Issues Management Working Group

IMWG Meeting Notes – 25 September 2017
Caspian 4.53
14.00 – 17.00

Attendees: Dev Sanyal (chair), Richard Bridge, Dominic Emery, David Eyton, Richard Harding, Paul Jefferiss, Kathrina Mannion, Peter Mather, Geoff Morrell, Edlyn Moy, Mike Nash, Eamonn Naughton. By phone: John Mingé, Bob Stout.
Guests Nigel Jenvey (by phone)
Apologies: Gordon Birrell, Emily Carey, Spencer Dale

Context

- Changes in politics are impacting regional approaches to climate policy.
- The Financial Stability Board Task Force on Climate Related Disclosures has issued their recommendations. Some peers (Shell, Total, Statoil, Eni, BHP) have come out in support of it externally.
- The OGCI charter is agreed. Preparations for the CEO event on 27 October are underway. This will showcase some of the new OGCI Climate Investments.
- The annual CDP reporting cycle is underway.
- BP's modern slavery statement was published in June.
- Executive and Board discussions on advancing low carbon continue.
- An update on the latest Energy Technology Perspectives was provided. A summary note has been circulated to members.
- Geoff Morrell was welcomed to his first meeting. Mike Nash has taken over as legal representative.
- The June minutes were agreed.

Legal context

- An update on legal context was provided.

Carbon, capture, use and storage (CCUS)

IMWG members made the following comments in relation to the position:

- Be clear why we believe CCUS is important, where we are as BP and what we want – make the key messages shorter and more punchy. Make sure the position is suitable for generalists.

- The final bullet on BP's role should be more assertive – BP in action.
- The fifth key message can be removed
- Outline that we are working on a number of options, some with bioenergy.
- Be more specific where possible on our policy asks: e.g. government support for demonstration; dedicated CCUS policy support; a carbon price.
- Bring out the economic benefits of CCUS (e.g. jobs).
- Emphasis complementarity with renewables rather than pitching against them.
- Consider more information on the utilization benefits and associated commercial opportunity.
- Highlight the relevance of industrial use (where there is no alternative).

In addition, the background paper should make clear which recommendations (i.e. the first) are for IMWG and which are being dealt with elsewhere.

Action: Redraft position to reflect IMWG feedback before OGCI 27 October event. Position to be reviewed and finalized at December IMWG meeting (DEy/NJ/KM) – by mid October

Action: Update background paper (DEy/NJ/KM) – by mid October

Net zero emissions
IMWG members made the following points:

- Building awareness and understanding of this topic within BP is valuable – the background paper is a very helpful primer.
- A specific position on net zero is not needed. A summary note that explains the concept and uncertainties that can be used reactively is more helpful.
- This summary note should not go into a BP position on specific definitions but should set the context of 2C being the main goal, and that this will be challenging regardless.

Action: Draft summary note and circulate to IMWG members for agreement (PJ) – by end October

GHG accounting and reporting terminology
IMWG members made the following comments:

- The paper is a very useful and clear educational document on terminology.
- The source of the supporting methodology for each term (where there is one) should be included in the table in the appendix.

Action: Update table in appendix to include sources of methodology (PJ) – by mid October.

IMWG process
On the December agenda, the following changes were requested:

- Include information paper on Environmental Performance Standards.
- A short verbal intro to fossil fuel subsides should be included in the agenda.

Initial views were expressed on the 2018 agenda:

- Question on the need for role of oil position
- Net positive approach should be a short info paper
- The US carbon tax position should be updated to reflect BP involvement in Carbon Leadership Council.
- A review of electrification of transport and role of gas was supported.
- Where possible, we should look to compress positions if feasible – e.g. methane and gas, climate positions, revenue and contract transparency.

The updated process for new issues was agreed.

Action: Update proposals for December and 2018 agenda (KM) – by mid November.

AOB
The next IMWG meeting is 1 December 2017.

Low carbon and the energy transition

Key messages

- We recognise the **urgency** of the climate challenge. We have long accepted the scientific consensus and called for action for more than 20 years.
- As a global energy business, we face the **dual challenge** of meeting society's need for more energy, while at the same time reducing carbon emissions.
- Our industry is changing faster than at any time in our lifetime. The energy mix is shifting **towards lower carbon** sources, driven by technological advances and growing environmental concerns.
- **BP will help advance this transition** – and our business will be transformed by it.
- We will **shift our focus towards gas**, meeting rising demand for cleaner energy. This has to be done right so we are going to lead on reducing methane emissions.
- New technologies are helping us to produce **more oil, more efficiently** from existing resources.
- With a mobility revolution underway, we are innovating to produce **new efficient fuels and biofuels.**
- We are developing our **renewable energy business** alongside a **dynamic venturing arm**. New lower carbon solutions will emerge from creative collaborations and new business models.
- We are working with our **network of long-term and trusted relationships,** such as the Oil and Gas Climate Initiative, to catalyze meaningful action on climate change within our industry and beyond.
- We are working with governments and other partners **to advocate for a carbon price** as the most effective policy to limit greenhouse gas emissions. We support a carbon tax or cap and trade, provided it's flexible and well-designed.

Additional information

BP strategic approach

- Our strategy anticipates a range of scenarios to give us flexibility in our approach, rather than pursuing a single view of the future. We believe having a balanced portfolio and a dynamic investment strategy give us the resilience to meet the challenge.
- We do not expect our proved resources to be stranded because on average they are produced over 15 years, giving us flexibility to respond and shift our investment strategy.

Examples of BP actions

- Carbon price: We put a price of \$40/tonne of CO_2 equivalent on emissions from our own large new projects in industrialised countries. We also consider the impact of \$80/tonne.
- Shift to gas: Natural gas produces about half the greenhouse gas (GHG) emissions of coal when burned to generate power. The share of gas in our portfolio is about 50% and growing. We are one of the top 10 natural gas producers in the US and have several new

big gas projects including Khazzan in Oman, West Nile Delta and Zohr in Egypt, Juniper in Trinidad, and the Southern Gas Corridor from the Caspian Sea to Europe. We acquired interests in gas exploration blocks in Mauritania and Senegal in 2016.

- Managing methane emissions: Through the Oil & Gas Climate Initiative (OGCI) and the Climate and Clean Air Coalition's Oil and Gas Methane Partnership (CCAC), we are deepening our industry's understanding of the core sources of methane emissions in upstream operations. For example, at our Khazzan site in Oman, we have built a central processing facility which helps reduce additional sources of methane emissions. We have a programme to measure and improve leak detection across our sites.
- Providing renewables: BP has the largest operated renewables business among our peers. We have significant biofuels and clean power businesses in Brazil, we are a large wind energy producer in the US, and have a recently established a bio-products business, Butamax, in partnership with DuPont.
- Supporting innovation and venturing: Technological innovation underpins our efforts to make operations and products more efficient and lower carbon, including through use of carbon capture use and storage (CCUS). Around half of our venturing investments focus on low carbon solutions.
- Pursuing efficient operations: We work to manage our GHG emissions by improving energy efficiency, as well as by reducing flaring. We are a member of the World Bank Zero Routine Flaring by 2030 initiative. Each of BP's refineries sets and tracks progress against a target.
- Helping customers reduce emissions: We are working to reduce the carbon footprint of our fuels, lubricants and petrochemicals products. For example, our lower viscosity Castrol lubricants and our range of fuels with ACTIVE technology can help improve vehicle efficiency. BP Target Neutral helps customers offset their emissions.
- Adapting to climate impacts: We seek to address the potential impacts of climate change on our new projects from the design phase.
- Collaboration: In addition to the OGCI and CCAC, BP invests in partnerships such as: Princeton's Carbon Mitigation Initiative; the Climate Leadership Council; and Carbon Pricing Leadership Coalition.

Climate change context

- The Paris Agreement aims to hold temperature rise to well below 2°C and pursue efforts to limit it to 1.5°C. To achieve this, countries agreed to aim for net zero emissions during the second half of the century.
- Countries have made climate pledges, or nationally determined contributions (NDCs). Current NDCs fall far short of the aims of the Paris Agreement and vary widely in their ambition and capability.

Challenges to addressing climate change

- Meeting the aims of the Paris Agreement will require an unprecedented transformation of the energy system.
- Energy demand is currently growing and access to affordable and secure energy is essential to development and economic growth.
- Emissions reductions are required across the board, not just in the energy sector, e.g. agriculture; forestry; cement. Consumers also need to change behaviour - currently around 80-90% of CO_2 emissions from oil and gas products are from their use by consumers in transportation, plants, industries and buildings.
- A diverse mix of fuels and technologies is needed: energy efficiency; natural gas; renewables; electrification; CCUS; nuclear.

Contact Paul Jefferiss

Message

From: Khalilov, Seymour [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Sent: 11/08/2016 22:23:57
To: Minge, John C [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
CC: Okonek, Kellie [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]; Yeilding, Cindy [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted] Stout, Robert [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted] Morrell, Geoff [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted] Nolan, James [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted] Brien, Michael P [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Subject: Insight: IST on climate issue and carbon markets
Attachments: Intro to Emissions.pptx

John et al,

Dan Barry who heads IST's global environmental products briefed Bob, Lamar, Brian and Dev with the attached pack on climate and emissions trading.

Had a chat with Dan yesterday – insights below.

Regards,
Seymour

Key highlight

- IST believes the best way to deal with the climate change is through Cap & Trade

How it works

- A 'Cap' is set on emissions across the whole economy and everyone gets issued allowances capped at total target
- The 'Trade' is a market mechanism for allowances, helping companies to reduce their emissions to stay within their limit or go to the market to trade with others based on their long/short positions

Why Cap & Trade is better

- Cap & Trade allows all private sector to be participants in lowering the emissions – i.e. the burden is not carried only by the energy sector. Requires everyone to pay for what they emit
- You can buy emission reductions to meet your targets, don't have to reduce directly as long as global reduction targets are met
- Market provides ability to leverage carbon reduction projects in other sectors and use the credits to offset carbon footprint elsewhere
- Emission trading achieves policy objectives at lowest cost. Trading lets companies to be more cost-effective in dealing with pollution cuts, avoids cost of compliance, and companies are incentivized to switch to cleaner technology
- This is more efficient way of achieving the same outcome – tax or regulation is higher cost to society on a global scale
- Global acceptance: political and regulatory developments around the world tend to prefer carbon pricing
- Market sets the price

Carbon Markets

- Represents ~25% (7gtCO2-e) of global emissions
- CA has emissions trading scheme and OR and WA have rules under consideration
- Market size is in~$0.5bn, with ~$200-250m in the US
- BP is competitively positioned, with capacity outweighing BP's current demand. Peers come to us, we're able to trade and make money. RDS has similar position to us.
- Each state has its own scheme and prices vary in CA vs. WA/other states given the regulation mandating each state to create its own market. The disparity creates an arbitrage opportunity and traders are able to make money just by positioning various regimes against each other
- In CA, IST made $23m of margin in 2014/15 FY in addition to ~$4m cost savings to the asset

Carbon Offset Projects

- BP guarantees to buy biogas or other environmental products (biogas supplied to a transport fleet or hooked to the grid), which creates credits for marketing to 3rd parties
- BP's guarantee is used as a collateral for the 3rd party's project finance for emission reduction projects
- We use our position in infrastructure to take the credits to where we can get most value
- Contracts are good for 17-20 years, can be extended through negotiations
- Currently the market size is about $100m/year, of which ~80% is in the U.S.

Political/Regulatory Landscape

- We appear more defensive in the US vs. other places around the world
  - Don't go proactively to the regulator to collaborate and help shape the policy
  - Instead we wait for the rules to come out, we don't like what we see, and then try to resist and block
- Mindset is different elsewhere:
  - In Germany worked together with the regulator and created regulation that helped our biofuels business
  - In Australia, engaged proactively with the regulators and established advantaged position for refining
- The risk is if we have a democratic administration and continue with the same attitude, they can push ahead with regulations across the full infrastructure chain, forcing us to adjust
- Better option may be to engage early, and help to set up a well-designed policy that works and lets the market do its job, and slow the pace and price of demand erosion

What do other companies think

- BP view of Cap & Trade is broadly shared among the peers (along with CVX, RDS, TOT) – the only outlier is Exxon
- Chevron in big internal debate at the moment, the CEO (more in line with Exxon) and others on the executive team are split
- XOM and COP are anchored in a carbon tax position – partly because they are disadvantaged in the market mechanism

Talking points for EY Executive Energy Insight Session

America's energy renaissance

- When we talk about the history and future of America's energy renaissance, it's important to emphasize three things right up front.
    - No. 1: The renaissance has been driven by our country's unique combination of abundant natural resources, strong property rights, technological expertise and a culture of innovation.
    - No. 2: It's been a tremendous boon to the U.S. economy.
        - In fact, according to a new report from the U.S. Chamber of Commerce's Institute for 21st Century Energy, America's energy renaissance led to the creation of 4.3 million U.S. jobs while adding $548 billion dollars to our national economy.
    - No. 3: It's helped make the U.S. a global leader in reducing carbon dioxide emissions, because natural gas has been displacing coal in the power sector.
        - To put things in perspective: Between 2005 and 2015, U.S. natural gas production increased by 52 percent. Over that same period, America's energy-related CO2 emissions declined by 12 percent.

The oil price challenge

- Of course, the fall in oil prices since 2014 has created enormous challenges for all oil and gas producers, including shale producers here in the U.S.
- The price downturn has forced everyone — big companies and small companies alike — to reduce capital expenditures, operating costs and headcount.
- A few weeks ago, the International Energy Agency projected that global upstream investments would fall by 24 percent this year, after falling by 25 percent last year.

- "The total fall exceeds $300 billion over the two years — an unprecedented occurrence," the agency said. "Furthermore, there are no signs that companies plan to increase their upstream capital spending in 2017."

- The IEA also projected that global crude oil supplies would exceed demand through the first half of 2017, and perhaps longer.

How technology is changing the industry

- As the world continues adjusting to the new oil price reality, there's no question that technology will play a major role in helping us drive down costs throughout the supply chain while also helping us increase oil and gas recovery.

    - In fact, BP believes that innovative technologies could reduce today's cost of supplying oil and gas by as much as 25 percent by 2050.

    - We also believe that technology could increase the world's recoverable oil and gas resources by about 35 percent by 2050.

- To give you a brief sense of how BP is using innovative technology to become more efficient:

    - *ISS* technology

        - Seismic imaging allows us to explore deep into the Earth's subsurface, and BP's *ISS* (Independent Simultaneous Source) technology makes large-scale, 3-D seismic surveys faster and more cost-effective.

        - In 2015, for example, our *ISS* survey at Prudhoe Bay in Alaska delivered a tenfold increase in productivity, enabling us to acquire higher-quality images in just one winter season.

        - BP processes this type of geophysical data — collected from seismic surveys around the globe — at our Center for High-Performance Computing in Houston, which is home to one of the world's largest supercomputers for commercial research.

- Digital technology

  - Digital technologies, meanwhile, help us enhance both safety and efficiency.

  - Among our many initiatives, BP has formed a strategic collaboration with GE to develop and pilot a new digital solution for unplanned downtime in our Gulf of Mexico operations. The software will introduce new process surveillance and predictive analytic tools to provide early warnings of potential facility issues, which will give crews time to intervene proactively.

- Enhanced oil recovery technology

  - BP also remains a global leader on EOR technologies, which help us extract additional oil from existing reservoirs.

  - In fact, our *Designer Water* and *Designer Gas* technologies deliver over 10 percent of the world's conventional EOR oil production — more than any other international oil company. These technologies include *Bright Water* and *LoSal* EOR.

    - *Bright Water* is a microscopic, thermally activated particle that expands deep in a reservoir, diverting injection water into poorly swept areas and, thereby, increasing oil recovery. On average, it costs less than $5 per barrel.

    - *LoSal* is a low-salinity water flooding technology that increases oil recovery compared with conventional seawater flooding. BP is already deploying LoSal in the North Sea, and we are evaluating its use in a Gulf of Mexico project.

  - BP's head of upstream technology, Ahmed Hashmi, has said: "As an industry, we have probably reached the point when the potential from existing reservoirs exceeds what we will find through exploration. EOR, improved oil recovery, and production optimization technologies will continue to make an important contribution to delivering that potential."

- Thunder Horse water injection project

    - In 2016, BP successfully launched a major water injection project in its Thunder Horse field in the Gulf of Mexico. The three-year project will allow for the recovery of an additional 65 million barrels of oil equivalent

- "Multilateral" wells in the San Juan Basin

    - In 2015, our Lower 48 onshore business bought all of Devon Energy's assets in the San Juan Basin of New Mexico, a region in which BP has operated for more than 30 years. The expansion added nearly 15,000 net acres to its portfolio.

    - With decades of experience in the San Juan Basin, BP has a deep understanding of its reservoirs, and our Lower 48 business has combined that knowledge with innovative technology to help boost production efficiency.

    - In 2015, for example, our Lower 48 business made history by completing its first-ever "multilateral" wells in the basin.

    - Multilateral wells feature multiple horizontal wells connected to a single drilling hole, or "wellbore," allowing producers to access more of the oil and gas in a given reservoir while reducing the number of drilling sites.

    - Our Lower 48 business expects that a majority of its new wells in the San Juan Basin will be multilaterals, and it is pursuing similar well-design improvements across all its operations.

Conclusion

- Here's the bottom line: With oil prices staying lower for longer, we need to be doing everything possible to make our operations more efficient and more productive.

- I've listed a few examples of how technology can help; but really, this has to be a transformative effort that cuts across all of our business lines.

- Getting it right matters, not only to oil and gas companies, but also to people throughout the world.

    - After all, the world is expected to need a third more energy by 2035 — and and the reality is that, despite what certain activist groups would like us to believe, it simply is not feasible to abandon fossil fuels overnight.

        - In fact, according to the most likely scenario outlined in BP's latest Energy Outlook report, fossil fuels are expected to account for nearly 80 percent of global energy supply in 2035.

        - Even in our "faster transition" scenario — a scenario in which the world moves aggressively on climate change, and we see global emissions peak in 2020 before declining to nearly 8 percent below 2014 levels by 2035 — even in that ambitious scenario, we project that fossil fuels will remain 70 percent of total energy in 2035.

- Again, we face serious challenges as an industry. Yet I'm confident that, in the years ahead, companies like ours can meet these challenges and continue delivering the energy the world needs.

- I look forward to discussing all these issues — and plenty more — with our distinguished panel and audience.

L48 3Q 2017 Operational Performance Review

November 6th, 2017

Topics

Business Overview	David Lawler
Strategic Initiatives & Alternatives	David Lawler
Development	David Lawler
Operations	Brian Pugh
Business Development	Mohit Singh
Financials: 3Q Actuals & FY LE 2017, 2018 Plan	Jack Collins

L48: Mission, Strategy and Goals

Mission

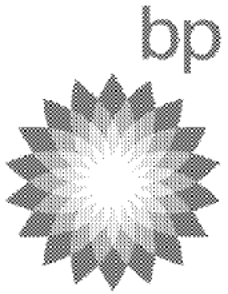
- Become a premier, market visible, high return, onshore exploration and production company that consistently increases asset value
- Establish a high performance culture based on empowerment, accountability and collegiality

Strategy

- Focus primarily on **projects in current basins** that generate the highest rate of return, with the entire organization becoming commercially focused while maintaining BP core values
- **Significantly increase development** in regions with **oil potential**
- **Acquire 1-2 additional, long-lived, liquids-weighted development projects**
- Utilize **innovative development techniques** to increase capital efficiencies
  - Multi-lateral, pad-based long lateral projects and advanced artificial lift systems
- Leverage **data analytics to dramatically improve** safety and operational performance
- Utilize **hedging program to achieve** production growth, free cash flow and competitive returns

Goals

- Establish L48 as top quartile in competitive metrics within 24 months



Business Overview

Business Overview

3Q Operating Performance & FY LE

- HSE
  - DAFWC – One BP employee event in Q3, 1 BP event YTD, 3 contractor events YTD
  - Recordable Injuries - Eight in Q3 (2 BP and 6 contractor). 5 BP events YTD, 14 contractors events YTD, TRIR 0.67 higher than 0.58 YTD 3Q 2016
  - Tier 1 events – No events in 3Q, 3 events YTD (including 2 in 4Q) as of October 27th, 2017
- Production
  - Q3 304 mboed, 3% or 8 mboed below plan of 312 mboed, primarily linked to Lewis energy and project delays across multiple Business Units: strong sequential improvement in 3Q increasing 8% or 22 mboed from 2Q
  - FY 298 mboed, 2% or 7 mboed below plan of 305 mboed, primarily linked to OBO (Lewis Energy – Eagle Ford JV) wells and project delays across multiple Business Units
  - Lewis Energy production – 4Q currently projected to be 5.4 mboed under plan, with FY ~1500 fewer production days
- Production Cost
  - Q3: $7.04/boe (adjusted for ACB), 6% or $0.4/boe above plan of $6.6/boe, mostly due to lower production. Down 3%, or $0.21/boe sequentially from $7.21/boe in 2Q to lowest ever publicly reported level
  - FY: $6.9/boe (adjusted for ACB), projected to be near plan due to cost reductions from Intelligent Operations model offsetting production under-delivery
- IRR: 20% IRR YTD for wells delivered on track with plan target of 20% ($3/$55) due to solid new well performance, including all appraisal and testing programs
- Pre-Tax Operating Cash Flow
  - 3Q $238m (adjusted for ACB), $32m below plan of $270m due to lower production and working capital impacts
  - FY: On track to meet full year 2017 operating cash flow plan of $900m as cost reductions expected to more than offset impact of projected 2% lower production than plan
- Free Cash Flow (underlying)
  - Q3 : -$1m (underlying), $20m above plan of $-21m, primarily due to lower capex and production
  - FY : Projected to exceed plan of $75m, interventions taken to offset the impact of incremental $40m of capex vs plan for Haynesville/Bossier acreage access agreement
- Natural gas hedging: Received $32m to settle in 3Q, which increased average natural gas price realization by $0.23/mmcfd. 1,345 mmcfd (90%) in 2017 at $3.25/mmbtu, 1,295 mmcfd (80%) in 2018 at $3.04/mmbtu and 398 mmcfd (23%) in 2019 at $2.87/mmbtu

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Business Overview

Business Development

- Project Barlow – Multi-basin acquisition – analysis submitted to London
- Project Rodeo – Evaluated strategic options for non operated Eagle Ford position
- Portfolio Optimization:
  - Project Arya
  - Project Tyrion - MidCon – Marketing divestment of L48 Fayetteville
  - Project Davos - MidCon – Sale of non-core STACK acreage. Two closings in early October delivered $7.2m in proceeds

Key Initiatives and Milestones

- Implemented proprietary New Well Delivery tool operational in all operated business units
- Completed actions to decrease the frequency of dropped objects in all operated business units
- Developed comprehensive implementation plan for SAP/PRA enterprise software system upgrade
- Denver office design complete and construction underway
- Built team transition plans to enable 2018 Denver office opening
- 100% third party reserves evaluation by Netherland Sewell & Associates, Inc. (NSAI)

Key Meetings

- San Juan Florida Plant operating and process safety review visit with Dave Dixon Sep 25-28, 2017
- PAE Workshop on Vaca Muerta and Unconventional Assessment, Houston Oct 23-27, 2017 and Buenos Aires Nov 14-17, 2017
- Intelligent Operations presentations to M&T London Nov 1, 2017

2018 Business Plan and Strategic Initiatives

2018 Business Plan

- Production 316 mboed (6% growth) – 1% decrease from previous guidance due Lewis Energy performance
- Plan production cost at $6.75/boe
- Ops Cash of $790m impacted by realized price of $15.04/boe in 2018 vs $16.65/boe in 2017
- Capex $852m (including $52m incremental SoHa leasing), >50% capex allocated to SoHa development.
- Targeting 23% IRR at $3HH/55WTI
- 6% production growth within cash flow (-$15m, excluding $52m for SoHa leasing and $14m for legal entity separation and accounting system upgrade projects)

Strategic Initiatives

Implementation of Intelligent operations model improving HSSE and operational performance, e.g. pilot program delivered 70%+ reduction in methane emissions associated with well venting events, 22% cost reduction, and increased production by 20%

