob Cooper
VP Group Strategic Planning	Dominic Emery
CEO, Lower 48	David Lawler
VP HSE & Engineering Authority, Lower 48	Kola Fagbayi
Regional President, North Sea	Ariel Flores
Senior Advisor, Environment & Carbon	Susan Ford
Chief Digital and Technology Officer	Ahmed Hashmi
VP Carbon Management	Gardiner Hill
VP Upstream HSE	Dave King
Head of Global Wells	Andy Krieger
Head of Segment Planning and Commercial	Kirsty McCormack
Assistant General Council	Mike Nash
Head of Global Projects	David O'Connor
Upstream Carbon Lead Advisor	Robert O'Brien
Director, Upstream Portfolio and Investment Governance	Brian Povey
VP Maintenance and Engineering	Bruce Price
Upstream Carbon Manager	Karen RagoonananJalim
Head of Engineering, Upstream	Aleida Rios
Head of Communications, Upstream	Stephen Shaw
VP & Head of Regulatory Affairs	Bob Stout
Senior Vice President, US C&EA	Mary Streett
VP Digital Innovation	Morag Watson
<b>Additional Invitees for 12<sup>th</sup> November 2019 Meeting</b>	
Environmental Engineering Lead, Upstream Technology	Peter Evans
Technology Director, Digital Innovation Organisation	Julian Gray
IST, Global Environmental Products	Zachary Scott
Principal Engineer, UEC	Tom Mooney
Head of Upstream Digital	Rob Kelly
Chief Innovation Officer, BPX	Brian Pugh

## Upstream Carbon Steering Team Meeting

Location: Skype / SJS Room 3-56 Sunflower

Houston Start Time	London Start Time	Duration	Agenda Item	Pre- Read	Lead
07:30	13:30	00:15	<b>Context</b>	No	Gordon Birrell
07:45	13:45	00:15	<b>Action Deep Dive</b>	Yes	Karen Ragoonanan- Jalim
08:00	14:00	00:45	<b>Xpansiv Update</b>	Yes	Sue Ford
08:45	14:45	00:15	<b>Methane Technology Update</b>	Yes	Peter Evans

## Upstream Carbon Steering Team Meeting

### Actions from previous meetings

Note: Only actions in progress, not started or completed since last steering meeting included in table below

Meeting Date	Action	Who	Target Date	Status
26/09/19	Maintain BP leadership position on Methane – convene methane strategy meeting before the end of 2019.	Gordon Birrell	1Q 2020	Working group to be established (Peter Evans)
26/09/19	Add My ALC and Xpansiv update into next meeting agenda.	Karen RagoonananJalim	Nov 19	Xpansiv in agenda of Nov 12 <sup>th</sup> , ALC moved to the next meeting
26/09/19	Opportunity to look at auxiliary benefits of the work done by Xpansiv and how to integrate into the business.	Sue Ford	12 Nov'19	Scheduled
26/09/19	Update ZNG look ahead taking into consideration the Alaska divestment and NCS investment.	Rob O'Brien	End 2019	In Progress
26/09/19	Check whether Scottish Forestry investments by North Sea Region could fulfil some of ZNG offset requirement.	Giles Mackey/Rob O'Brien	End 2019	In progress

Agreed topics to cover at future meetings:

- GPO Projects Review
- ✓ Tortue Project Update (Fiona Campbell)
- Upstream Portfolio Team project on Carbon Intensity (Rob Cooper / Brian Povey)
- Hydrogen (Rod Davies)
- Low Carbon Platform (John Goldie / Russell Smith)
- ✓ Action Status Deep Dive (Karen RagoonananJalim and Rob O'Brien)
- CCUS: Summary of strategic direction
- ✓ Upstream Carbon Workstreams – Project Updates
- ✓ xPansiv update (Sue Ford)
- My Advancing Low Carbon (MyALC) Programme (Katie Wallace)
- ✓ Methane Technology Update (Peter Evans)
- Future update on Tortue 2/3 key decisions (GPO)