Projects in current basins and innovative development techniques

- Coal Bed Methane Tiffany Pad 1 multilateral (4 wells, 13 laterals, 55,346' lateral) delivering 85% IRR
- Fox Hills and Lewis co-development providing significant oil-rich options
- Artificial lift algorithm in place selecting appropriate method for each well and reducing methane emissions

New Zone discoveries

- Material, highly commercial, South Haynesville and Bossier development underway; 24 new wells planned in 2018
- Successful Upper Eagle Ford test results unlocking 12+ bcf wells in new horizon with >$500m PV potential
- Mancos significant development potential with 130 locations in acquired NEBU position (5TCF+ OGIP); 5 new wells planned in 2018

Acquired liquid-weighted development project

- Swoop Parker 1HX well has produced 600 bopd for more than 40 days (29,000 barrels of oil, first 60 days) – 2nd biggest well in McClain county; potential 350 locations with 8 new wells planned in 2018

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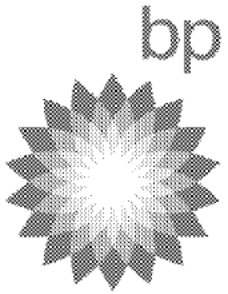

Development

L48 2017 Development Performance

20% IRR YTD for wells delivered by 9/30/17, targeting FY LE of 20%+ @$3/$55 per plan

2017 FY L48 Well Economics at $3/$55/$23		2017 Plan Unrisked							2017 September YTD*						
Program	Well Type	# Wells Online	WI%	NRI%	Capex $m	IRR%	NPV6 $m	VIR	# Wells Online	WI%	NRI%	Capex $m	IRR%	NPV6 $m	VIR
Comingled Delineation	vertical	13	93%	78%	29	16%	12	0.4	6	80%	67%	12	15%	3	0.2
Upper Almond	horizontal	1	100%	84%	9	3%	-1	-0.1	1	100%	84%	7	0%	-2	-0.3
Middle Almond	horizontal	3	100%	84%	22	23%	7	0.3	1	100%	84%	11	11%	2	0.1
Fox Hills/Lewis	horizontal	3	100%	84%	21	44%	8	0.4	4	92%	78%	44	35%	22	0.5
Lewis	horizontal/multilateral	9	100%	83%	78	44%	34	0.4							0.0
Recomplete/Refrac	recompletions		100%	85%	5	27%	2	0.5	0	100%	85%	2	0%	-1	-0.5
Capital wellwork	wellwork		100%	85%	5	39%	4	0.9							0.0
North 2017 FY Program Total		**29**	**99%**	**83%**	**168**	**30%**	**67**	**0.4**	**12**	**94%**	**80%**	**77**	**20%**	**23**	**0.3**
CO Type 2 CBM - ML/HST	multilateral	11	96%	81%	14	41%	13	0.9	10	96%	80%	16	44%	12	0.7
CO Type 2 CBM - Esauls Creek	multilateral	8	93%	79%	19	40%	23	1.2							0.0
CO Type 2 CBM - VT	vertical	1	100%	88%	1	38%	1	0.9	2	100%	88%	3	5%	0	-0.1
CO Type 2 CBM - Tiffany	multilateral	10	85%	71%	24	51%	28	1.2	4	85%	71%	10	86%	12	1.2
NM Type 3 CBM	horizontal	1	100%	87%	3	5%	0	0.0							0.0
NM Mancos Gas	horizontal	4	100%	85%	35	21%	15	0.4	1	100%	84%	20	2%	-2	-0.1
Capital wellwork	wellwork		70%	60%	9	25%	4	0.5		81%	67%	5	41%	5	1.0
SJN OBO	multilateral	2	20%	17%	1	34%	1	0.8							0.0
West 2017 FY Program Total		**37**	**89%**	**75%**	**105**	**35%**	**86**	**0.8**	**17**	**94%**	**79%**	**53**	**26%**	**26**	**0.5**
2016 Carryover (Woodford Development)	horizontal	7	73%	56%	29	14%	9	0.3							0.0
Woodford Development	horizontal	14	73%	59%	55	31%	37	0.7	22	78%	63%	100	14%	33	0.3
SWOOP	horizontal	4	100%	75%	27	31%	18	0.7	1	91%	68%	11	5%	0	0.0
Anadarko incubator/multi-lat oil	horizontal	4	100%	80%	18	22%	7	0.4							0.0
Vertical re-entry side-tracks / DUCs	vertical	3	100%	80%	8	32%	4	0.5	2	93%	76%	10	0%	-5	-0.6
Capital wellwork	wellwork		100%	80%	4	39%	3	0.7		100%	81%	1	0%	0	-0.4
MidCon 2017 FY Program Total		**32**	**91%**	**72%**	**141**	**25%**	**78**	**0.6**	**25**	**80%**	**65%**	**120**	**12%**	**27**	**0.2**
2016 Carryover	horizontal	2	60%	53%	15	69%	6	0.4	2	60%	53%	10	57%	9	0.9
Haynesville	horizontal	18	100%	82%	187	48%	73	0.4	9	98%	96%	119	30%	43	0.4
Capital wellwork	wellwork		85%		7	66%	4	0.7		94%	82%	2	42%	1	0.8
East 2017 FY Program Total		**20**	**80%**	**68%**	**209**	**50%**	**84**	**0.4**	**11**	**84%**	**77%**	**131**	**32%**	**53**	**0.4**
2015 DUCs	horizontal	7	44%	33%	19	13%	5	0.3	3	45%	34%	6	0%	-2	-0.3
EF Dry T1	horizontal	15	55%	41%	54	30%	38	0.7	12	55%	41%	44	29%	20	0.5
EF Dry T1 Deep	horizontal	4	40%	30%	11	21%	7	0.6	2	40%	30%	7	16%	2	0.2
EF Dry T2	horizontal	12	48%	36%	47	15%	12	0.3	9	49%	37%	36	9%	2	0.1
BHP	horizontal	3	45%	32%	10	26%	6	0.7	3	45%	32%	10	47%	8	0.9
Gates	horizontal	3	34%	26%	5	34%	3	0.7							0.0
ESC - SE12H	horizontal	3	39%	29%	6	8%	0	0.1	2	45%	34%	4	6%	0	0.0
Olmos	horizontal	1	36%	27%	1	21%	0	0.2	1	36%	27%	1	0%	0	-0.2
South 2017 FY Program Total		**48**	**47%**	**36%**	**154**	**21%**	**72**	**0.5**	**32**	**49%**	**37%**	**108**	**19%**	**30**	**0.3**
2017 FY Program Total		**166**	**78%**		**776**	**30%**	**387**	**0.5**	**97**	**71%**	**60%**	**489**	**20%**	**160**	**0.3**

* for all wells coming online Dec 1, 2016 thru September 30, 2017

20% risked

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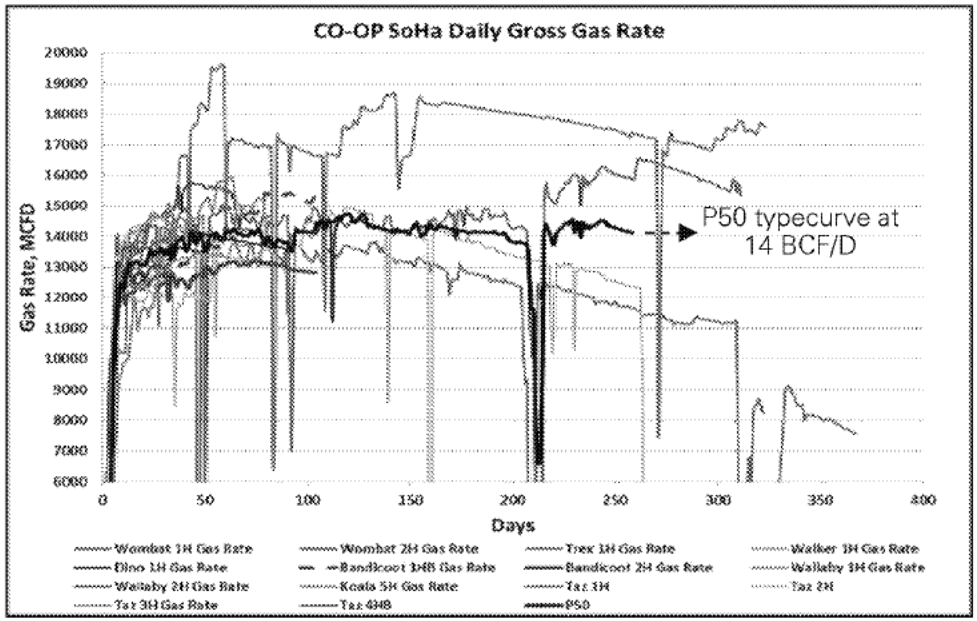
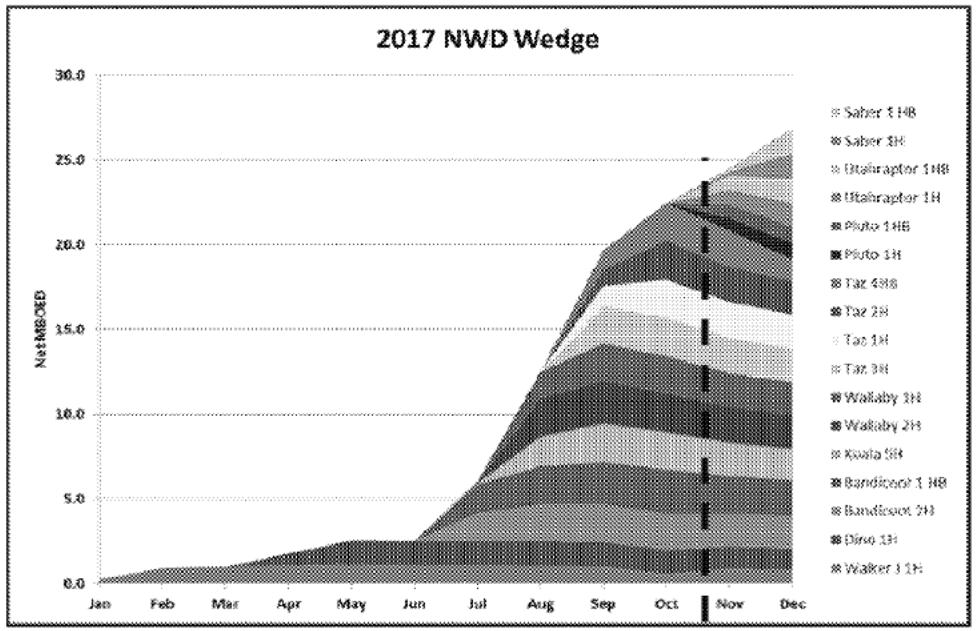
East - Haynesville / Bossier Play

Significant production ramp achieved, delivering 2017 wedge of 10.2 mboed



Well	WI/NRI,%	EUR	IRR	NPV	BCF/000'	Cum Prod, BCF
Wombat 1H	100/100	11.9	67%	$7.4	1.5	4.4
Wombat 2H	100/100	10.3	26%	$3.6	1.4	4.6
Trex 1H	75/61	18.0	117%	$8.3	2.5	5.5
Walker J 1H	45/45	14.2	100%	$4.6	2.0	3.4
Dino 1H	75/61	14.6	35%	$4.2	2.5	2.6
Bandicoot 1HB	100/100	12.0	18%	$4.6	1.9	1.4
Bandicoot 2H	100/100	13.0	100%	$9.7	1.8	1.3
Wallaby 1H	100/97	12.0	49%	$6.7	1.5	0.9
Wallaby 2H	100/97	12.0	51%	$6.9	1.4	1.1
Koala 5H	90/88	9.7	49%	$4.5	1.3	1.1
Taz 1H	100/98	10.5	21%	$3.7	1.4	0.5
Taz 2H	100/97	10.5	25%	$3.9	1.4	0.4
Taz 3H	100/97	9.5	19%	$2.7	1.2	0.7
Taz 4HB	100/98	9.2	16%	$2.5	1.2	0.4



- 2/3 of wedge is producing; 6 wells are completing, 1st production in November
- 2 Bossier laterals producing, 3 stacked Haynesville/Bossier laterals completing now
- Average well: 7500' LL delivering 12 BCF, 1.6 BCF/1000', 2500 ppf stimulations
- 2018 program will be 3800 ppf stimulations
- Planned future SoHa drilling and completion activity is within areas of relatively low population density and consistent with previous activity

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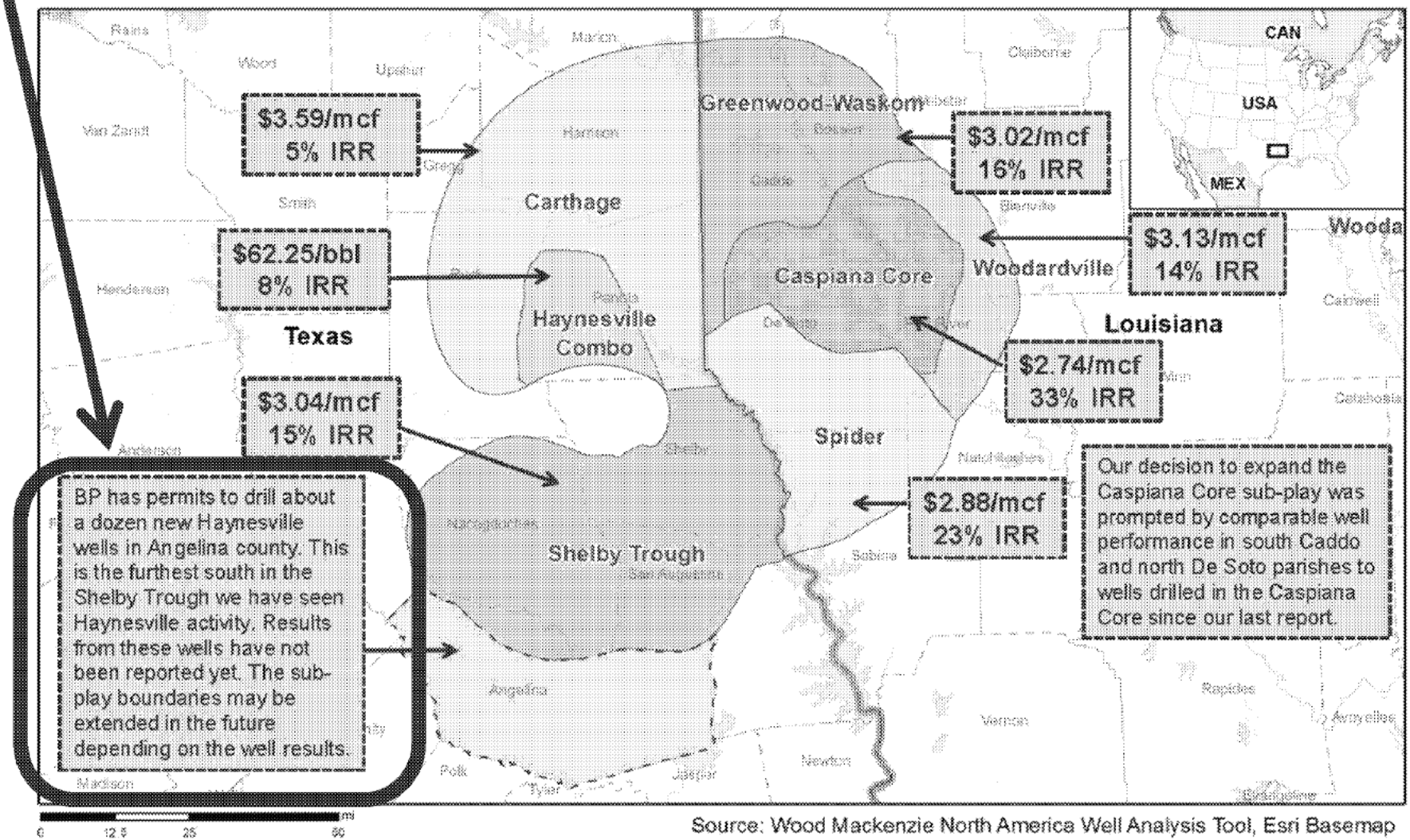
East – WoodMac Article –

BP first mover status = major opportunity

- WoodMac notes BP results haven't been reported yet but we plan to actively develop
- BP SoHa well IRRs exceed those of every other Haynesville sub-play

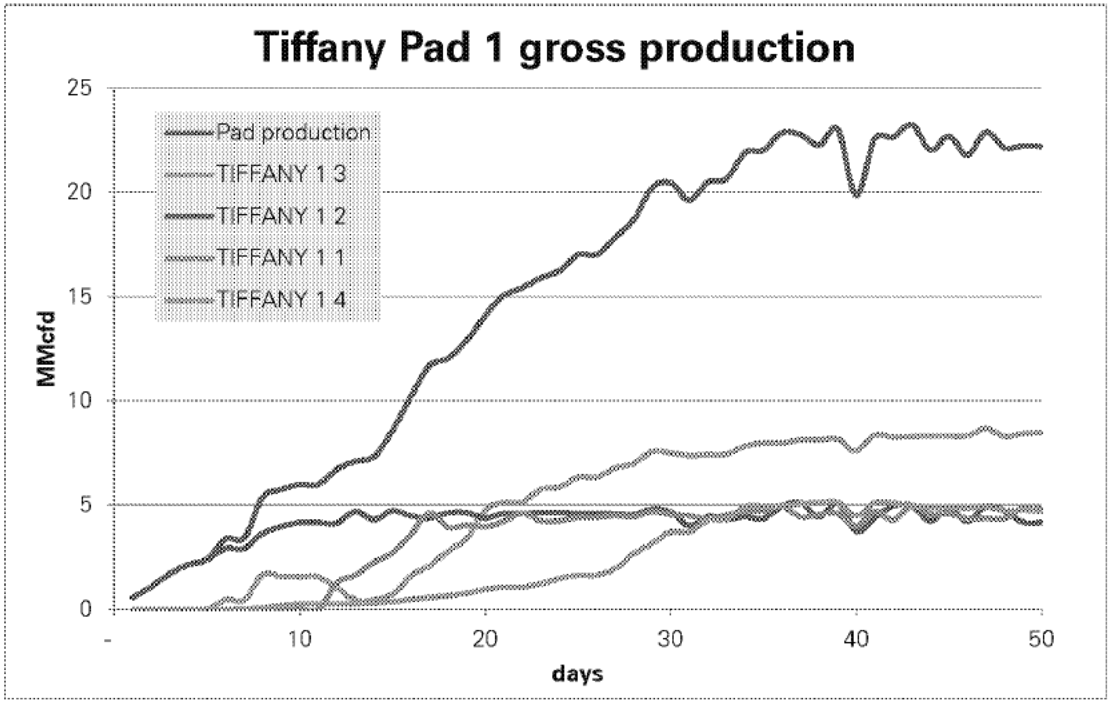
Haynesville sub-play breakeven and rate of return map



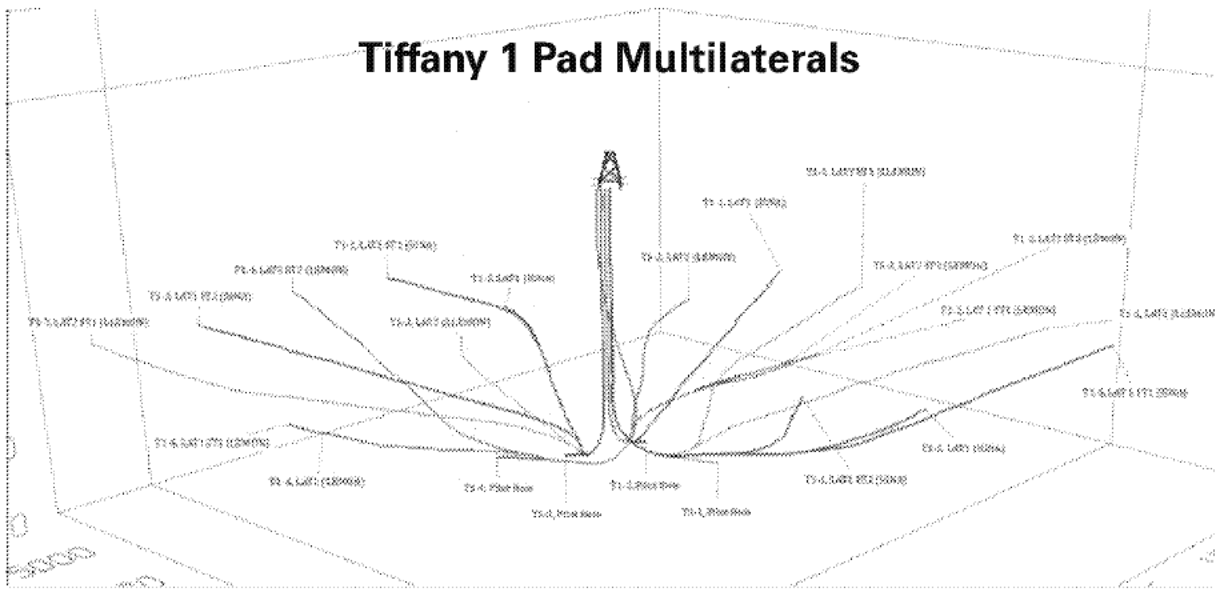
Source: Wood Mackenzie North America Well Analysis Tool, Esri Basemap

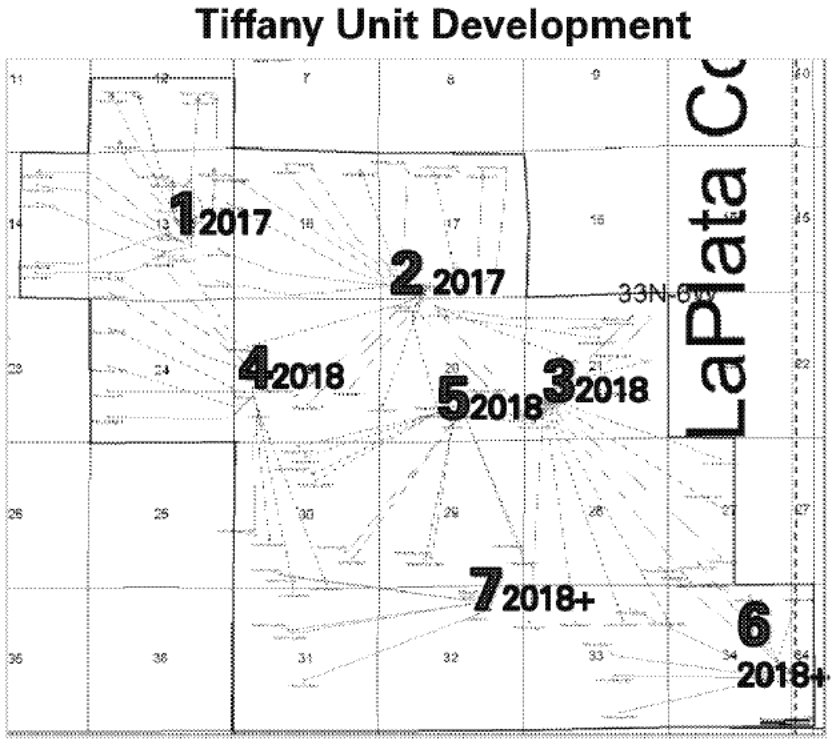
West – CBM - Tiffany 1 Multilateral Pad

Multilateral pad producing >22 mmcfd with an 85% IRR



- 4 wells, 13 laterals, 55,346' lateral
- Producing >50% above forecast for pad
- Production 70% above AFE type curve
- Reached 20 mmcfd within 20 days of all 4 wells online (31 days from first well)
- Best multilateral in basin with other 3 in top 9
- Well cost $10.7m delivering $12m NPV6