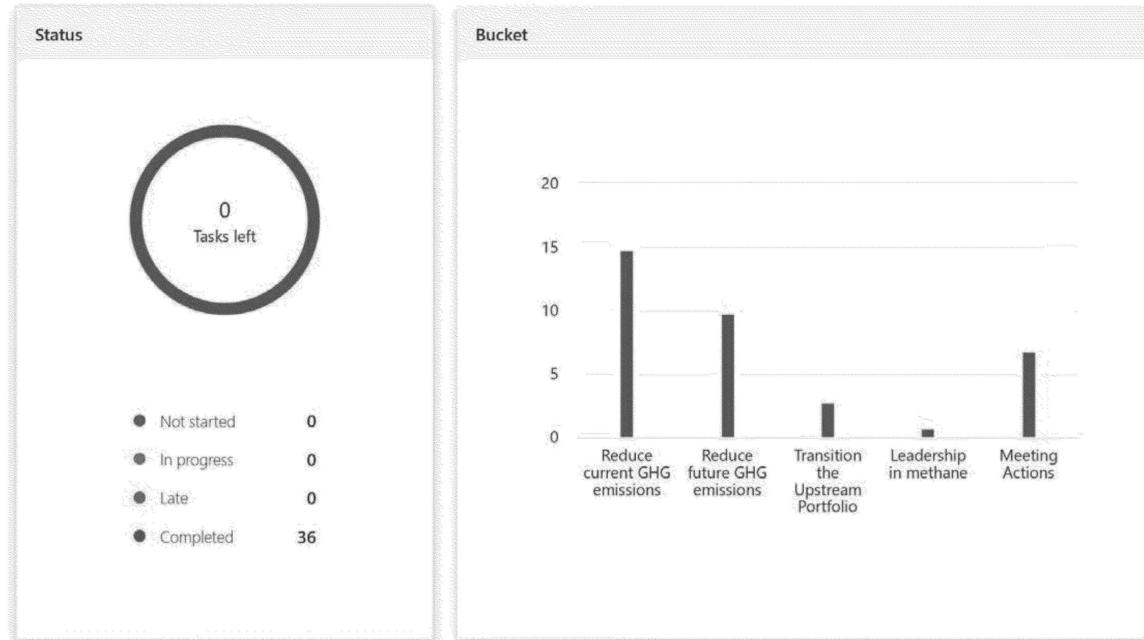
# Carbon Roadmap & Methane Leadership Plan Action Status

November 2019

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# Carbon Roadmap Action Status

(as of 07/11/2019)