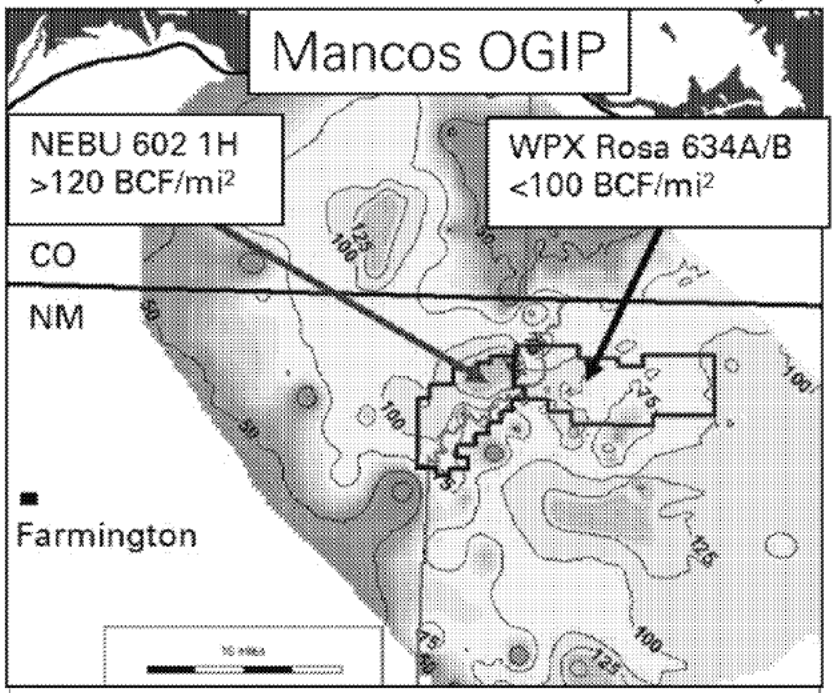


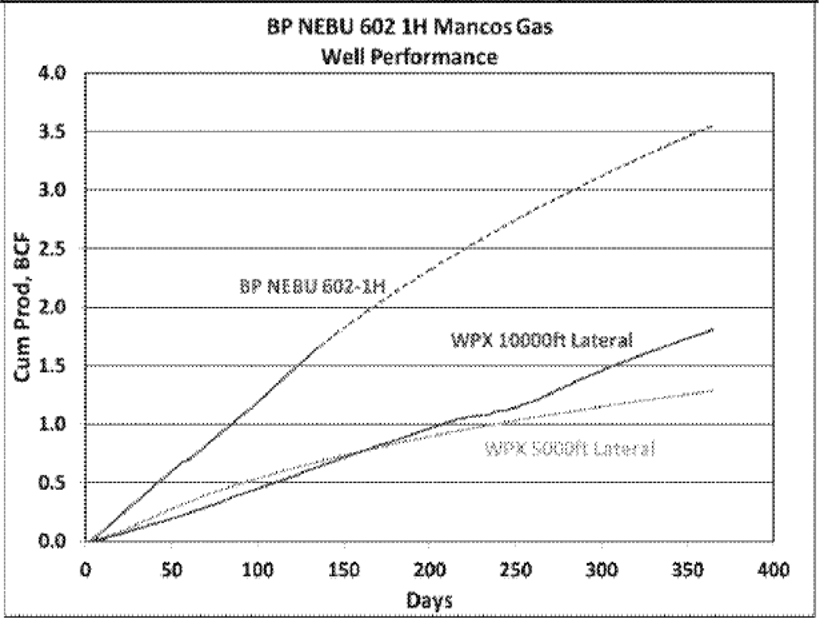


West - Mancos Discovery

Significant development potential

- High-graded geologic parameters identified prior to NEBU acquisition
- Innovative well design to achieve 84% completion efficiency
- Highest IP30 Max Mancos Gas well in San Juan Basin at 12.9 MMcfd
- Produced 1.5 Bcf in 125 days
  - >160% of IP30 Max of WPX 10,000' well
  - 365 day Cum LE is twice WPX 10,000' well
- NEBU > 5 TCF OGIP
  - >130 gross locations (10,000' laterals)
  - Entire Mancos Gas fairway >600 gross locations (10,000' laterals) on BP WI acreage
- Economic potential of $0.4Bn NPV* in NEBU
  - Effectively paid $22m for non-PDP in acquisition
- Current funding puts value realization at risk

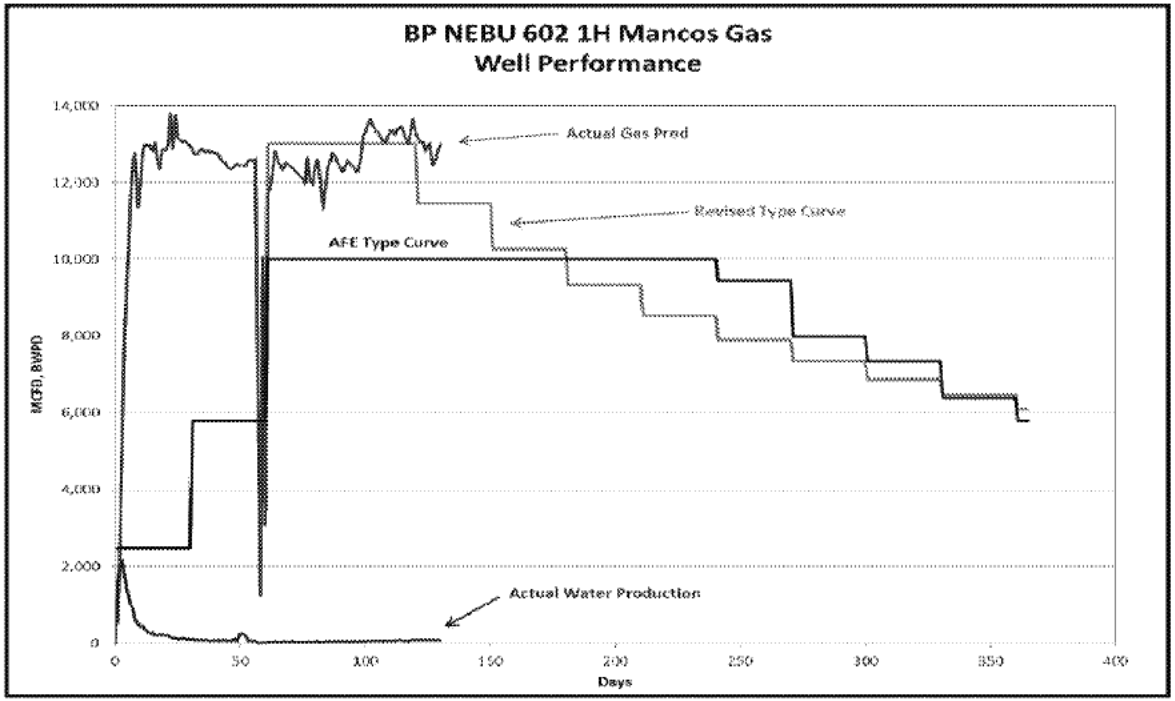


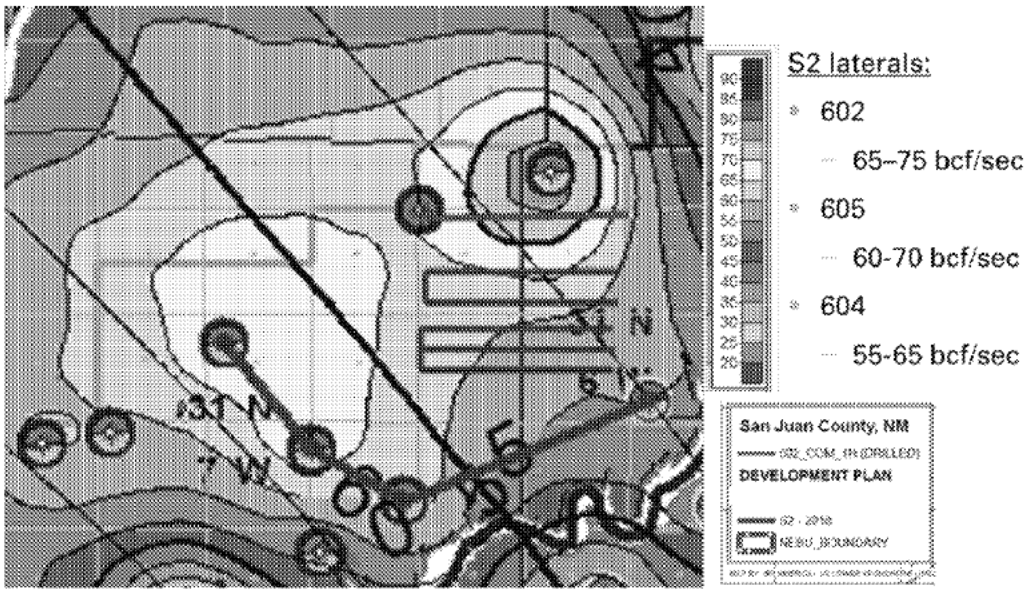


*Assuming $3m NPV gross on 130 wells (10,000') not factoring in time value of drilling pace

West – Building on Mancos Success

NEBU 602-1H production holding strong at 13 MMcfd with >1.5 Bcf cum to date





Think of the OGIP values relative to 602-1H well performance.

- 5 10k laterals planned for 2018
- Expect to reach 2 Bcf cum in less than a month from now
- NMOCD approved request to defer tubing installation deadline another 60 days to Dec 17
- Continuing to open choke to maintain and increase rate
- Monitoring erosional velocities in surface equipment
- BHP pressure decline has maintained at less than 25 psi/day
- Well established trend at 13 mmcfd indicating we are not damaging the well at that rate.

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South - Production Shortfall

Lewis Energy performance issues create -3 mboed 2017, -4 mboed 2018

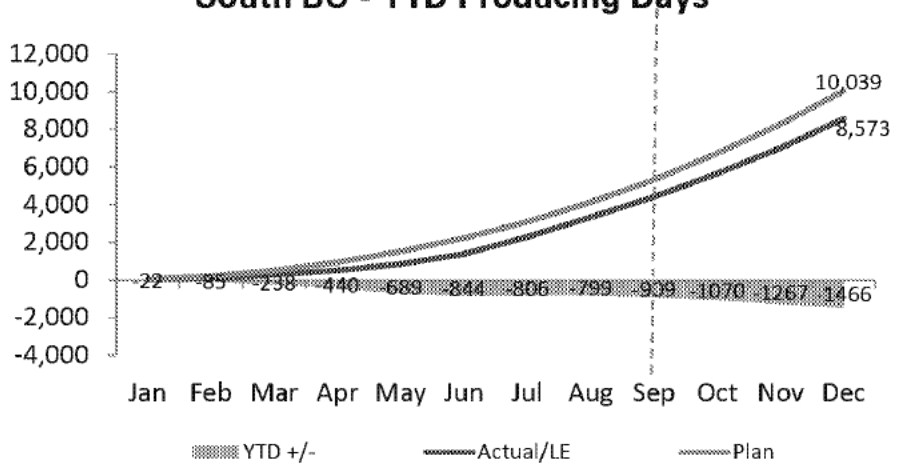
Significant under-delivery by Lewis impacting L48

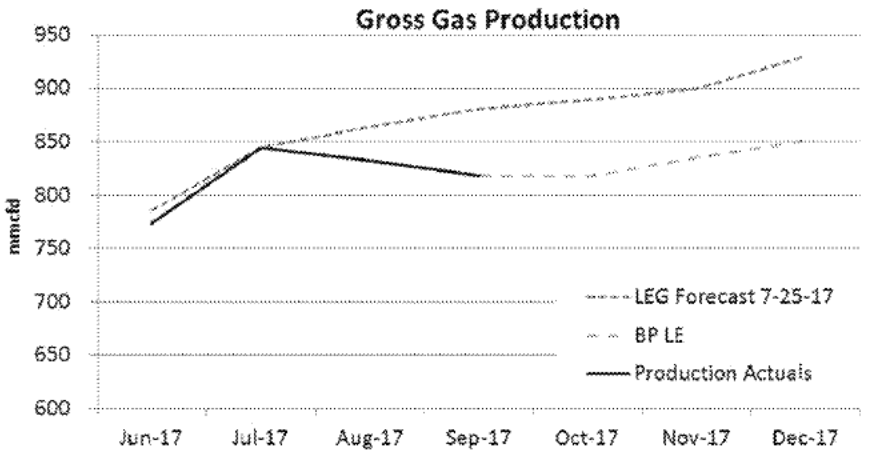
- 4Q production 5 mboed net below Plan
- Current rates ~80 mmcfd (5 mboed net) below forecast provided by LEG in July
- Wells broadly in line with type curve – not a reservoir issue

	LE	Plan	Var	% Var
Base Prod (mboed)	43.0	44.4	-1.5	-3%
Wedge Prod (mboed)	10.9	12.5	-1.5	-12%
Comm'l Prod (mboed)	0.3	0.0	0.3	
TOTAL (mboed)	**54.1**	**56.9**	**-2.7**	**-5%**

Lewis performance key problem areas:

- Poor Lewis frac fleet performance
  - 1,500 production-day shortfall including 250 loss in last two months
  - 23 wells over 1 year spud to first production, Average time 313 days,
  - Over 50% of completion pads have significant operational issues/delays
- Lack of focus on base production
  - Average 300+ days to workover wells
  - 1 PE for 1500 wells
- Overly aggressive choke management
  - Loss of 1-3 bcf per well
  - ~1 mboed impact to 2018 from steep declines
- Significant risk to delivery in 2018





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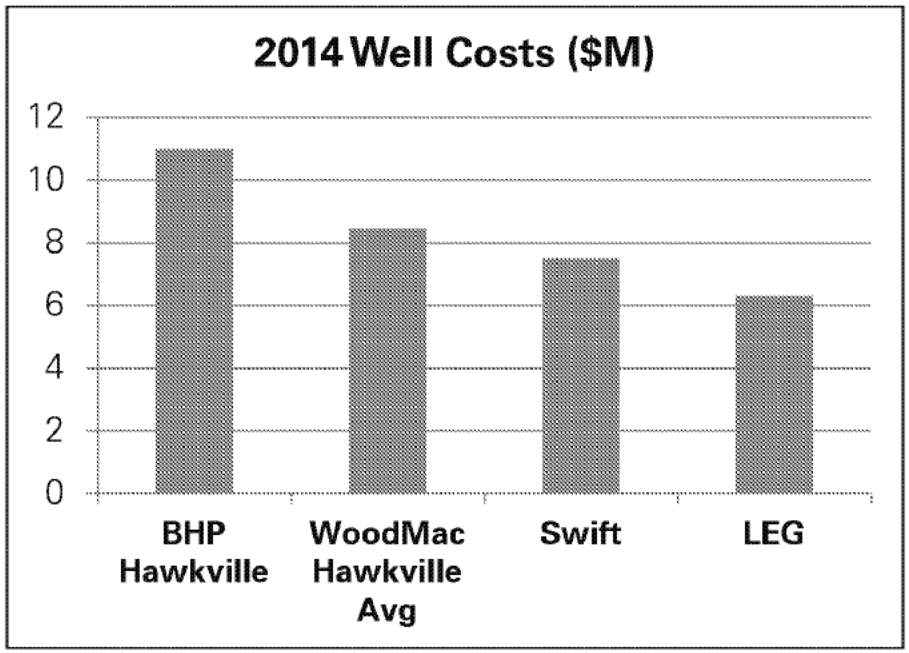
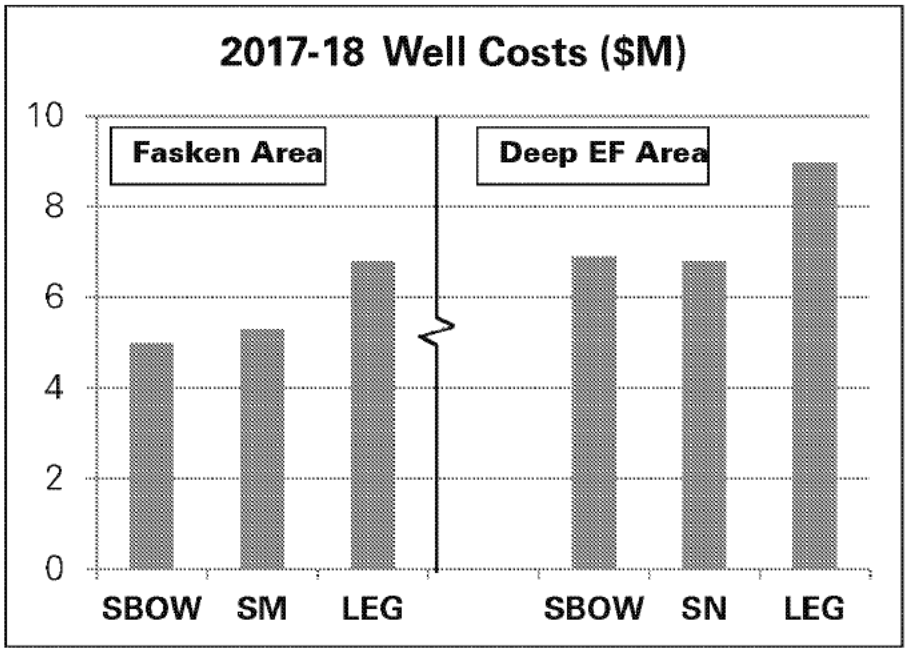
South - Well Cost Trends

Lewis moved from low cost to high cost operator since 2014





Note: Silverbow & SM have different completion design than BP/LEG

- 2014 & Prior: LEG offered below market well costs
- Today: LEG well costs significantly higher than offset competitors
- Potential to reduce yearly gross capex by ~$40M by matching competitors

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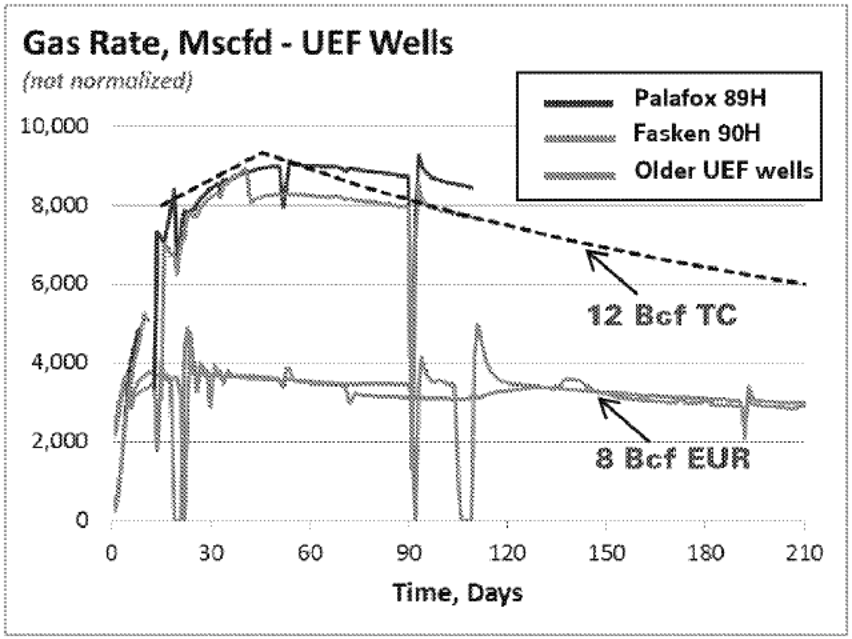
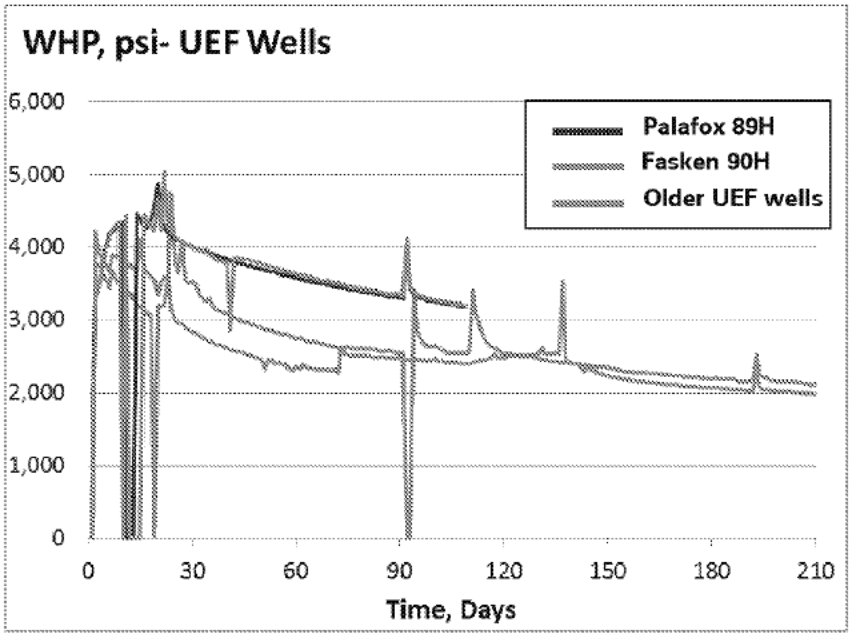
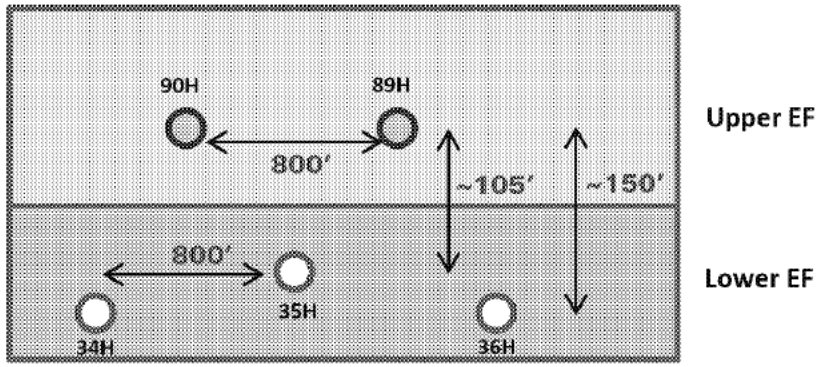
South - Successful Upper Eagle Ford Program

12+ bcf wells prove up new horizon with >$500m PV potential







- First Upper EF wells with longer laterals & enhanced frac design
- 140% higher rate & 25% higher pressure than the previous Upper EF wells
- No apparent degradation in early performance of Lower EF offsets
- ~400 potential locations booked with NPV of $1.2m each
- Significant room for improvement over current Lewis well costs further enhancing NPV

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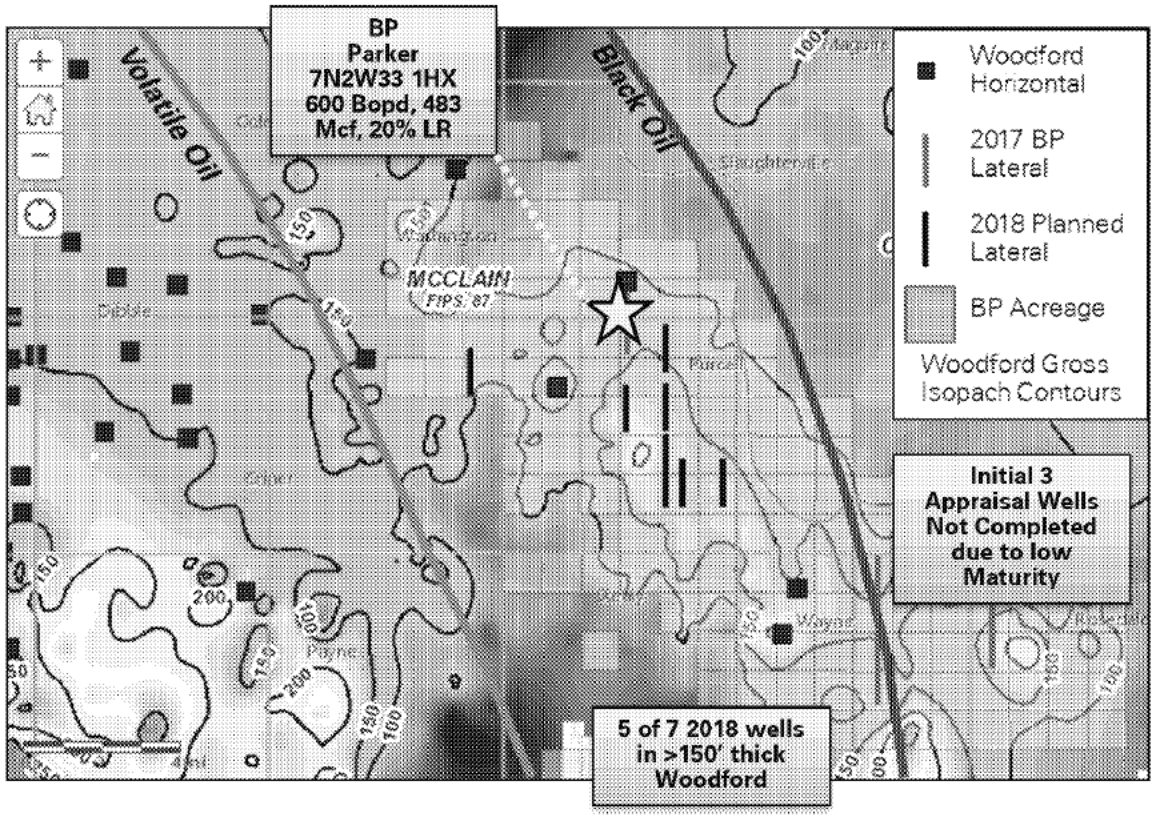
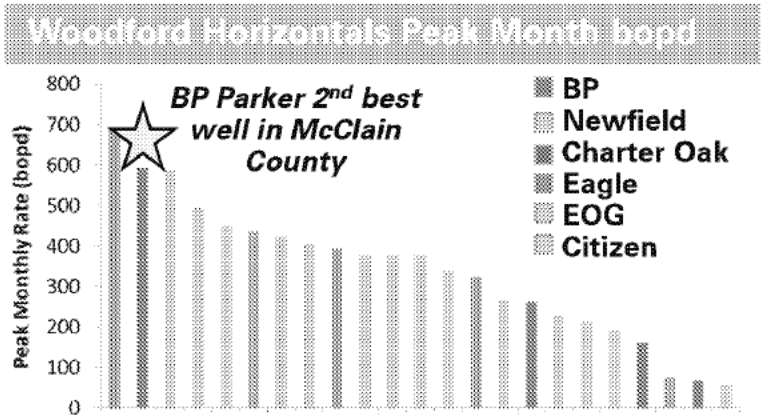
MidCon - SWOOP Parker Production Update

Premier Woodford oil rates – BP drills 2nd biggest well in McClain County

Parker 7N2W33 1HX ☆

- Peak Rate
  750 boe/d (80% oil)
  600bopd for 40+ days
- 60 day cumulative
  29 Mbo, 21 MMscf
- **$760k cash flow in first two months**[1]
- 0.5+ MMboe EUR per well 3rd party engineers, upgraded to 5 laterals per section
- ~350 gross drilling locations for a total gross resource of 150+ MMboe





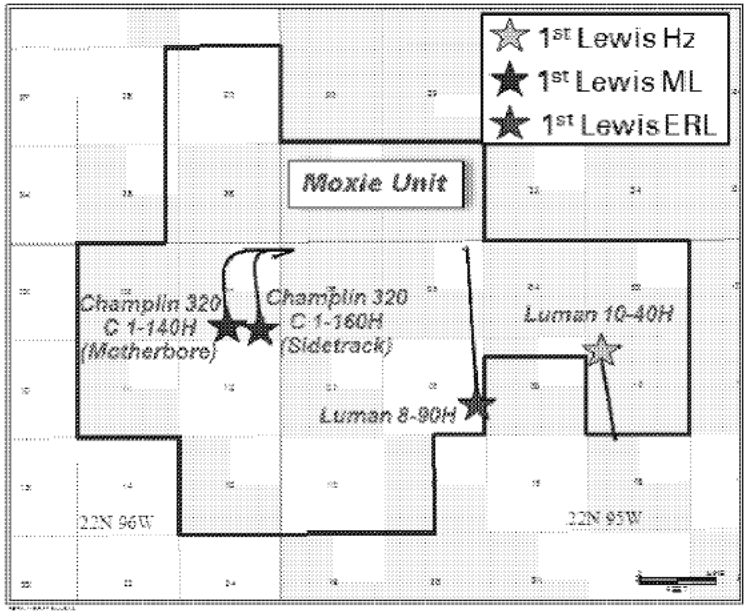
2018 SWOOP Plan

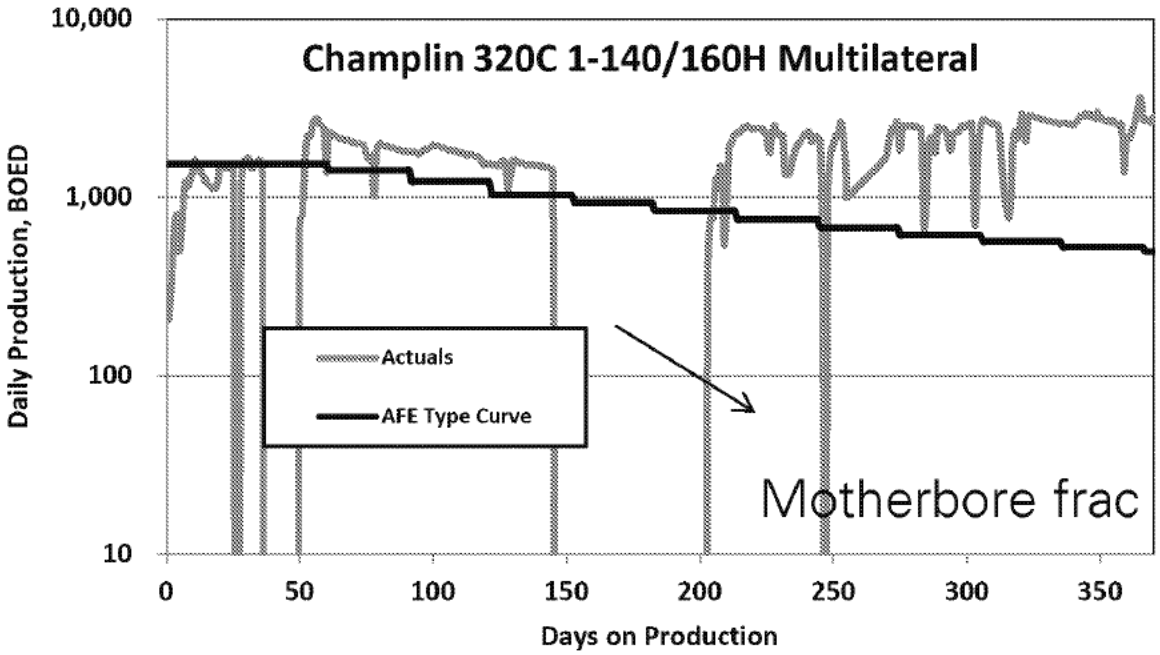
- 7 wells in thickest Woodford, best fluid quality
- 30 additional core sections with term acreage to develop
- Generation II well designs will allow for enhanced/accelerated peak rate
- Proppant Loading trials will optimize cost/benefit curve
- **Target IRR for 2018 at 26%** with higher initial rates

1. Net Operating cash flow estimate
2. Per YE2017 Third party engineer review

North - First Multilateral Exceeding Expectations

- Producing 12mmcfd, 450bcpd at 1,000 psi WHP (10/23)
- Cumulative gross well revenue to date is $6.1m from production of 1.2bcf of gas & 100mbbls of oil
- 52 total frac stages placing 19.6 million lbs. of sand; 7,023 ft. of completed lateral (135 ft./stage average); 2,787 lbs./ft. of proppant
- LE IRR of 24% and NPV of $9.7m at $3HH / $55WTI
- LE EUR at AFE cost of $16.5m IRR is 40%.
- Microseismic acquired to inform understanding of preferred frac azimuth
- Cost effective pressure isolation key to reduce cycle time between laterals – until then, will drill extended reach laterals.





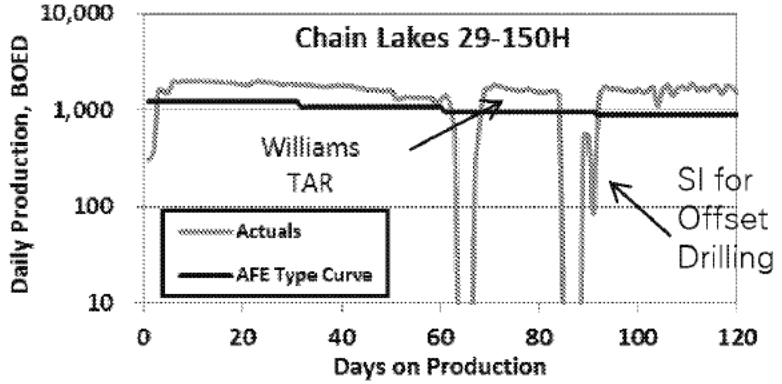
Economics		
	AFE	LE (Oct 10th)
Facilities	$1.5	$1.4
FEL/Drilling	$3.7	$5.9
Completions	$11.4	$13.9
Total	**$16.6**	**$21.2**
IRR	52%	24%
NPV	$7.3	9.7

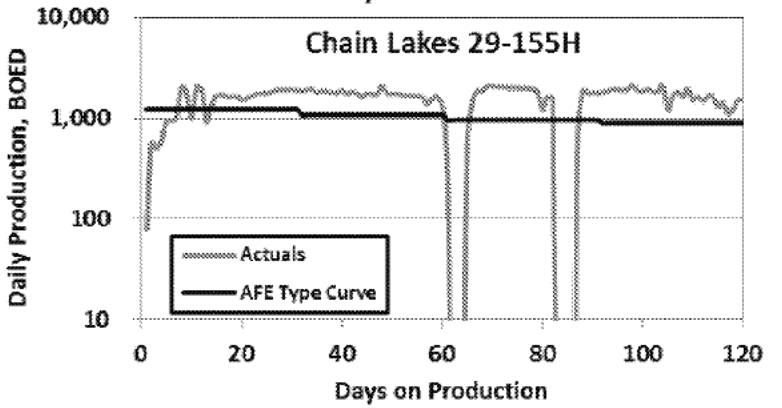
North - Fox Hills a New Oil-Rich Play in Wamsutter

Sustained production in first horizontal wells near Continental acreage

Overview/Key Learnings

- Combined rate: ~13mmcfd and 1,150 bcpd with flowing pressure of ~1,400 psi
  - Directly offsets Continental acquisition acreage
  - Running room of 100+ wells
- Chain Lakes 29 pad (offset vertical pad) observed frac hit during toe stages
  - Ops observed pressure increase and influx of water
  - Wells have recovered and seeing 1 MMCFD of incremental gas
  - Will monitor as horizontal wells are brought online
- Rig Release to first sales cycle time of 31 days
  - Fastest time of any horizontal drilled to date in NBU
- Upcoming two Chain Lakes 29-160H/165H wells will be frac'd with 100% sand at end of October





Stimulation Stats

	Compl. Lat Length	Stage Length	Prop Loading (lb./ft.)	Fluid Load (BW/ft.
CL 29-150H	3,141'	150'	3,982	44
CL 29-155H	3,065'	146'	4,141	39
Champ 320C Sidetrack	3,195'	128'	3,212	41

Note: Utilized 75% sand / 25% ISP at 600K lbs. per stage

Cost Snapshot

	CL 29-155H		CL 29-150H	
	AFE	LE 10/10	AFE	LE 10/10
Facil.	$0.48	$0.59	$0.48	$0.64
FEL/Drlg.	$2.61	$2.92	$2.74	$3.08
Compl.	$5.06	$4.27	$5.06	$4.25
Total	**$8.15**	**$7.78**	**$8.29**	**$7.97**
IRR	26%	54%	24%	22%
NPV6	$1.7	$4.5	$1.6	$1.4

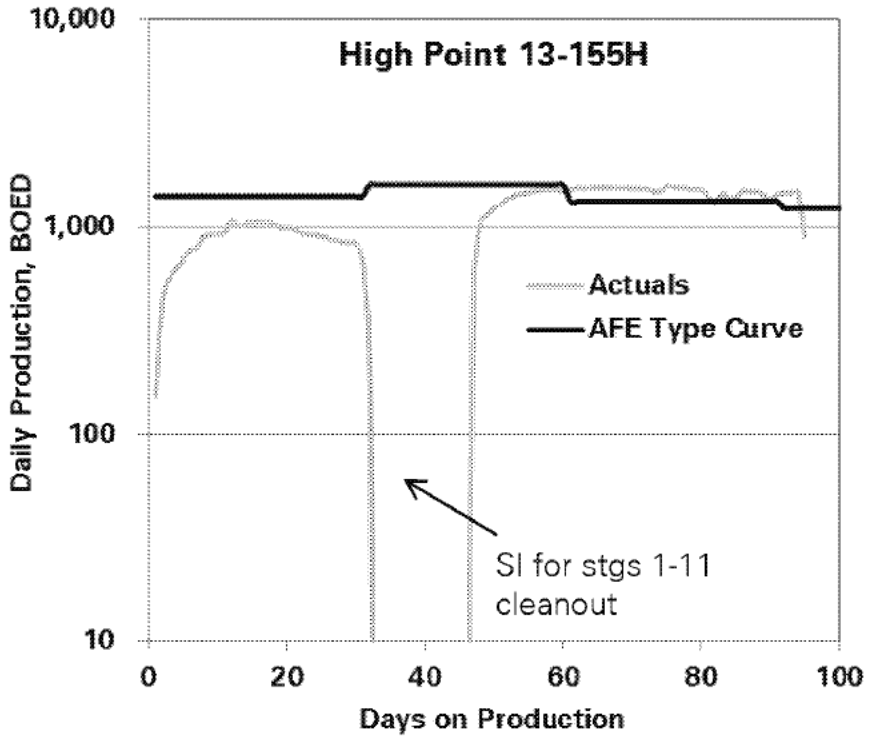
North - High Point 100%+ IRR and $6.2m NPV6

Overview

- Strong initial production but noticed fast decline in well rates.
- Tracer results indicated contribution from only half of the total lateral. Intervention made with CT drillout of sleeves
- As of 10/23, producing: 5.4 mmcfd, 471 bcpd; now in line with HP 23-155H 100% ISP well.
- 23-stage OH completion sleeve system (no drillout post frac)
- 100% sand used, more stages, and lower cost than offset HP 23-155H (34% IRR in 2017 with 100% ISP)

Cost Details

- Drilling: +$210K over AFE due to unbudgeted demob charges of Nabors 101 (capital reduction decision)
- Completions: +$480K over AFE due to unbudgeted coiled-tubing drillout of sleeves
  - Drillout of sleeves took 6 total days with 3 days of working stuck coiled-tubing
  - Able to work coiled tubing free and avoid fishing operation, 4 sleeves at toe left undrilled
- Facilities: $160K under AFE due to pad savings with HP 13-150H



Stimulation Stats

	Compl. Lat Length	Stage Length	Prop Loading (lb /ft)	Fluid Load (BW/ft	D&C Cost
HP 13-155H	4,286'	185'	3,192	30	**$6.16MM**
HP 23-155H	4,028'	235'	1,688	22	$6.67MM

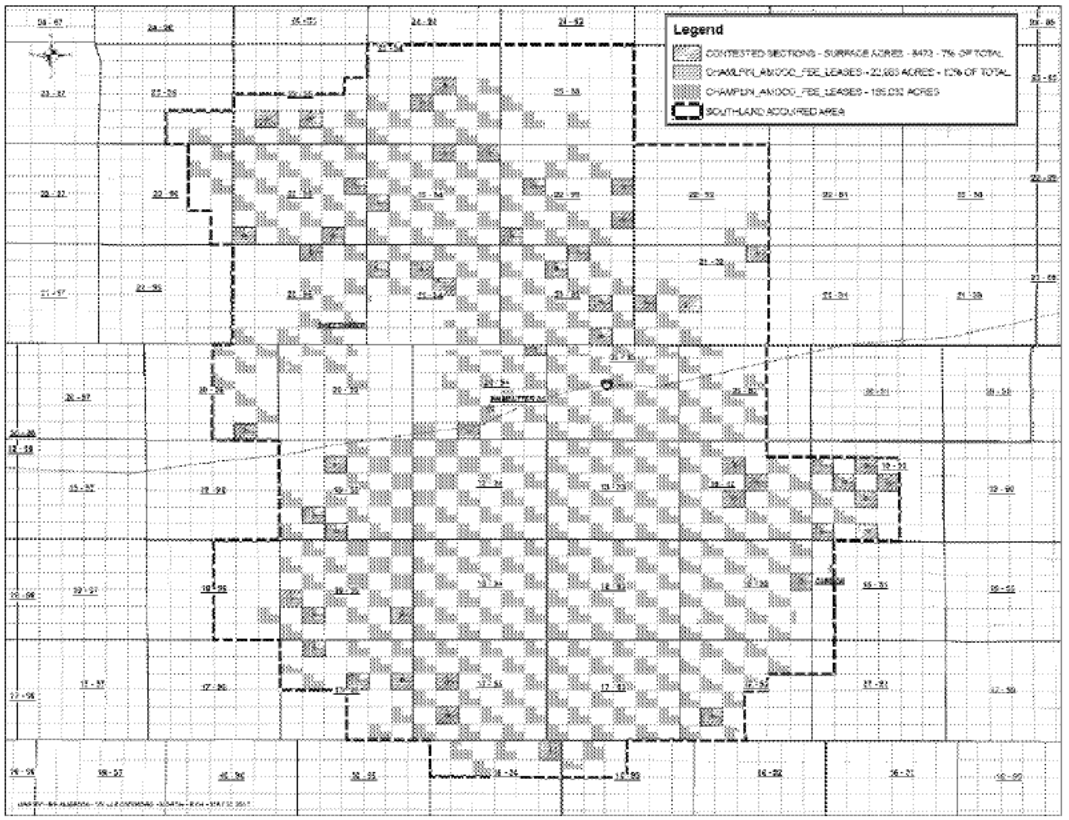
Cost Snapshot

	High Point 13-155H	
	AFE	LE 10/10
Facilities	$0.78	$0.39
FEL/Drlg.	$1.6	$2.04
Compl.	$3.25	$3.73
Total	**$5.63**	**$6.16**
IRR	>100%	>100%
NPV6	$4.4	$6.2

North - Southland Royalty Company

Title dispute over long-held BP Wamsutter acreage

- Southland Royalty Company ("SRC") acquired Anadarko's position in Wamsutter effective January 1, 2016
- BP has leases on ~185,000 acres of SRC's fee minerals, subject to long-term contractual development and release obligations
- **BP has satisfied all of its release and development obligations through 2016,** without dispute in the decades of previous dealings with Anadarko establishing a long-standing course of dealing
- **In early 2017 SRC began demanding release of ~12% of the leased acreage**, deviating from the parties' historical course of dealing
- SRC also started filing formal protests to BP's permit applications and contesting BLM onsites
- BP demanded SRC withdraw the release demands and protests. SRC refused, clouding BP's title and handicapping future rig lines



- **BP filed suit against SRC in Wyoming District Court on June 6, 2017**, seeking a declaration confirming BP's title under the development agreements and seeking monetary damages in an amount to be determined at trial (12-18 mos)

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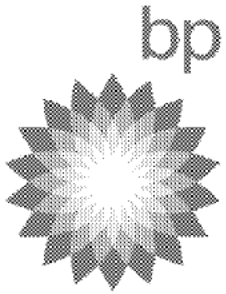

Operations

Operations Overview

New intelligent operations model fundamentally changing the company

- Company Operated Production costs **down $100m** since 2014; clear line of site to **additional 10% Y-O-Y savings ($17m)** in 2018
- BP/Silicon Valley start up co developed pad optimization model delivered **70%+ reduction in methane emissions associated with well venting events**, 22% cost reduction, and increased production by 20%; Planning full field deployment for Q4 in North BU
- Established new VP of Data Analytics position in Q3; Successful hire in September of Max Zhu – VP Data Analytics; PhD in Economics & substantial Data Science leadership experience; focus on expanding Intelligent Operations and developing Data Science expertise across all areas of L48
- Promise delivered - L48 Inventory **under $5m**; enabling simplification of supply management and warehouse requirements

Key Ongoing Initiatives – expanding L48 intelligent operation platform

- Raspberry Pi RTU project continues successful pilot and development; currently scaling and on track to deploy across 1,300 wells in Q1'18; provides **92% automation cost reduction** and enables automation of all wells
- Piloting drone technology on a variety of applications with early estimates of **$5m in cost savings**; potential to enable full Leak Detection and Repair program across L48 in support of carbon road map **years ahead of schedule**
- Successful completion of augmented reality pilot (advanced software and smart glasses) in Q3; allows further reduction of company and contract technical experts, **improves efficiency by up to 50%** (eliminates drive times), and enhances safety
- Successful completion of Work Optimization/Management System – L48 developed ARROW Logistics system continuing to show production improvement and **line of site to 50% FTE reduction**; deploying L48 wide in Q4

Challenges

- Redefining what value means within the operation; historically based on accomplishing a quantity of tasks rather than ensuring we safely capture the most value each day

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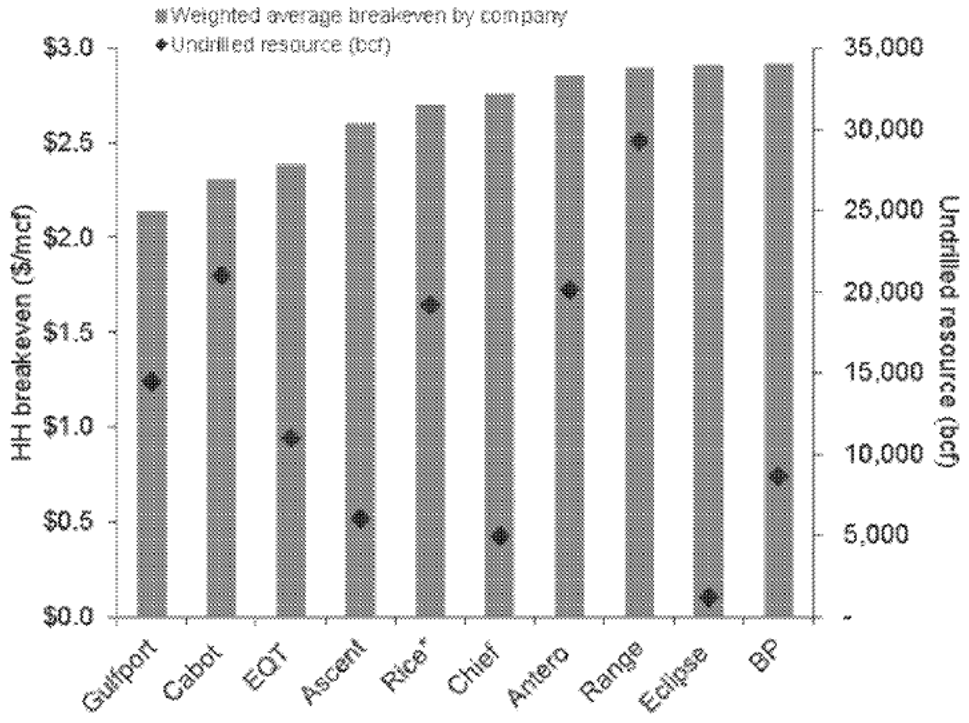
BP in Top 10 Lowest Cost Producers

Company benchmarking: gas

Lowest average breakeven – Top 10

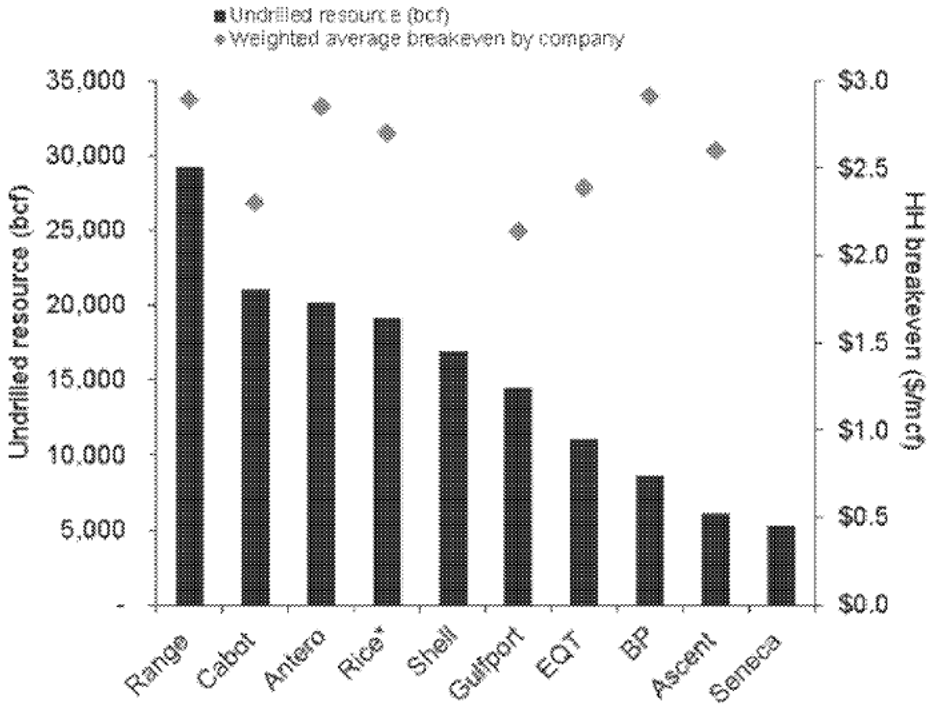
BP has come a long way to make our top 10 this update. The company has grown Lower 48 organically and can now compete with low cost stalwarts in the Northeast.