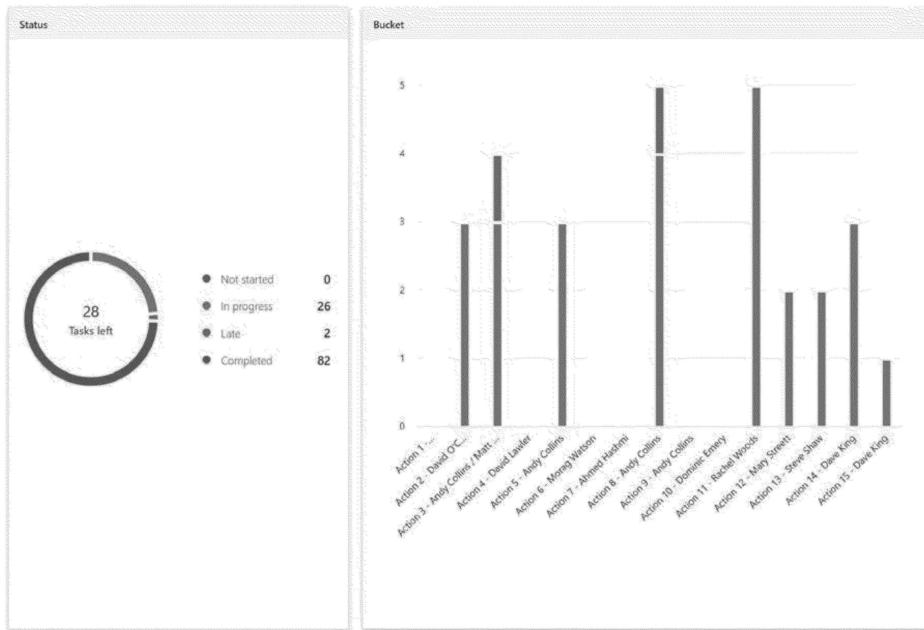


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# Methane Leadership Plan Action Status

(as of 07/11/2019)



Action Owner	Open Actions	Due in 2019	Due in 2020
Gordon Birrell	0	0	0
David O'Connor/ Richard Mortimer	3	3	0
Andy Collins	12	9	3
David Lawler	0	0	0
Morag Watson	0	0	0
Ahmed Hashmi	0	0	0
Dominic Emery	0	0	0
Rachel Woods	5	0	5
Mary Streett	2	2	0
Steve Shaw	2	2	0
Dave King	4	4	0
<b>Total</b>	<b>28</b>	<b>20</b>	<b>8</b>

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Back-up

BPA\_HC0R\_00259913

# Methane Leadership Plan - Late Actions

(as of 07/11/2019)



Action	SPA	Due Date	Status	Comments
<u>3.2 Develop Segment Flaring Practice to further enhance flaring performance in the regions.</u>	SPA: Dave King SPR: Doog Wright/Graeme Gordon	30 Jun 2019	In progress (Late)	(Nov'19) To be embedded with Upstream Carbon Guide and Practice.
<u>8.1 - Evaluate flare uncertainty (metering and combustion) across GOO operations.</u>	SPR: Ian Alleyne	30 Sep 2019	In progress (Late)	<p>(Nov'19)</p> <p>- Flare meter assessment programme ~40% complete, delayed by UEC workload/resource constraints; results in Oman showed meter over-reading by 17% (NB: a methodology change, NOT an SER; but will reduce headline emission numbers).</p> <p>- Flare combustion direct measurement part of Methane technology plan to measure &gt;75% flare emissions: Alaska/ Angola (both assets)/ Oman (inc drilling) complete – awaiting Oman report, others &gt;98% current assumption.</p> <p>Estimated completion date to be confirmed by UEC.</p>

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 2 David O'Connor/Richard Mortimer

Action	SPA	Due Date	Status	Comments
<u><a href="#">ACTION 2 -Develop and implement plan to deliver 'Near Zero' Methane Emissions in Projects</a></u>	David O'Connor SPR: Richard Mortimer	31 Dec 2019	In progress	(Oct'19) Draft framework "towards net zero carbon" concepts presented at Carbon Steering Committee on 10th September. Comments received and framework being updated. Will be published as part of the GPO Carbon Guiding Principles document.
<u><a href="#">2.11a Adopt Reducing Methane Best Practices in Upstream</a></u>	David O'Connor SPR: Sue Ford	31 Dec 2019	In progress	(Nov'19) The Guides for the 8 Reducing Methane Emissions Best Practices have been developed by SLR Consulting International and the University Texas (Austin) as part of the 2019 Work Programme under the Methane Guiding Principles external initiative. Synopses have also been produced for each Best Practice. The Guides will be available on the new MGP Website by the end of Nov 2019. These have been incorporated into the draft Upstream Carbon Practice and Upstream Carbon Guide.
<u><a href="#">2.12 - Update L48 Facility Design Manual (FDM) to incorporate design focus on reducing methane emissions from new &amp; modified facilities.</a></u>	David O'Connor SPA: Kola Fagbayi SPR: Rick Urban	31 Dec 2019	In progress	(Nov'19) An updated Facility Design Manual has been drafted and is currently under review. The draft is currently undergoing a major revision and is planned to be finalized by years' end.