Source: Wood Mackenzie

Low cost resource – Top 10

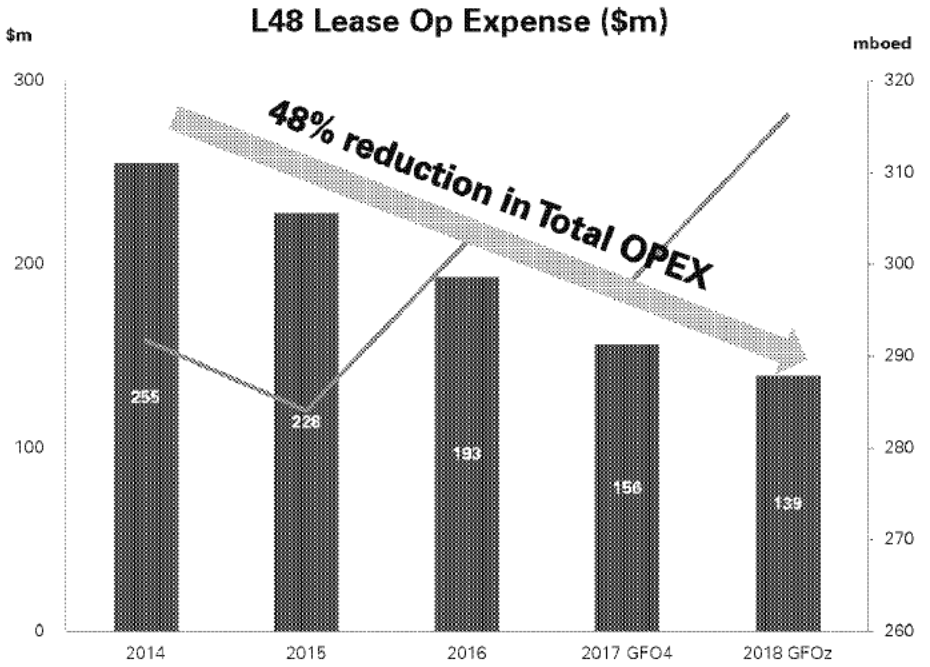
Consolidation in the Northeast – see EQT's pending acquisition of Rice – will further differentiate gas portfolios. Merging adjacent leaseholds improves logistics and allows for longer laterals, improving cost structures.

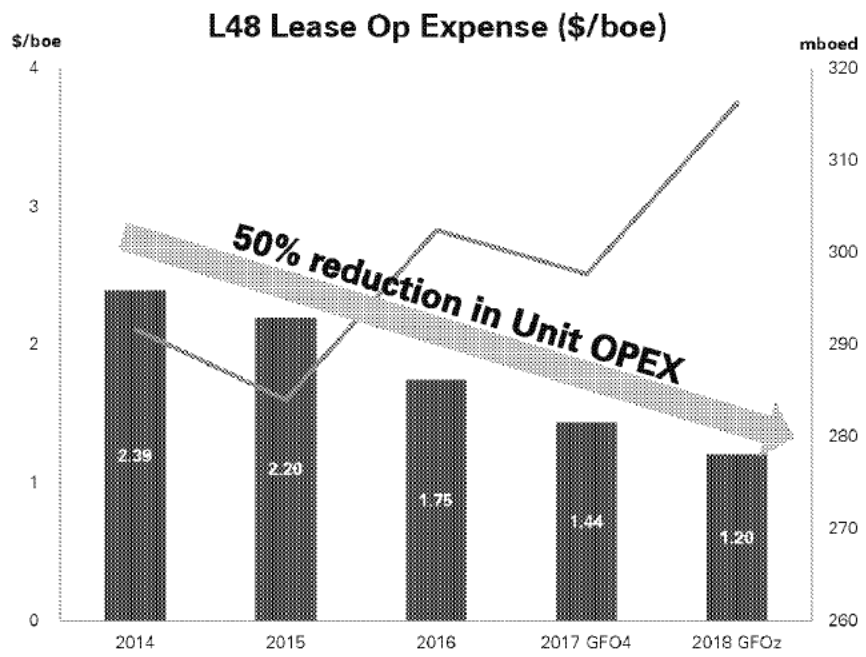


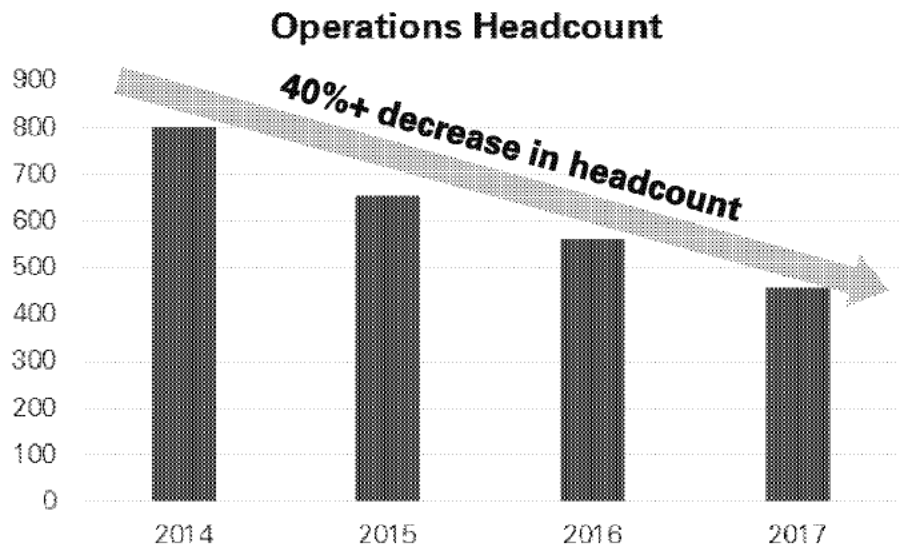
Source: Wood Mackenzie

L48 Co-Op Lease Operating Expenses

Co-Op production costs down almost $100m by YE2017 vs 2014; headcount down 50%







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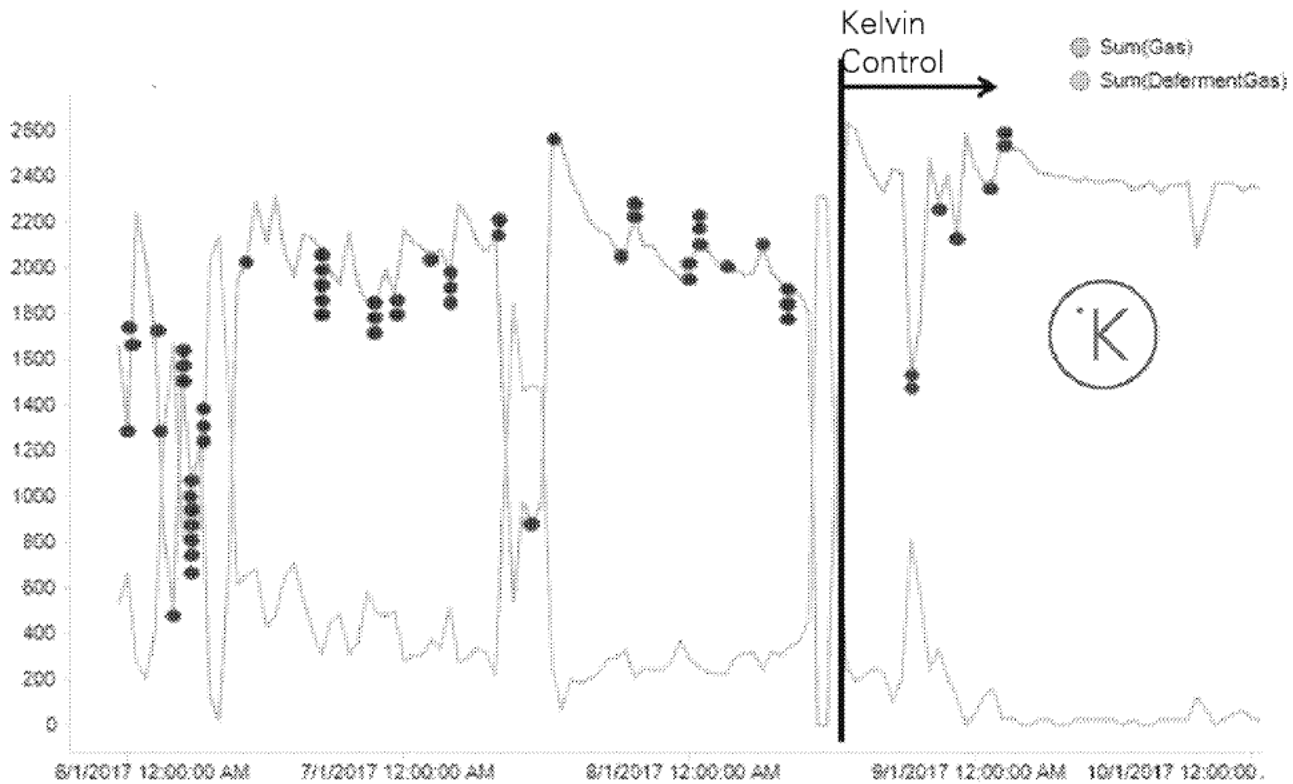
L48 Intelligent Operations in Action

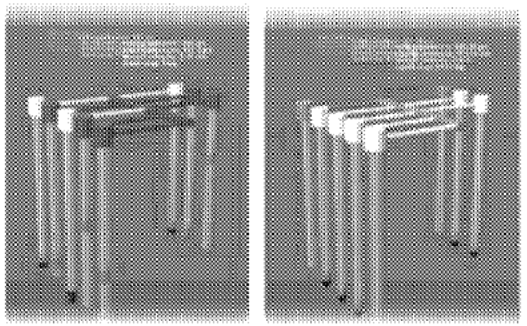
Data, technology, and analytics improving multiple metrics

- Co-developed pad optimization/control mathematical model with Silicon valley start up
- First time application in Oil and Gas industry; Currently deployed on 180 wells and 5 pads
- Full deployment by 11/30 will control 173 Pads accounting for 950 wells and 125MMD



IMPACT

- Reduced emissions by **74%** (eliminates most well venting)
- Increased production by **20%**
- Reduced manual interventions (well venting) by **66%**
- Reduced cost by **22%** by eliminating site visits



L48 Intelligent Operations in Action

Continuing to create and find industry changing technology

FieldBit &ODG – Virtual Assist, Augmented Reality, Smart Glasses

- **L48 Impact**: First onshore oil and gas company to deploy; **Empowers** technicians to solve complex problems; reduces need for FTE technical experts
- **Next Steps**: FieldBit - 200 Licenses / Smart Glasses - 100 Units Deployed across L48 by Dec 1

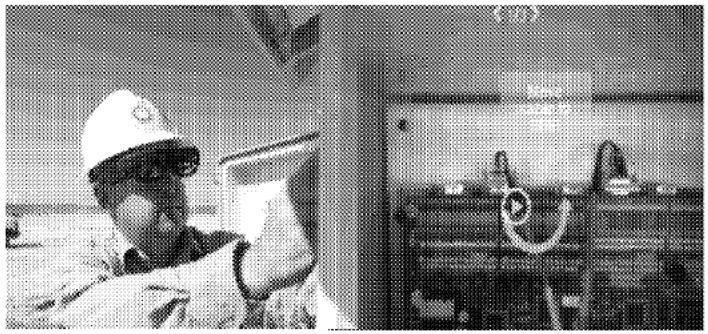
ARROW – BP Progressive Logistics Model & Work Management

- **L48 Impact**: Work Management System powered by priority **algorithms** automates task of efficiently deploying resources and **eliminates wasted effort**
- **Next Steps**: Full L48 deployment by Dec 1.

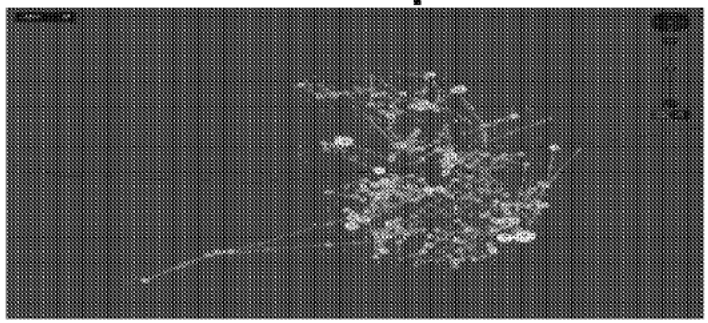
Raspberry Pi – BP *Industry Disrupting* Alternative to Traditional RTU

- **L48 Impact**: Open platform for RTU's that commoditizes end devices with a **92% Savings** per system; **allows path to automate all wells**
- **Next Steps**: Coding for plug and play functionality complete by end of Q4**;** Controlled integration and scale across West BU (1,300 wells) and EnerVest Acquisition in Anadarko starting Q1.

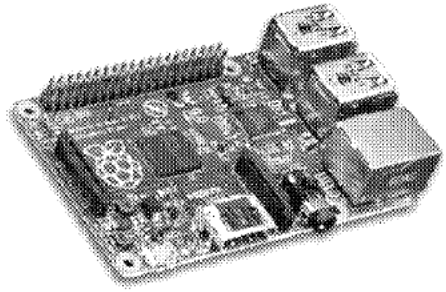
FieldBit & ODG



ARROW Route Optimization



Raspberry Pi Unit

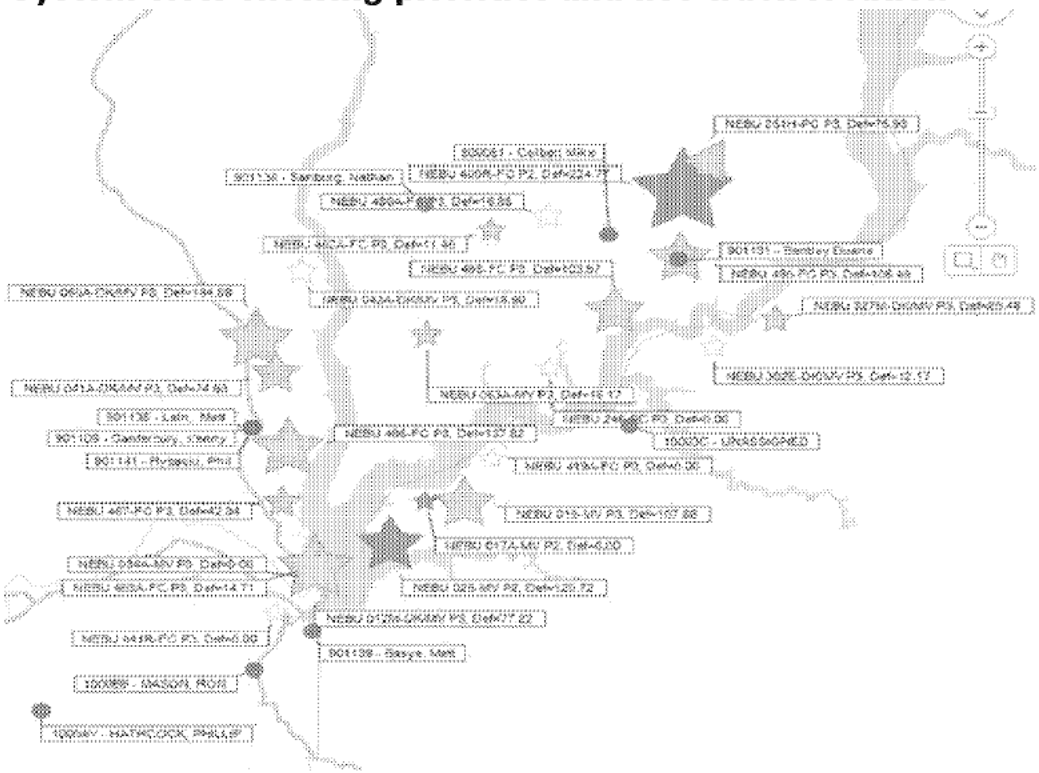


Work Management System (WMS)

WMS | Background | Key Points

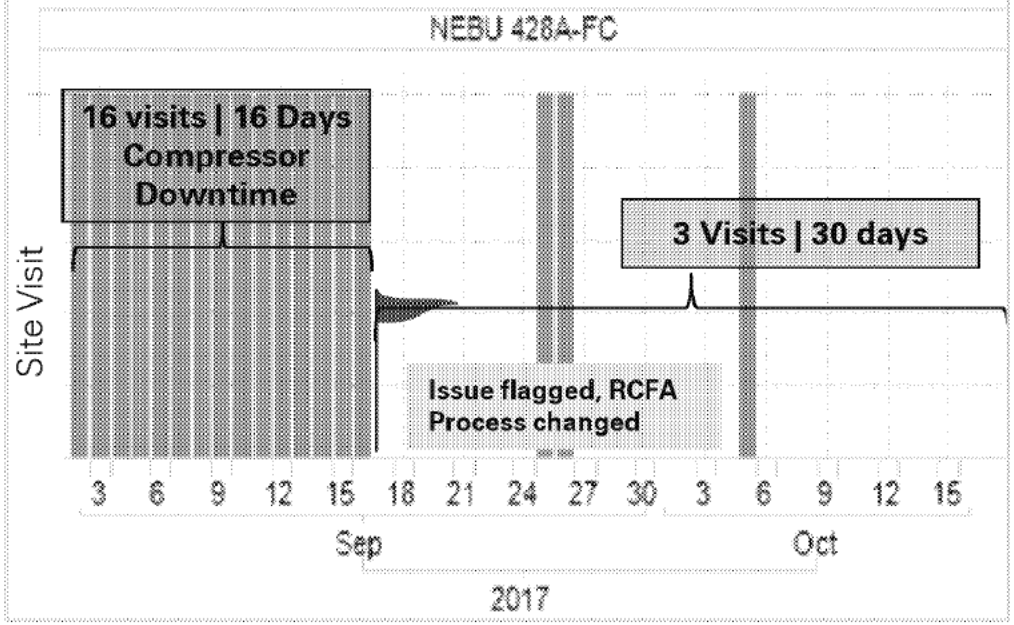
- **50%** of techs daily time spent driving in US onshore operations
- **Optimized daily work reduces travel time without production deferral increase**
- Automatically generated priorities now drive all well visits with asset objectives aligned across Vendors/Techs/Engineers/Mgmt
- Every action requires a cause and comment in WMS
- Entries drive conversation - data determines actions
- Visibility into activity provides accountability/flags negative trends

System view showing priorities and live truck location



Example – field tech visitation frequency

- Had been visiting every day
- Exception flag raised resulting in process change
- Defect corrected through RCFA

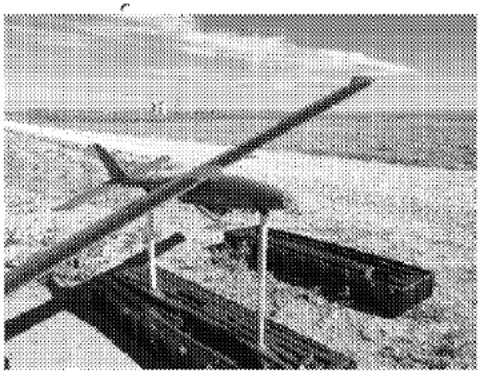


Bottom Line Results

- Differential HSSE discussions drive continuous improvement based on WMS inputs
- **Better task management leads to reduced visits while achieving lower deferral and higher overall production**
  - Base production incline YTD '17 on wells drilled circa 1980
- Lowest asset level deferral % in L48 since Sept 1
  - Deferral reduced from +10% to 6%
- Primary driver to forecast ~$1/mcf cash costs in 2018

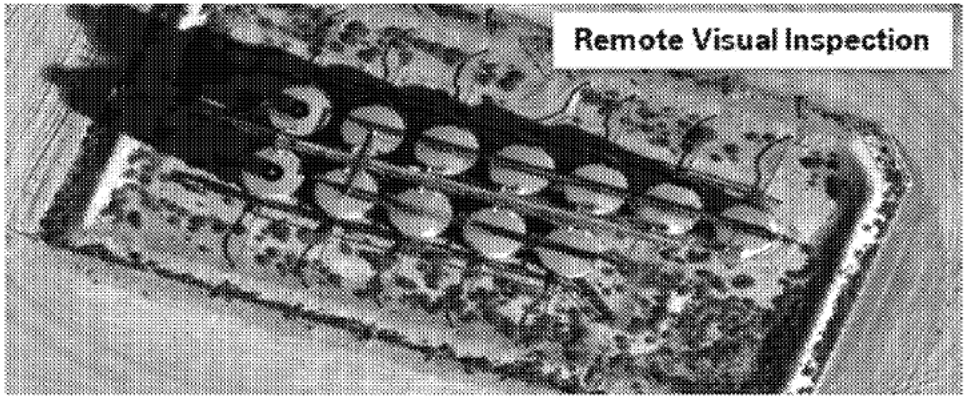
Silent Falcon UAS Concept Flight (Drones)

~$5M annual savings while reducing risk and improving environmental

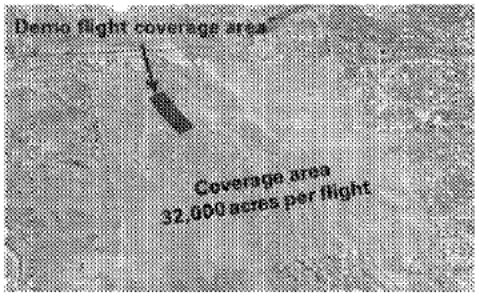


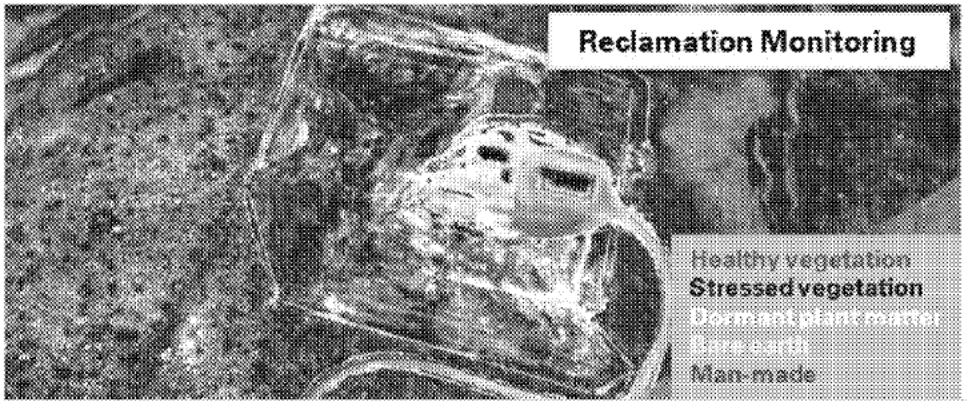
Silent Falcon during preflight assembly with OGI camera payload

Mobile ground operating equipment



Silent Falcon launch with Overwatch imaging precision survey payload

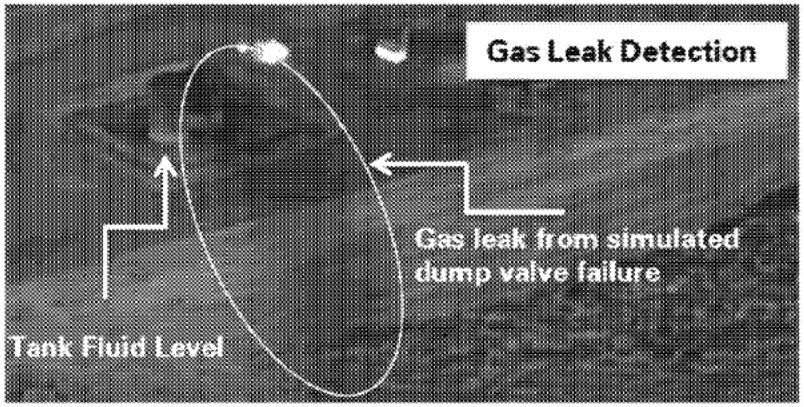




Applications	Benefits
Remote visual inspection	Reduces operator time, saving $2M (20FTE) & reduces travel related risks
Reclamation monitoring	Reduces personnel monitoring, saving $2M
Gas Leak Detection: reduces costs and enables full field LDAR multiple times/yr	$600K (6FTE reduction) + increased leak detection (enables L48 wide program)
1st responder during emergencies	Reduces human exposure in emergency events
Surveying/encroachment identification	

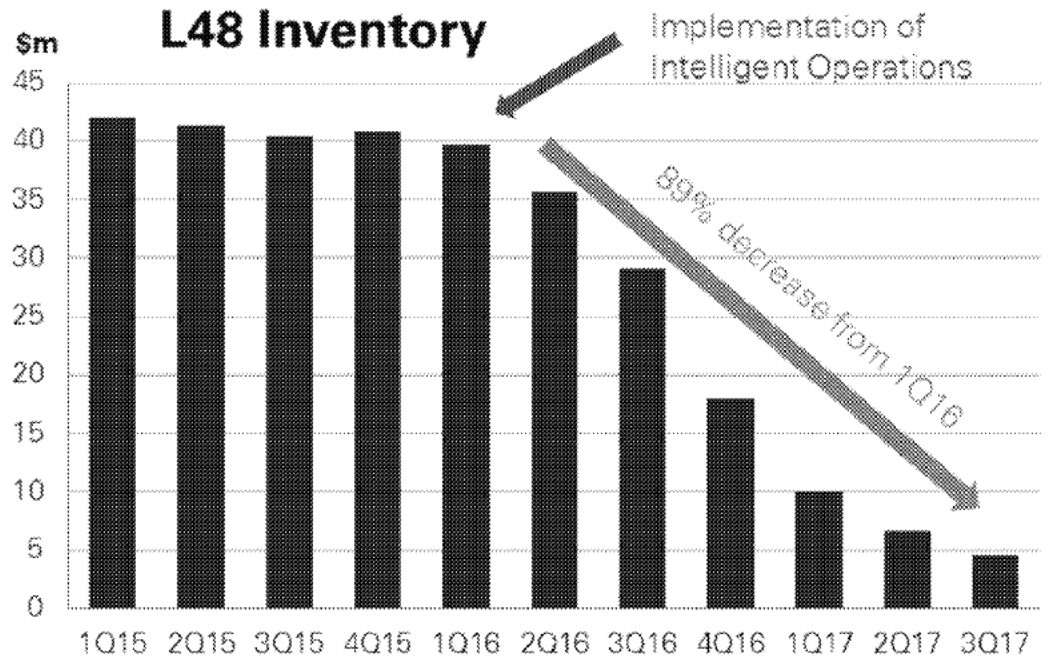
Timeline to Implementation

Initial flight (*complete*)	Sep 2017
L48 drone info share	Oct 2017
Vendor develop gas imaging software	Dec 2017
FAA waiver to fly at 2,500'	Jan 2018
Initial scale flight	Mar 2018



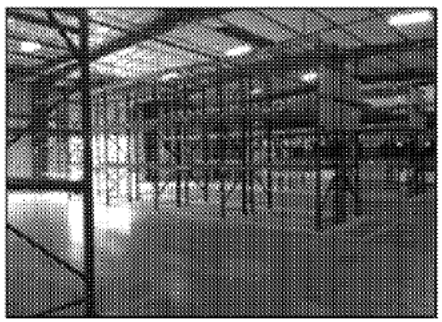
L48 Inventory

Intelligent operations drives L48 inventory to below $5MM



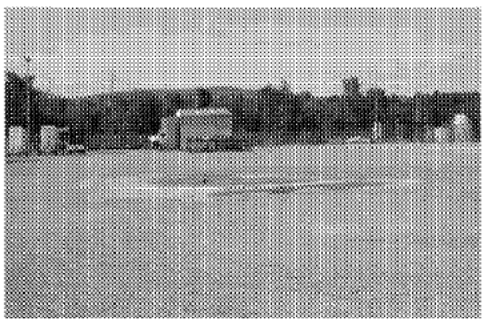
- Standard set of inventory management guidelines across every BU
- Analytics backed visualization tools provide visibility to all levels
- No impact to drilling or production
- 9/30/17 inventory of $5m vs $18m at 12/31/16

East TX BU WH

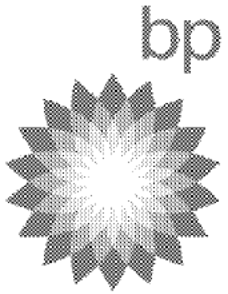


North BU WH

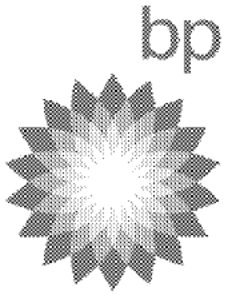
Midcon BU yard



North BU yard



Financials: 3Q Actuals & FY LE, 2018 Plan



Finance Summary

Finance Summary

- Production
  - Q3 304 mboed, 3% or 8 mboed below plan of 312 mboed, primarily linked to Lewis energy and project delays across multiple Business Units: strong sequential improvement in 3Q increasing 8% or 21 mboed from 2Q
  - FY 298 mboed, 2% or 7 mboed below plan of 305 mboed, primarily linked to OBO (Lewis Energy – Eagle Ford JV) wells and project delays across multiple Business Units
  - Lewis Energy production – 4Q currently projected to be 5.4 mboed under plan, with FY ~1500 fewer production days
- Production Cost
  - Q3: $7.0/boe (adjusted for ACB), 6% or $0.4/boe above plan of $6.6/boe, mostly due to lower production. Down 3%, or $0.21/boe sequentially from $7.21/boe in 2Q to lowest ever publicly reported level
  - FY: $6.9/boe (adjusted for ACB), projected to be near plan due to cost reductions from Intelligent Operations model offsetting production under-delivery
- IRR: 20% IRR YTD for wells delivered on track with plan target of 20% ($3/$55) due to solid new well performance, including all appraisal and testing programs
- Pre-Tax Operating Cash Flow
  - 3Q $238m (adjusted for ACB), $32m below plan of $270m due to lower production and working capital impacts
  - FY: On track to meet full year 2017 operating cash flow plan of $900m as cost reductions expected to more than offset impact of projected 2% lower production than plan
- Free Cash Flow (underlying)
  - Q3 : -$1m (underlying), $20m above plan of $-21m, primarily due to lower capex and production
  - FY : Projected to exceed plan of $75m, interventions taken to offset the impact of incremental $40m of capex vs plan for Haynesville/Bossier acreage access agreement
- Natural gas hedging: Received $32m to settle in 3Q, which increased average natural gas price realization by $0.23/mmcfd. 1,345 mmcfd (90%) in 2017 at $3.25/mmbtu, 1,295 mmcfd (80%) in 2018 at $3.04/mmbtu and 398 mmcfd (23%) in 2019 at $2.87/mmbtu
- Finance system upgrade and legal entity separation – targeting July 2018 go live

Lower 48 – 2017 ACB Metrics Through September

Categories	Performance	Weighting	2016 Actual	2017 Goal	Sep 2017 YTD	Sep 2017 Plan YTD
Safety, Compliance & Risk Management	Recordable Incident Frequency (RIF) (#/200k hours)	30%	0.62	0.56	0.70	
	Days Away from Work (DAFW) (BP managed employees only)		1	1	1	
	Tier 1 PSEs		4	4	1	
Value	Production (with $810m capex)	40%	302 mboe/d	305 mboe/d	290 mboe/d	297 mboe/d
	Production Costs ($/boe) (excluding system upgrade charges)		$7.25 / boe	$6.9 / boe	$7.1 / boe	$7.1 / boe
	Free Cash Flow (with $810m capex and @ ACB price of $54 WTI, $21 NGL plus hedge 90% gas production at $3.25HH and 10% at $3.00HH)		$(173)m @ 2016 ACB Prices	$75m	$127m ($2m underlying)	-$48m
	Development Capex Return 2017 Target @ $3HH / $55WTI / $23NGL		11% @ 2016 January Strip	20%	20%	FY 2017 Plan 20%
Business Objectives	Implement proprietary New Well Delivery tool in all operated business units	30%		Complete		
	Implement actions to decrease the frequency of dropped objects			Complete		
	Develop comprehensive implementation plan for SAP/PRA enterprise software system upgrade			Complete		
	Design Denver office and build staff transition plan to enable 2018 office opening			Complete		
	Third-party report for 100% of proved reserves			Complete		

Notes

1. Entity performance assessment is subject to Segment and Group executive judgment
2. Metrics are subject to normalization for price, Lower 48 Onshore re-org costs and other one-offs
   2017 YTD production costs adjusted for re-org, systems upgrade, excess ACB expense
   2017 YTD cash flow adjusted for re-org, excess ACB pmts and to Plan prices
3. Safety: 3 contractor managed DAFW

ACB Milestone - New Well Delivery Tool Update

Real-Time Data Collaboration

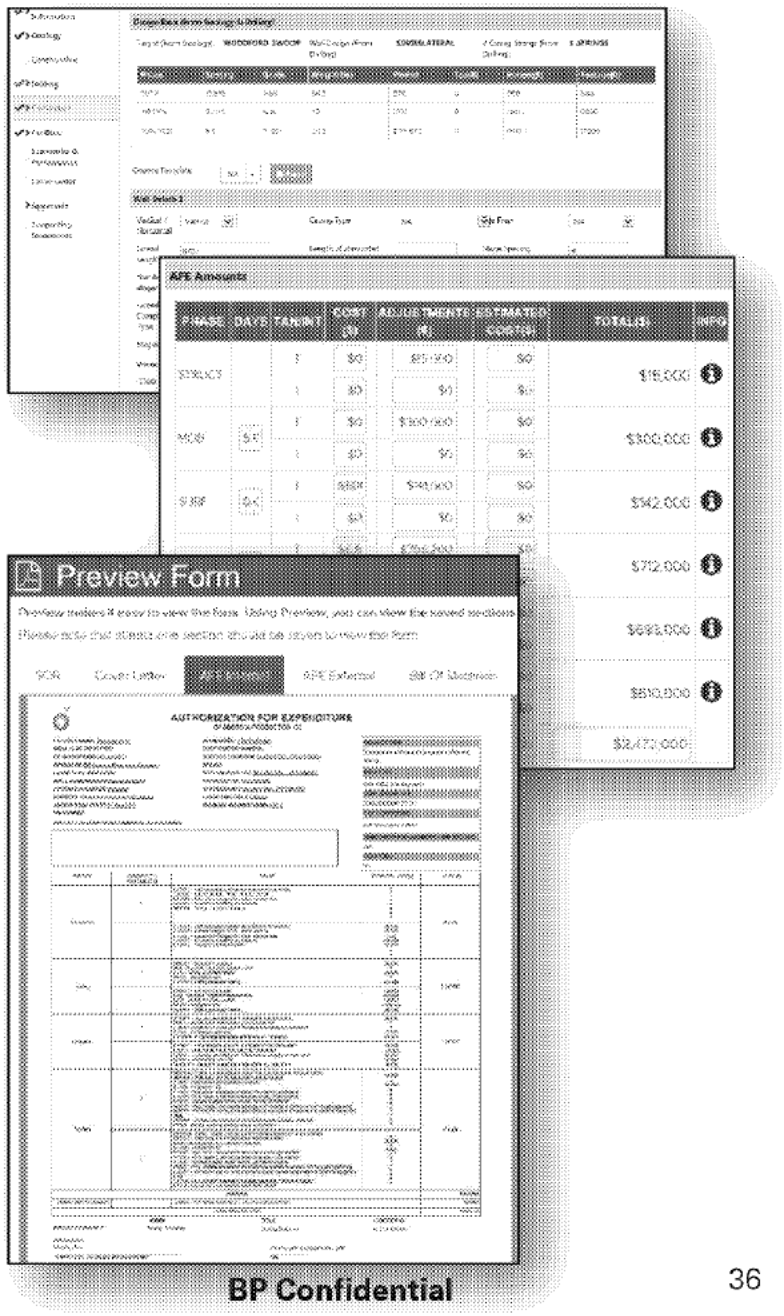
- Template-based app for efficient well planning
- Transparent cost profiles and design parameters
- Accurate AFE data consolidation, supplements, approvals and partner balloting
- Already seeing dramatically improved cross-team / BU collaboration

Common Tool Across All L48 Teams

- Configured to accommodate all onshore well types (coal bed methane, tri-lateral, etc.)
- Validated and used for new well AFE approvals
- Reported 5x time savings in facilities AFE generation
- In use by all business units
  - 118 Wells: North(4), West(3), MidCon(90), East(20), South(1)

Analytics & Visualization

- Unprecedented availability of in-progress and historical well details
- Insight into cause, impacts and rectification of time and cost variances
- Learning through characterization of successful efforts



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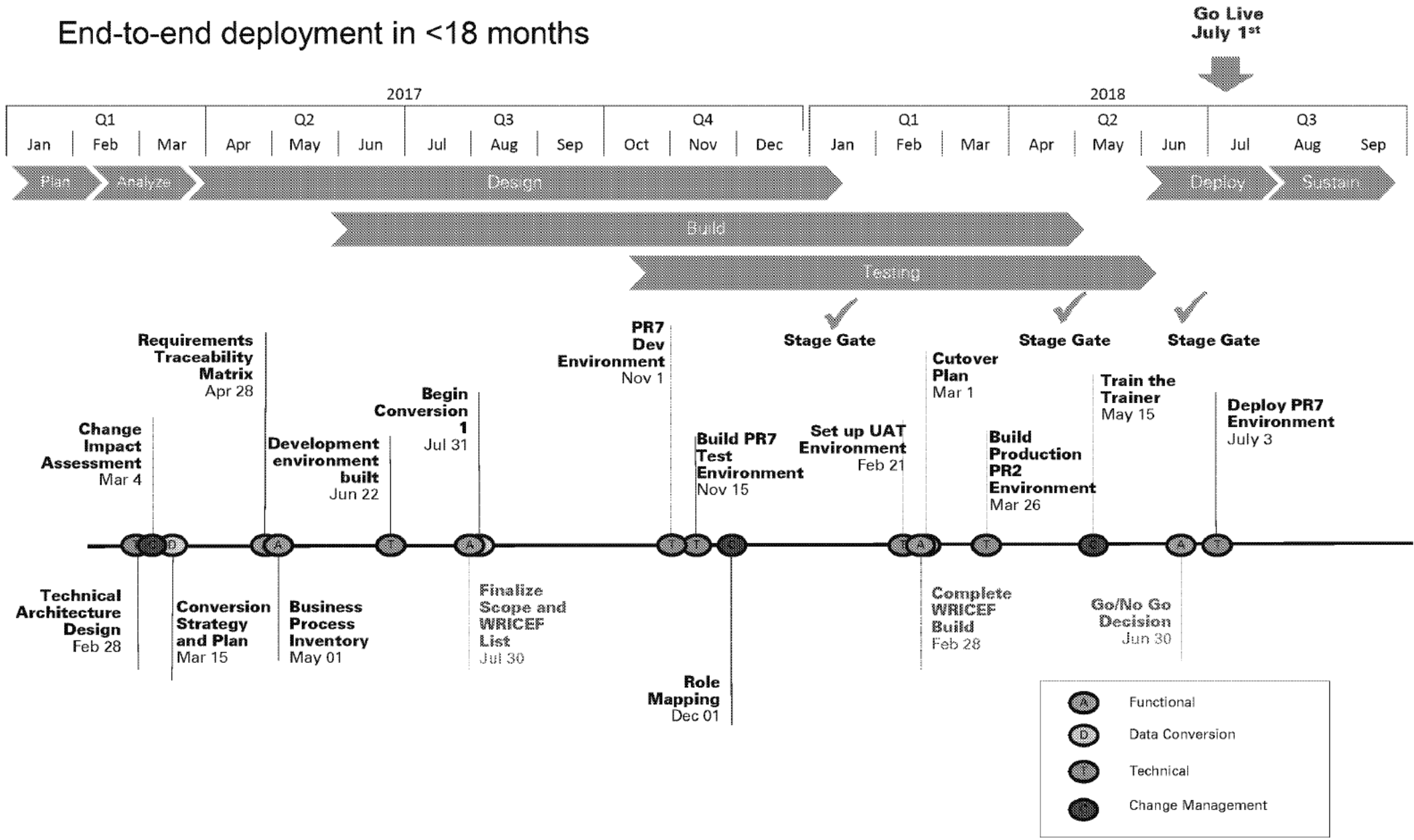
ACB Milestone – Project Genesis (SAP)

Key activities and milestones

End-to-end deployment in <18 months



ACB Milestone - Denver Office and People Transition Plan

Denver Office
- Design sign off – May 2017
- Occupancy – Summer 2018

- 143 L48 employees invited in 1Q 2017 to move to Denver
  - 91 employees accepted the invitation
  - L48 relocation package followed or supplemented the existing BP policy
    - YTD, 46 employees have relocated and now are Denver-based
    - Remaining relocations expected to occur over 1H 2018

- 25 new employees hired in Denver YTD
  - Diverse mix of backgrounds and experiences

- At present, 33 additional Denver-based roles in active recruitment
  - Currently reviewing external and internal candidates
  - Sourcing through multiple channels to attract diverse talent
  - ~50 candidates participated in our 2-day interview event, staffed by ~30 L48 leaders

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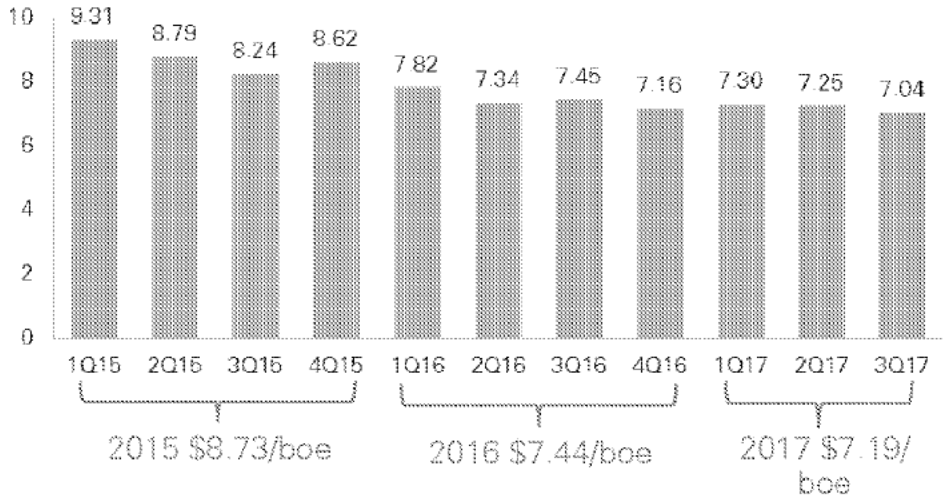
L48 Production Costs

Systematic cost management achieving lowest ever total production cost

Exernally Reported Production Costs ($/boe)



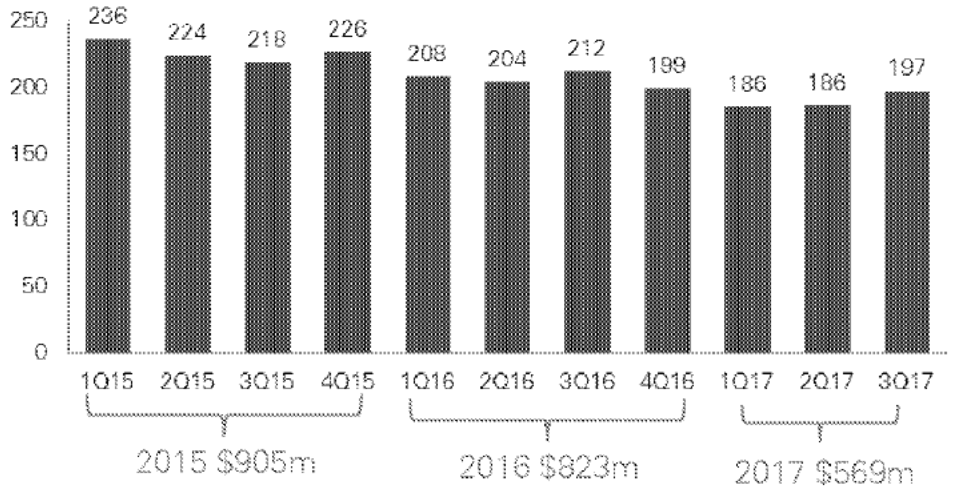
3Q

- Market visibility to production cost savings
- Production costs down $2.3/boe 1Q15 vs 3Q17

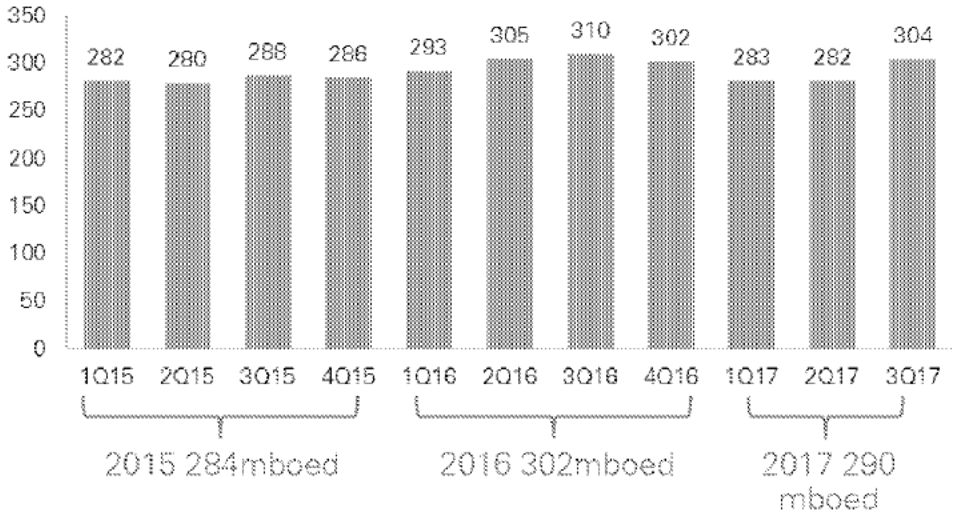
FY

- On track to deliver ACB plan of $6.9/boe FY

Production Costs ($m)



Production (mboed)



For ACB purposes production costs are adjusted for additional unaccrued ACB bonus payment, systems upgrade

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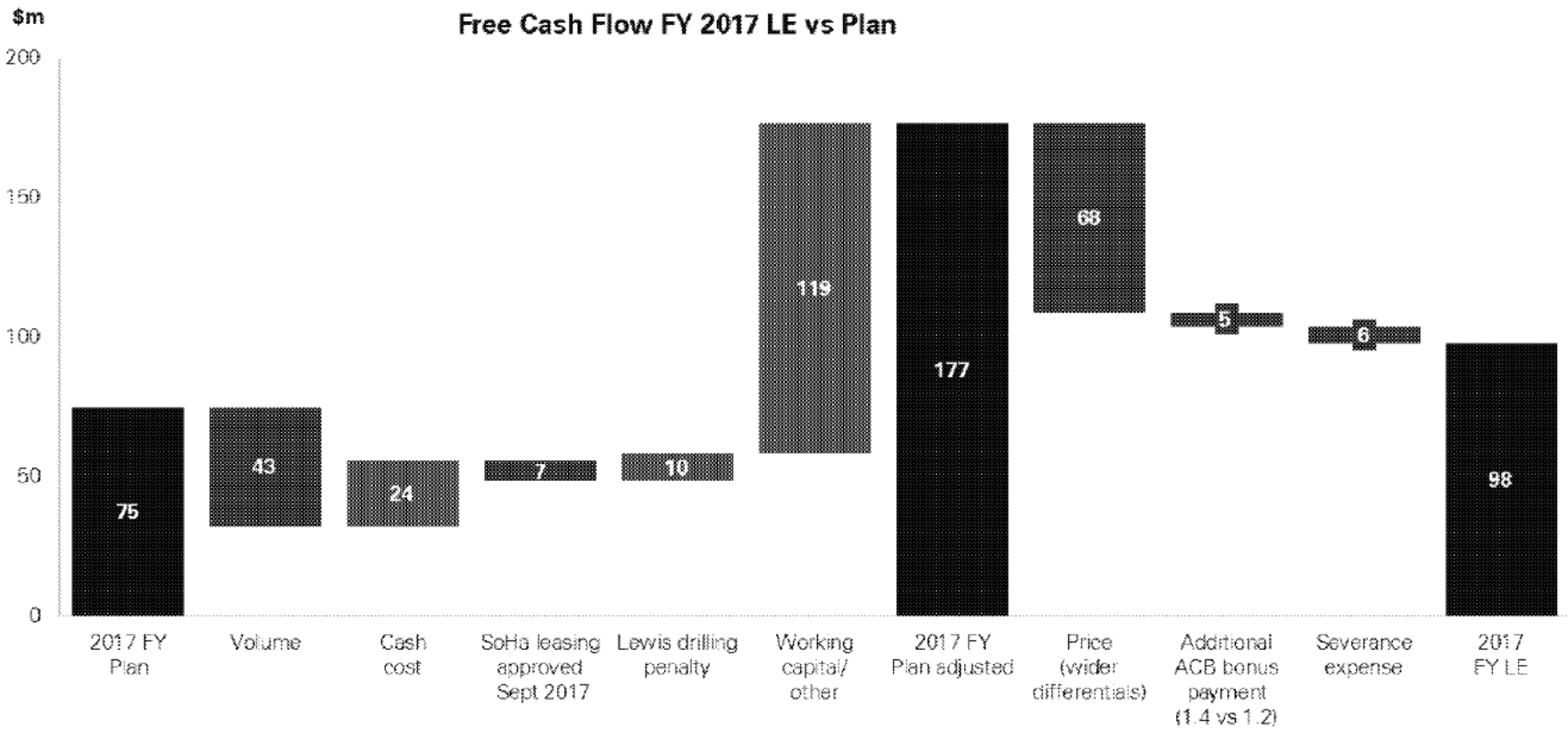
L48 Pre-Tax Free Cash Flow 2017 FY LE vs ACB

- FY Ops Cash flow on track to meet full year 2017 operating cash flow plan of $900m as cost reductions expected to more than offset impact of projected 2% lower production than plan
- FY Free cash Flow Projected to exceed plan of $75m, interventions taken to offset the impact of incremental $40m of capex vs plan for Haynesville/Bossier acreage access agreement



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SoHa $60m Land FM - Approved Sept 2017

2017 & 2018 spend tracker

FM description:

SoHa Land Acquisition FM totaling $60m of net investment to increase positions for the existing Haynesville/Bossier program in East Texas. This FM strategically supports the L48 mission and is intended to capture necessary obligation lands for the 2018 drilling program and offset acreage for the long range development of the program. In addition, the intent is also to expand the exisiting acreage position held by L48 by up to 21k acres.