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 3 Andy Collins

Action	SPA	Due Date	Status	Comments
<u>ACTION 3 - Develop and implement prioritised plan to drive further reductions in operational flaring emissions (prioritising Angola)</u>	Andy Collins	31 Dec 2020	In progress	(Oct'19) Glen Lyon: FGR remains a key commissioning objective, but delayed from 3Q18 due to sand & gas management issues & lack of stable operations; latest estimate is for FGR commissioning is 1H19; PSVM: LP compressor restarted Sep18, initially estimated to be ~12mmscf/d; SER TBD (qualification/ quantification)
<u>3.1 Agree and implement plan to enable (Angola) PSVM and (North Sea) Glen Lyon to operate to their low-emission designs.</u>	SPR: Roger Boyce/Andy Johnston	30 Sep 2020	In progress	(Nov'19) Unit testing completed and confirmed full seal failure. In situ unit to be removed for overhaul. New unit being procured in parallel (with assistance from Carbon fund); P10 installation and restart of 31st March dependent on successful overhaul of existing unit, P50 is September 2020. PSCM are helping to expedite the new unit, UEC are assisting with seal failure RCFA and potential redesign.  Due date is deferred to September 2020.

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 3 Andy Collins

Action	SPA	Due Date	Status	Comments
<u>3.2 Develop Segment Flaring Practice to further enhance flaring performance in the regions.</u>	SPA: Dave King SPR: Doog Wright/Graeme Gordon	30 Jun 2019	In progress (Late)	(Nov'19) To be embedded with Upstream Carbon Guide and Practice.
<u>3.4 Implement plan to instil operational mindset to continually improve flare performance.</u>	SPA: Gio Cristofoli SPR: Graeme Gordon	31 Dec 2019	In progress	(Dec'18) 1Q19: COO/ HoF regional expectations communication; develop simple & straightforward video training materials for frontline operations; update production reporting tools update (OMS 6.1/8.1: deviations from flaring design) 2Q19: monitor progress (successes/ challenges); add flaring expectations to Site Manager calls/ workshop

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 5 Andy Collins

Action	SPA	Due Date	Status	Comments
<u>ACTION 5 - Develop and implement prioritised influencing plan for methane emissions in non-operated JVs and other parties</u>	Andy Collins	31 Dec 2019	In progress	(Oct'19) A draft plan has been produced and reviewed with HSE secondees. Next step is to review with Risk Process Owners. On track for year end.
5.1 - Develop plan to seek to influence PAE to reduce methane emissions with focus on largest sources (e.g. venting).	Andy Collins SPA: Sayma Robbie SPR: John Sanders	31 Dec 2019	In progress	(Oct'19) A draft plan has been written in conjunction between the PAE Shareholder Team, the UHSE Carbon Team, and the NOJV Directorate. This is being reviewed. On track for year end.
5.7 - Equip NOJV Business Managers to be able to actively influence NOJV operator/partners to lower carbon intensity (incl. methane) on existing operations and with new investments.	Andy Collins SPA: Sayma Robbie SPR: John Sanders	31 Dec 2019	In progress	(Sep'19) The Upstream Carbon Lead Advisor, The Upstream Senior Advisor on Emissions and Carbon and the NOJV Director HSE & Risk are working collectively on a tool kit that includes: access to the Methane Guiding Principles, Bespoke Workshops and Methane Measurement tools

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 8 Andy Collins

Action	SPA	Due Date	Status	Comments
<u>ACTION 8 - Develop and implement a plan to enhance flare emissions data accuracy (metered volumes &amp; combustion efficiency)</u>	SPA: Fuzzy Bitar	31 Dec 2019	In progress	
8.1 - Evaluate flare uncertainty (metering and combustion) across GOO operations.	SPR: Ian Alleyne	30 Sep 2019	In progress (Late)	<p>(Nov'19) - Flare meter assessment programme ~40% complete, delayed by UEC workload/resource constraints; results in Oman showed meter over-reading by 17% (NB: a methodology change, NOT an SER; but will reduce headline emission numbers).</p> <p>- Flare combustion direct measurement part of Methane technology plan to measure &gt;75% flare emissions: Alaska/ Angola (both assets)/ Oman (inc drilling) complete – awaiting Oman report, others &gt;98% current assumption.</p> <p>Estimated completion date to be confirmed.</p>