2017 Allocation - $8m			
	Capital ($m)	Acres	Comments
Cortez	$5.3	3,229	Acquistion of 75% interest in 4,305 net acres (3,229 net to BP) from Cortez Resources LLC in Lacyville fault block East of Trex & Dino Units. The other 25% will be purchased by BP's joint venture party Black Stone Energy Company LLC. This acreage suports up to 9 net HV & 10 net BS wells.
Sarge	$1.2	488	Acquisition of the 650 gross acre (488 net) Sarge Gas Unit. This unit contains 1 Haynesville & 2 Bossier locations that are to be drilled at a future date.
2017 Total	$6.5	3,717	

2018 Allocation - $52m			
	Capital ($m)	Acres	Comments
Tier 3 (Dinosaurs)	–	–	
Lacyville	–	–	
Cortez	–	–	
Greek Gods	–	–	
Chevron	–	–	
Goodrich	–	–	
Sam Rayburn	–	–	
Flying Saucer	–	–	
Highlander	–	–	
2018 Total			
Total to date ----->	**$6.5**	**3,717**	

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Incremental $125m Capital FM – Approved June 2016

Delivering FM NPV promise with slight degradation in IRR

	Capex ($m)	2016 Jan Strip		$3HH/$55WTI	
		NPV	IRR	NPV	IRR
FM	125	47	21%	66	29%
Mar LE	126	25	13%	47	21%
Sep LE	136	49	17%	69	23%

- September latest estimate NPV $69 m vs FM of $66m; IRR 23% vs FM of 29% at $3/$55
- Main drivers of Sept LE improvement
  - Recent strong performance from Tiffany Pad 1 (CBM in West) and Haynesville program has enable to claw back NPV deterioration in Arkoma Woodford and North programs
- Main drivers Sept LE vs original FM
  - North required facilities upgrades for liquids as well as cost pressure
  - MidCon due to Queen overpressure Atoka issues and project phasing
  - West due to continuous permitting delays working with the SUIT offset by strong over deliver from the Tiffany Pad 1
  - East strong production of recent Haynesville wells

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One Team Effort Limits Harvey Production Impact

- Hurricane Harvey put severe stress on the Mont Belvieu fractionation complex;
  - Limited takeaway of purity products and continued delivery of y-grade severely stressed available storage capacity
- NAGP and L48 worked daily to proactively resolve choke points and preventatively reroute equity gas and NGLs
- Net result for BP L48-operated / NAGP marketed production was <u><1 mmcf/d deferral for just four days</u>
- Our performance contrasted with many North American independents that were forced to curtail their onshore production due to limited NGL capacity and hence lower their 3Q production guidance, including:

eog resources
Chesapeake ENERGY
Apache
PIONEER NATURAL RESOURCES
Jagged Peak ENERGY
devon

Note: Non-operated production in STX (not marketed by NAGP) saw ~45 mmcf/d of net gas deferment for four days due to an elective shut-in of the BHP/Kinder Morgan gathering system.

Current Hedging Position – as of Oct 22nd

	2017	2018	2019
Daily volume hedged (mmbtu/d) - swaps	1,345,000	1,295,000	397,500
% of total expected gas production – 2017 GFOz	90%	80%	23%
Weighted average net price	$3.25	$3.04	$2.87

- For 2018, no longer adding beyond 80% level
  - Objective of attaining cash flow neutrality in 2018 is accomplished
  - Fundamentals indicate more upside vs. downside risk heading into winter 2017-2018
- For 2019, now seeking to hedge up to 50% at $3.10 or higher
  - Objective of securing attractive rates of return on capital investment is accomplished
  - Now seeking to attain cash flow neutrality for 2019; requiring higher price target for additional tranches
- For 2020, requesting permission to begin hedging up to 25% at $2.95 or higher
  - Goal is to secure attractive rates of return for 2018 and 2019 capital programs

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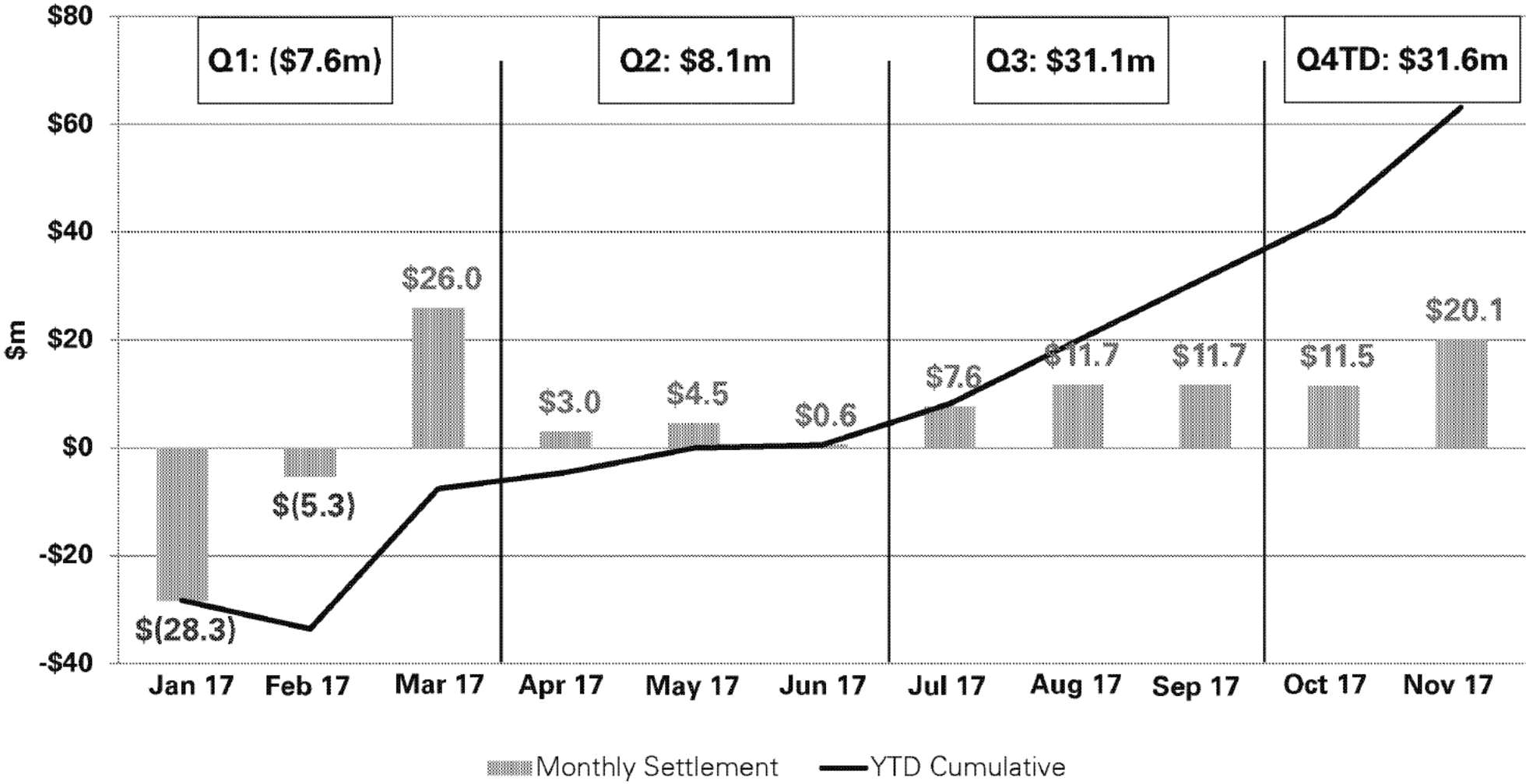
Realized Cash Settlements YTD: $63.2m



- Typical for prices to strengthen in Dec, and hence reduce monthly settlement for that month

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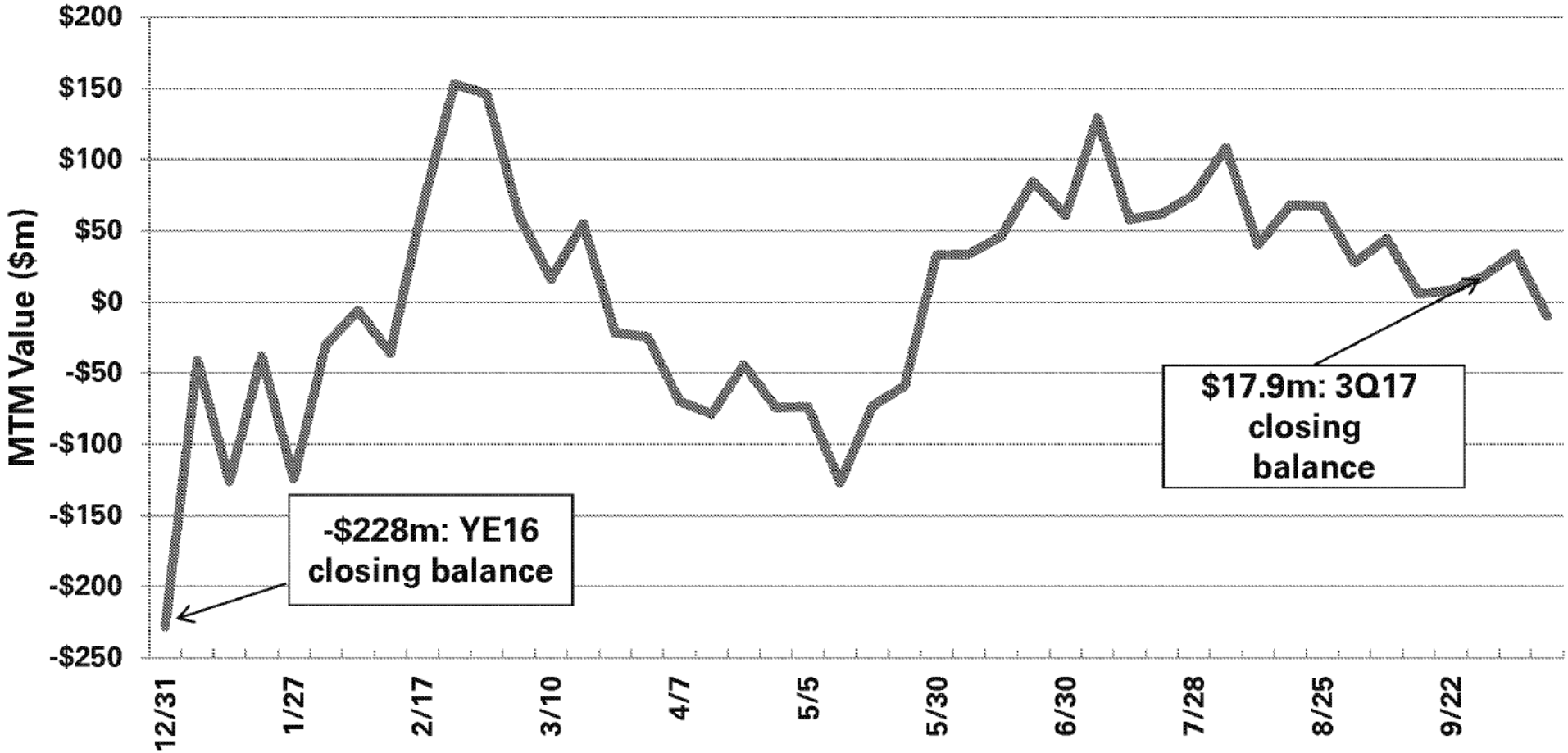
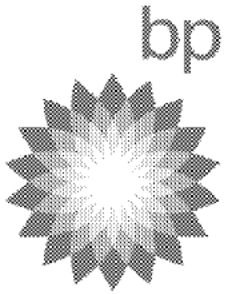
Mark-to-Market Financial Impact



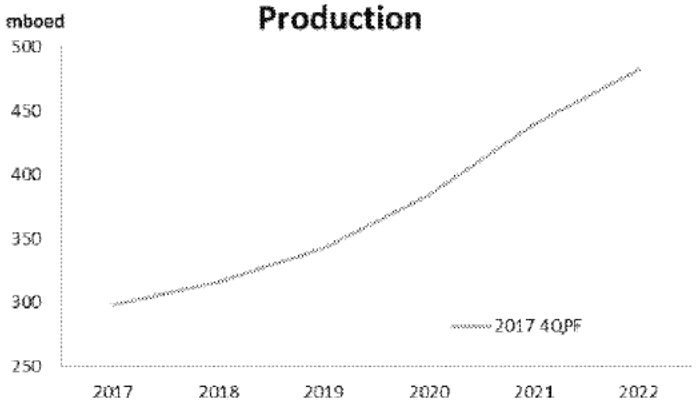
- 3Q17 unrealized P&L impact was a loss of $42.8m
- YTD P&L impact was a gain of $245.9m

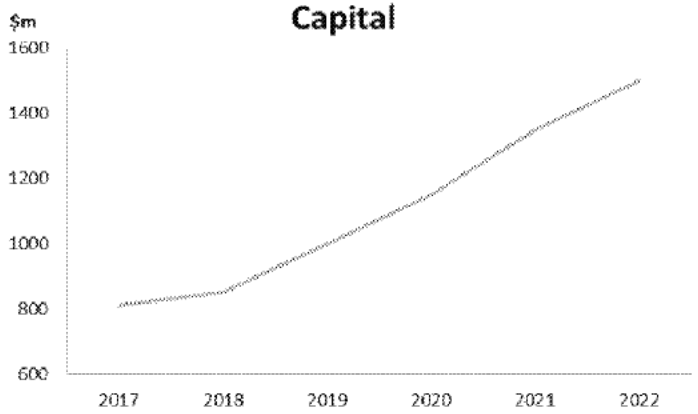


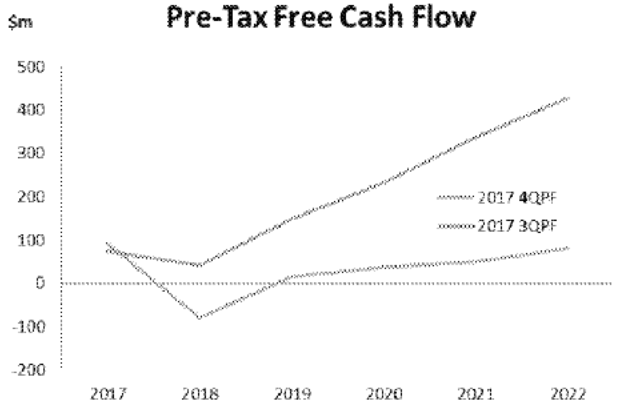
Plan 2018 - 2022

2018-2022 Plan

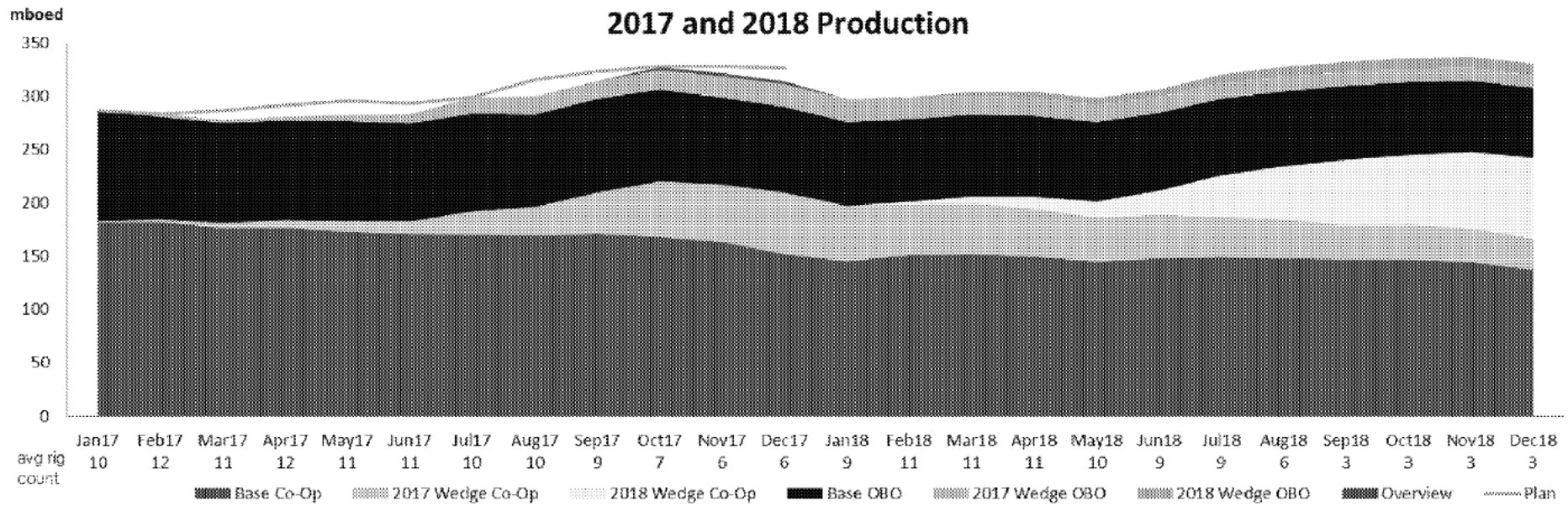
	2017 4QPF						2017 3QPF						Variance					
	2017	2018	2019	2020	2021	2022	2017	2018	2019	2020	2021	2022	2017	2018	2019	2020	2021	2022
Capex	810	852	1000	1150	1350	1500	810	800	1000	1150	1350	1500	0	52	0	0	0	0
Capital Efficency ($m/mboed)	20	17	15	14	13	16	17	16	15	14	13	16	3	1	0	0	0	0
Production	298	316	342	384	440	482	300	320	346	387	442	480	-2	-4	-4	-3	-2	2
TCC	777	790	848	935	1043	1119	794	815	863	945	1051	1119	-17	-25	-15	-10	-8	0
Unit Cash Cost ($/boe)	7.1	6.9	6.7	6.6	6.4	6.3	7.1	7.0	6.8	6.7	6.5	6.4	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
Pre-tax Ops Cash	881	791	1015	1187	1400	1581	863	842	1168	1403	1708	1948	18	-50	-153	-216	-308	-367
Pre-tax Free Cash Flow	93	-81	15	37	50	81	75	42	148	233	338	428	18	-122	-133	-196	-288	-347
Post-Tax Free Cash Flow	133	-22	5	-9	-24	-11	121	70	80	105	148	199	11	-92	-75	-114	-172	-210
NPV6 ($m)	6,871						10,140						(3,269)					
Resources progressed	4,871 mmboe						4,871 mmboe						0					
HH Marker	3.12	3.00	3.00	3.00	3.00	3.00	3.13	3.00	3.12	3.18	3.25	3.31	-0.01	0.00	-0.12	-0.18	-0.25	-0.31
WTI Marker	49.45	46.00	48.00	48.00	48.00	48.00	49.34	48.50	55.22	56.37	57.53	58.72	0.11	-2.50	-7.22	-8.37	-9.53	-10.72