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 8 Andy Collins

Action	SPA	Due Date	Status	Comments
<u>8.3 - Define flare metering performance requirements and build maintenance requirements into existing maintenance processes.</u>	SPR: Doog Wright	31 Dec 2019	In progress	(Nov'19) Flare meter assessment programme and flare combustion direct measurement are currently ongoing (See Action 8.1). The result from both programme will be the basis to action on this task.
<u>8.4 - Define flare combustion performance requirements and build maintenance requirements into existing maintenance processes.</u>	Andy Collins SPR: Steve Beamer	31 Dec 2020	In progress	(Nov'19) Flare combustion efficiency testing is happening using Mantis VISR, completed in Angola (PSVM and GTP), Oman (CPF, GOO and GWO), AGT (w/c 11th Nov 2019) and Alaska. AsPac (Tangguh) is scheduled in 2020.
<u>8.6 - Develop plan to deliver flare metering and combustion performance requirements across GOO.</u>	SPR: Doog Wright	31 Dec 2019	In progress	(Nov'19) Flare meter assessment programme and flare combustion direct measurement are currently ongoing (See Action 8.1). The result from both programmes will be the basis to action on this task.

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 11 Rachel Woods

Action	SPA	Due Date	Status	Comments
<u><a href="#">ACTION 11 - Deliver external Group-wide gas advocacy campaign and demonstrate BP's leadership on methane</a></u>	Rachel Woods	31 Dec 2020	In progress	
<u><a href="#">11.1 - Deploy leaders to tell the gas story and increase BP's visibility on key global platforms e.g. World Gas Conference.</a></u>	SPA: Rachel Woods SPR: Clare Moore-Bridger	21 Mar 2020	In progress	(Mar'19) Bernard Looney took part in a methane-specific panel at CERA Week. He will speak at BNEF and at LNG Shanghai, sharing messaging around gas as well as emissions reductions.
<u><a href="#">11.4 - Leverage milestones on BP's most significant gas projects as live proof points on the case for gas (SGC, Khazzan).</a></u>	SPA: Rachel Woods SPR: Clare Moore-Bridger	23 Mar 2020	In progress	(Sep'19) The Gas and Methane campaign plan sets out a number of ways to use BP's major Upstream projects to communicate our gas advocacy messaging, whilst showcasing what the business is doing to tackle methane.  In Q1 2019 we are planning is to focus on developing a "digital press tour" focusing on BP's hero gas projects for top/tier influential media though an event hosted at the Upstream Learning Centre in Sunbury coinciding with the upcoming tech partnership on Methane Monitoring.

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 11 Rachel Woods

Action	SPA	Due Date	Status	Comments
<u>11.7 - Publish independent data on the methane science cycle with Princeton.</u>	SPA: Rachel Woods SPR: Clare Moore-Bridger	31 Jan 2020	In progress	(Oct'19) Meeting set with Liz Rogers on 5/11 to discuss
<u>11.10 - Develop a cross-industry methane summit including e.g. agriculture and construction to tackle the methane challenge beyond O&amp;G industry</u>	SPA: Rachel Woods SPR: Clare Moore-Bridger	31 Dec 2020	In progress	

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



Action 12 Mary Streett

Action	SPA	Due Date	Status	Comments
<b>Redacted - First Amendment</b>				

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 13 Steve Shaw

Action	SPA	Due Date	Status	Comments
<u><a href="#">ACTION 13 - Develop and deliver internal communications plan to educate BP employees on carbon and methane science and BP's role in reducing carbon/ methane emissions</a></u>	Steve Shaw	31 Dec 2019	In progress	(Nov'19) Have added the latest comms plan which details approach, what has been delivered in 2019, and plans for 2020
<u><a href="#">13.5 - Develop Upstream specific methane eLearning package covering methane sources and how they're managed.</a></u>	SPA: Dave King SPR: Doog Wright	31 Dec 2019	In progress	(Jun'19) This action will be addressed through the MGP Executives / Masterclass Training delivery that SGI / Imperial College are delivering as part of the MGP Tool Kit, in support of the Reducing Methane Emissions: Best Practices, which will be adopted and embedded within the Upstream.

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 14 Dave King

Action	SPA	Due Date	Status	Comments
<u>ACTION 14 - Develop and implement SLL/Executive Education Programme to instil culture of methane leadership across Upstream</u>	Dave King	31 Dec 2019	In progress	
<u>14.3 - Develop and implement plan for SLL/Executive education programme.</u>	SPA: Dave King SPR: Karen Jalim	31 Dec 2019	In progress	(Jun'19) The SLL and Executive Methane Education Programme will be delivered via the ongoing work programme in the Methane Guiding Principles external initiative. Under the MGPs an Implementation Plan for the 8 Reducing Methane Emissions: Best Practices is being developed which includes a Global Methane Toolkit and an Outreach Programme for Executives (1/2 a day) and a Master Class for Operational Leaders (1 Day.) The former is for CEOs/COO; the latter for VP Ops/AOMs audiences. Trials for both courses are planned for 31st Oct and 1st Nov 2019 respectively in Imperial College. (...to be continued)

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 14 Dave King

Action	SPA	Due Date	Status	Comments
				SGI will deliver the course which is in large part being built on the work BP and EDF are leading on the Global Methane Toolkit. A Program of Course requests is in place with the first "live" course being Woodside hosted in Nov 2019. Other requests have been received from Gazprom, Equinor, IGU. BP should consider requesting a dedicated BP event in 2020. Attachments show Course Outline and current Schedule.

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 14 Dave King

Action	SPA	Due Date	Status	Comments
<u>14.5 - Develop and implement 'zero methane emissions mindset' for L48 leaders.</u>	SPA: Dave Lawler SPR: Kola Fagbayi	31 Dec 2019	In progress	<p>(Nov'19) Communications that were completed to progress the zero methane mindset in BPX Energy:</p> <ul style="list-style-type: none"><li>- Drafting This is a Big Deal email - Comms that will educate BPX on what GHGs are, what BPX reduction GHG goals, and who to reach out to.</li><li>- 9/24/19 BPX Energy: Not Business as Usual - company wide email communication on climate change and BPX commitment on low carbon future</li><li>- Developed GHG Virtual Reality Training that was shared at August BPX Leadership Offsite Meeting.</li><li>- The BPX RC&amp;E delivered environmental training in June to help progress the zero methane emissions mindset.</li></ul> <p>(...to be continued)</p>

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 14 Dave King

Action	SPA	Due Date	Status	Comments
				<ul style="list-style-type: none"><li>- BPX COO, Brian Pugh met with leader of EDF+Business Energy &amp; Innovation team to discuss technology advances like drones that are being deployed within BPX assets.</li><li>- BPX COO, Brian Pugh held a field visit with Wall Street Journal.</li><li>- Provided talking points to Bloomberg reporter Kevin Crowley on report from Rystad about flaring in the Permian.</li><li>- BPX Energy and EDF conducted a Field Tour.</li></ul>

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# Methane Leadership Plan Action Detail

(as of 07/11/2019)



## Action 15 Dave King

Action	SPA	Due Date	Status	Comments
<u>15.9 - Work with industry partners (e.g. OGCI) to define industry methodology for determining methane emissions across the value chain.</u>	SPA: Liz Rogers SPR: Sonna	31 Dec 2019	In progress	(Jan'19) The timeline needs to reflect this is a detailed effort spanning a long period of time and linked to multiple activities with parties outside of BP

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