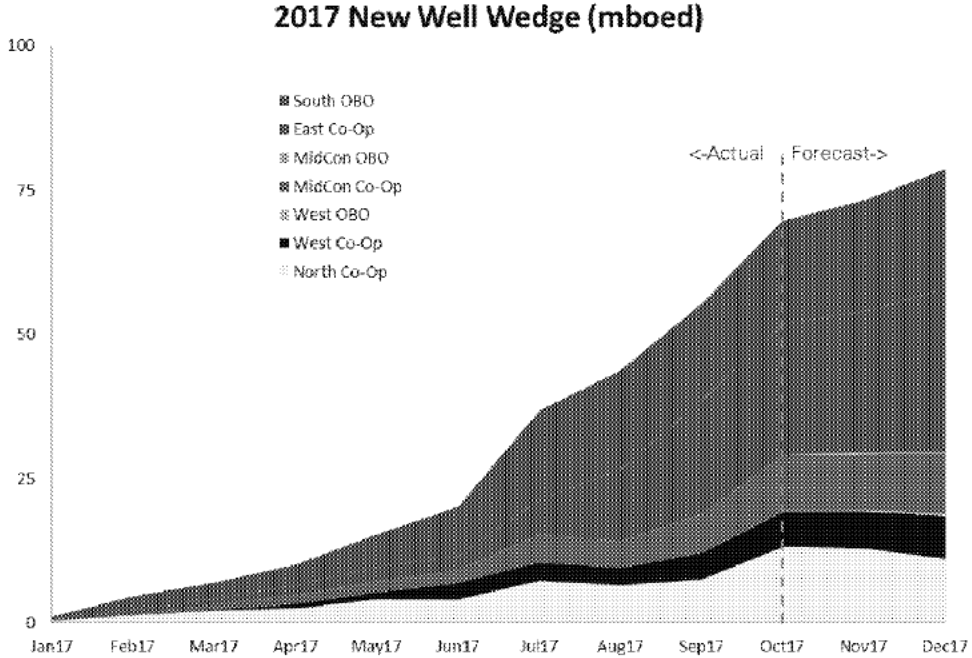


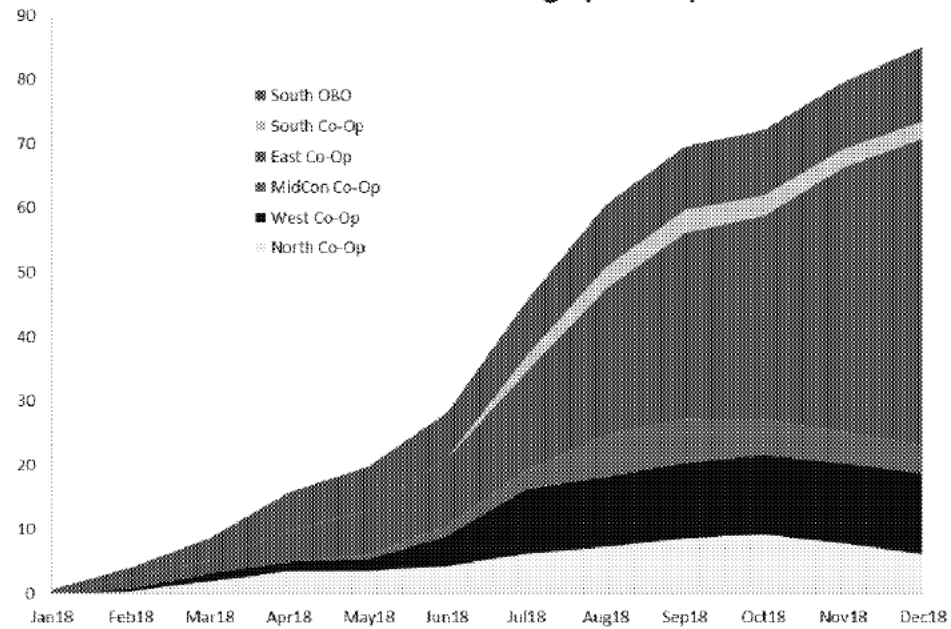




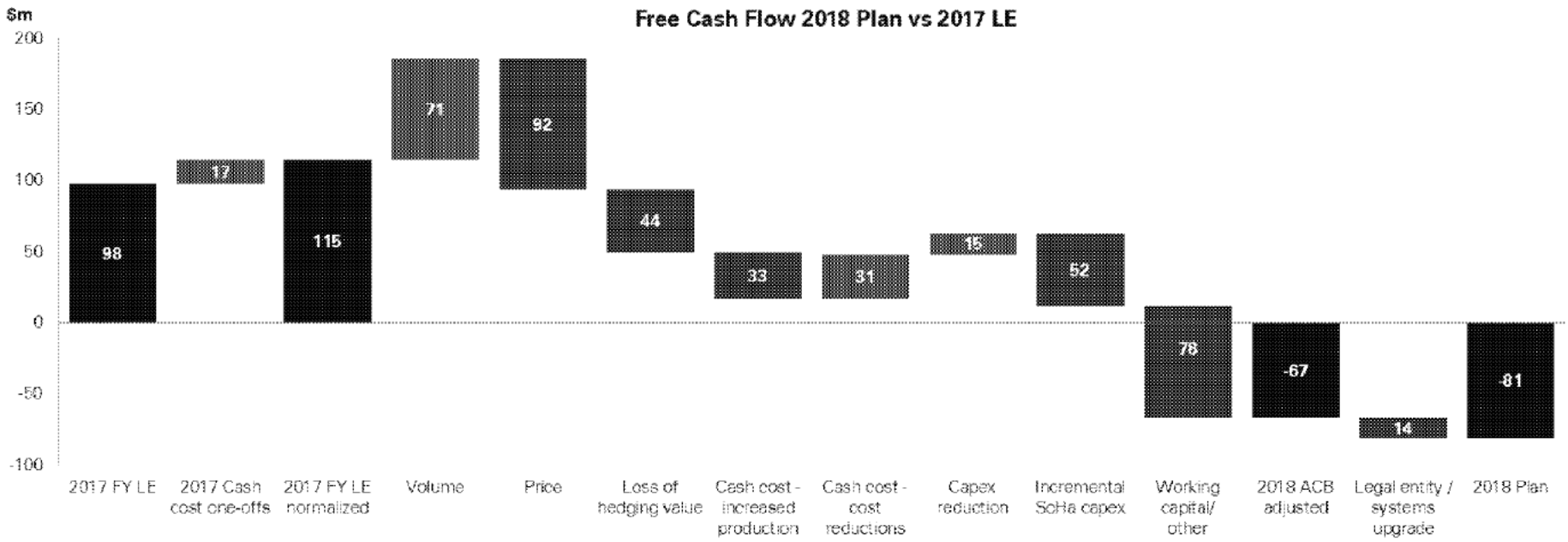
L48 Production 2017-2018







2018 Free Cash Flow

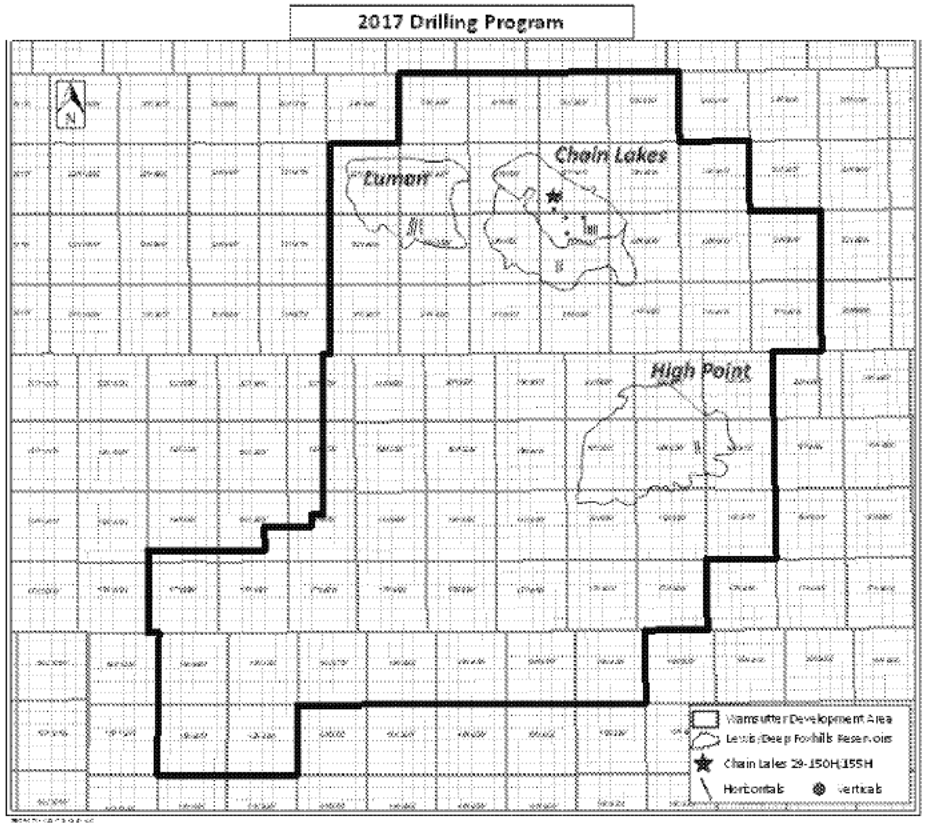


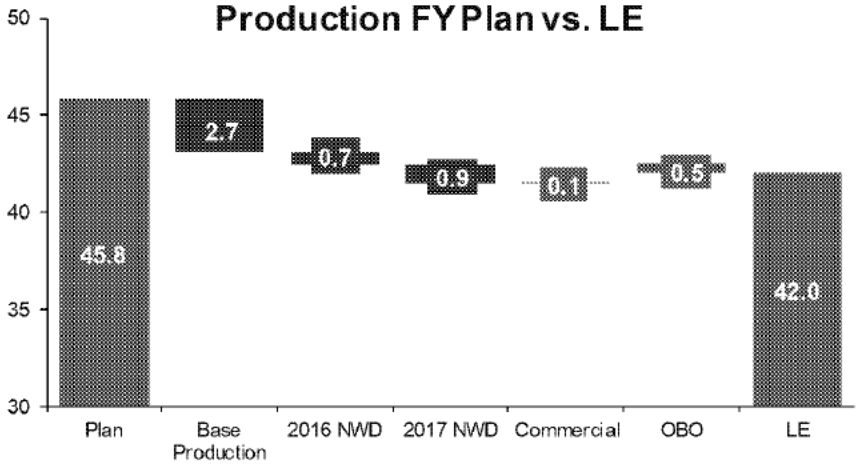
Backup

North - Performance

Continued strong reservoir performance; making strides on infrastructure constraints

- Production : –3.2 mboed YTD vs plan, FYLE –3.8 mboed vs plan
  - Gap due to activity phasing and infrastructure issues
  - New compression station online for Northern area since Oct 9th. Seeing ~300psi drop in line pressure
- IRR YTD of 20% (incl. wellwork), FY LE 22% in line with L48 target of 20%
  - First multilateral now performing at 24% IRR (or 40% at AFE cost)
  - Chain Lakes Hz pad wells (Lewis and Fox Hills) now at aggregate 37% IRR actual
  - Delivered High Point 13-155H at 100% IRR, another prolific area but impacted by the Southland litigation





Activity Delivery	Sept 2017 YTD		FY 2017	
	Plan	Actual	Plan	LE
Production (mboed)	44.2	41.0	45.8	42.0
Production cost ($/boe)	7.1	7.2	6.9	7.1
IRR (Sept YTD)	25%	20%	25%	22%
# wells online	23	13	26	19

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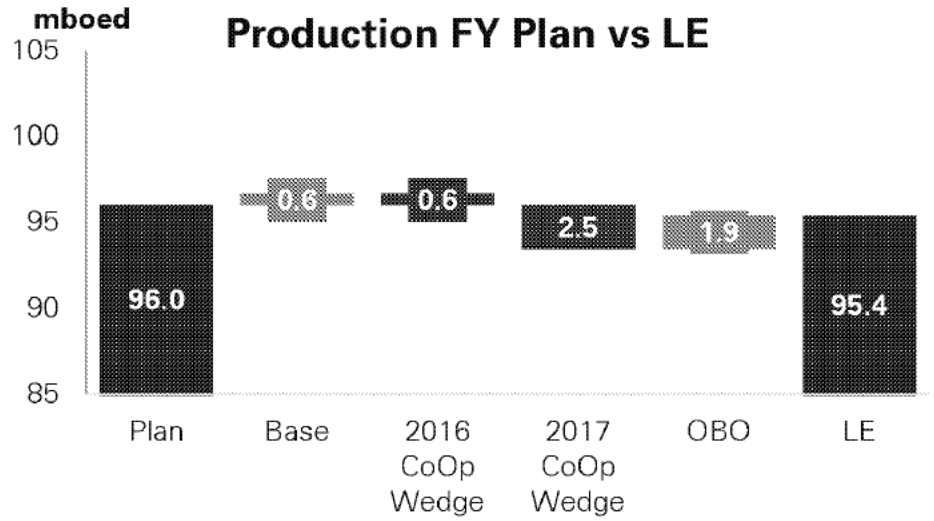
West - Performance

CBM delivering exceptional returns, slower than anticipated permit approval

- Production: –0.7 mboed September YTD vs plan, full year LE –0.6 mboed vs plan
  - OBO and managed base delivering above expectations
  - 2016 NWD wedge below plan due primarily to delays on Tiffany 1 pad
  - 2017 NWD wedge down due to permit approval delays in Tiffany, Mancos Gas, and activity reduction to absorb capital hit for Rosa Unit Mancos PA expansion by WPX
    - Delays partially offset by strong CBM and Mancos well performance
- IRR: September YTD of 26% full year LE 30% vs unrisked plan of 35%
  - CBM program delivered 46% IRR through September driven by ML over performance
  - NEBU 602-1H cost overrun weighed on BU IRR



Activity Delivery	Sep 2017 YTD		FY 2017	
	Plan	Actual	Plan	LE
Production (mboed)	94.0	93.3	96.0	95.4
Prduction cost ($boe)	$ 6.8	$ 6.5	$ 6.9	$ 6.5
IRR		26%	35%*	30%
# wells online	24	17	36	23
Well producing days	2,754	1,660	5,562	3,474

*unrisked

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MidCon - Performance

NWD IPs cause FY production/IRR shortfall, but costs down and CF up

Production:

–1.4 Mboed September YTD vs plan, -1.2 full year LE mboed vs plan

- Wedge FY LE 4.4mboed vs. 8.2mboed Plan (-3.8mboed / -46.3%)
- Driven by lower average CAL17 NWD IP30, weighted by Arkoma WFD
  - IP30 59% of target; EUR 88% of target

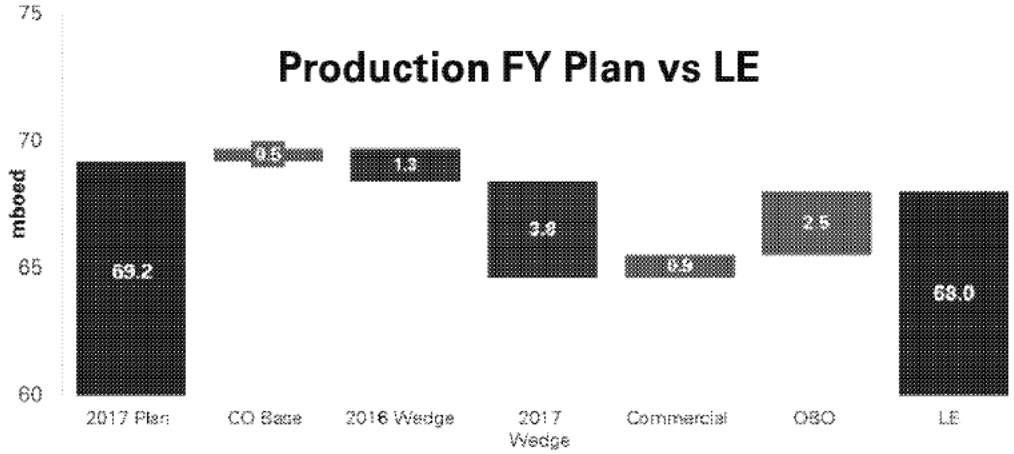
Production Costs:

BU Production Costs down 8% despite lower volumes: LE $150m ($6.0/boe) vs. $164m Plan ($6.5/boe)

IRR:

September YTD of 12%, full year LE 12% vs unrisked plan of 25%

- Arkoma Woodford IRR LE 14%. Main driver lower IP30 vs. Plan
- Due to significant early year timing delays, capital was shifted disproportionately to Arkoma WFD as best risk/reward economics and production
- Consistent with 3 year performance but targeted improvement not realized
- Recalibrating models for lateral placement, height confinement and frac geometry



Activity Delivery	Sept 2017 YTD		FY 2017	
	Plan	Actual	Plan	LE
Production (mboed)	69.6	68.2	69.2	68.0
Production cost ($/boe)	6.5	6.0	6.5	6.0
IRR (Sept YTD)		12%	25%*	12%
# wells online	22	25	35	27

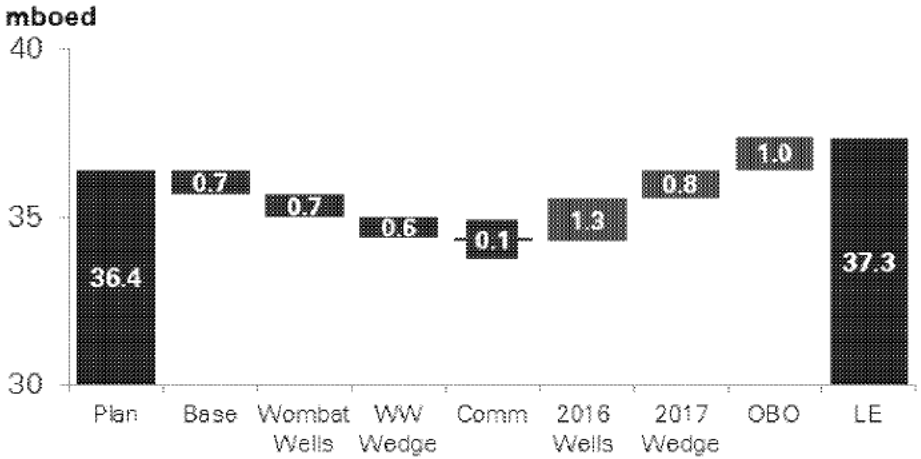
* unrisked

East BU Performance

Unlocked the South Haynesville, delivering premier returns

- Production: +1.0 mboed Sept YTD vs plan, full year LE +1.0 mboed vs Plan
  - 2016 well performance, 2017 new well delivery, & OBO offset downtime on Wombat wells, base performance, and wellwork wedge scope change (capex shifted to NWD).
    - Wombat 2H returned to production on July 4, current rate 6.2 mmcfd. Cost to restore production $4m; remaining reserves 1.1 mmboe
    - Wombat 1H workover begins 1st week of November.
  - 2017 New Wells: delivering 17 wells vs Plan of 16 with 11 delivered Sept YTD. 6 additional wells online by end November. 19.7 mboed net current rate and 28 mboed net exit rate vs Plan of 25 mboed net. New well wedge +0.8 mboed. Wellwork wedge -0.6 mboed.
- IRR: Sept YTD of 30%, full year LE 29% vs unrisked plan of 50%
  - '17 IRR LE impact due to increase in well cost primarily driven by in-year well design changes to include chrome tubing, in-year cost increases due to inflation in both drilling and completion phases driven by a +50% increase in basin yoy, and one unsuccessful sidetrack.
  - '18 IRR projection in line with current well design and expected performance increase driven by enhanced completion from 2500 #/ft in '16 – '17 to 3500 #/ft in '18.

Production FY Plan vs. LE



Activity Delivery	Sept 2017 YTD		FY 2017	
	Plan	Actual	Plan	LE*
Production (mboed)	32.4	33.4	36.4	37.3
Production cost ($/boe)	5.70	5.65	5.09	5.10
IRR	-	32%	50%	29%
# Wells drilled	17	17	22	22
# wells online	12	11	16	17
# of Producing Days	1,027	882	2,375	2,229

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East - Haynesville

Natural gas turbine powered frac operations update

- Discussions for 100% natural gas powered completions supplied by **Evolution Well Services** ongoing.
  - Requires a $42m capital commitment with recoupment of cost over an approximate two year period.
  - Downside is increased risk to production delivery of SoHa program due to phasing logistics and relatively unproven performance of the technology in very low permeability reservoirs with high treating pressure.
- Discussion initiated with **Haliburton** on a diesel/natural gas fired option
  - ~50% - 70% of a completion can be fueled by natural gas.
  - Cost savings of ~$200k/well
  - Less risk to SoHa production delivery in that power can be switched from diesel to natural gas while pumping the completion.
- The **CO2**-sourced from power plants for **secondary/tertiary recovery** is also on-going. High level scoping based upon evaluation of production data indicates up to nine counties in the greater Ark-La-Tex with at least one candidate reservoir, proximity to a power plant and association with BP minerals. More in-depth analysis has not yet been initiated.

Advocacy campaign
gas and methane

BRUNSWICK

Campaign objectives

1. Position the positive role of gas – in the context of advancing the transition to a low carbon future
2. Protect BP's 'advantaged gas position' – best basins, efficient operations
3. Secure support for gas as a natural low carbon fuel by taking a leading commitment to methane reduction
4. Demonstrate how commitment to advancing low carbon is being driven through the core Upstream business – i.e. not just through renewables/ventures

Advance and protect the role of gas – and BP - in the future of energy conversation

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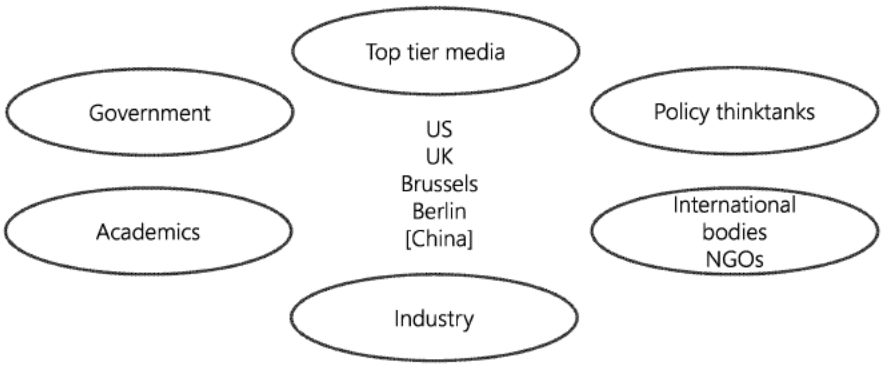
Priority audiences

- **Focus on key national governments.**
- **Global stakeholders** shaping the future energy debate.
- Located in key **international hubs.**



Key trends in the conversation

- To achieve a 2 degrees world, virtually all scientific discourse anticipates gas as a significant part of the energy mix.
- However, in the public arena, support for gas as a long term solution can't be taken for granted.
- There are three key challenges that need to be addressed by this campaign:

1. Lower carbon than coal – but still a fossil fuel
2. Renewables dominate the debate in the future of energy
3. Emergence of methane as a flashpoint for gas

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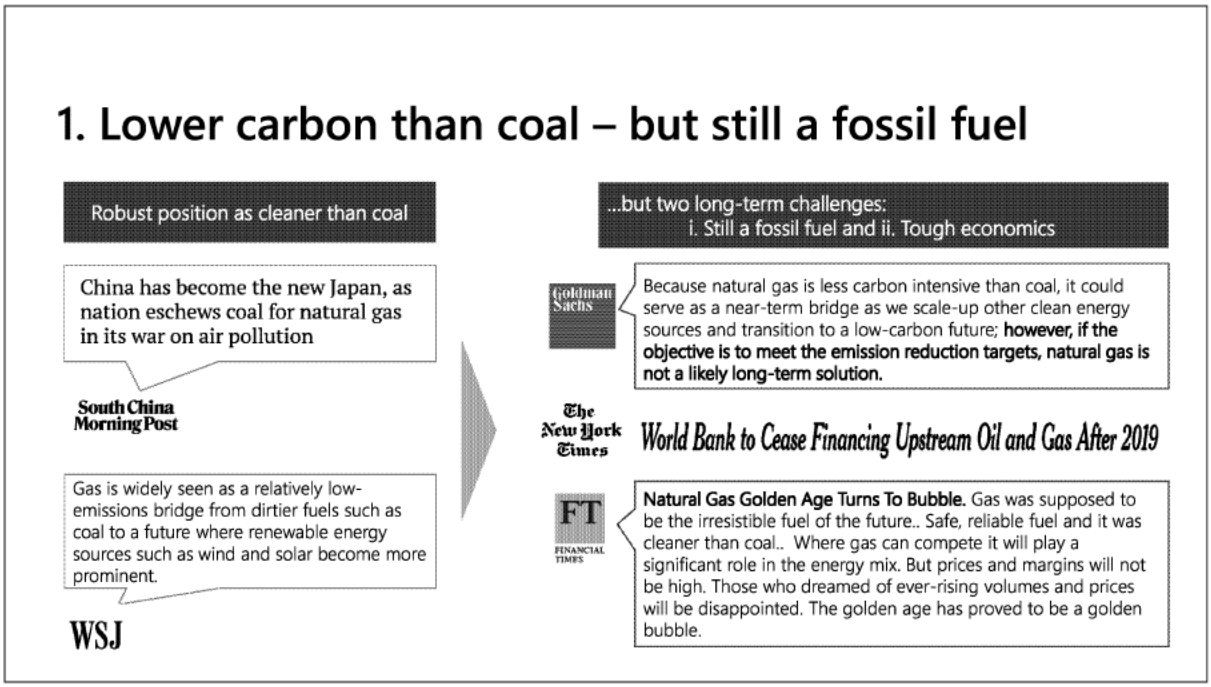

https://www.ft.com/content/175814dc-a01c-39bb-a156-b2bd2cfaef44

2. Dominance of renewables in future of energy debate

Commentary about the future of energy focuses on renewables, going straight past gas

The Economist — **Africa might leapfrog straight to cheap renewable electricity and minigrids**

FT — The Big Read Renewable Energy

The Big Green Bang: how renewable energy became unstoppable

The New York Times — **A Renewable Energy Boom**

Stanford — **Roadmaps for an All-Renewable Energy World**

A rapid transition away from fossil fuels is the only way to achieve most ambitious goal of limiting global temperature rise to 1.5 degrees Celsius above pre-industrial levels. New roadmaps to an all-renewable world include no nuclear power, coal, natural gas or biofuels.

OXFORD — **'A world powered by renewable energy'**

Goldman Sachs — FACILITATING THE TRANSITION TO A LOW-CARBON FUTURE — $150BN

Clean Energy: The Future is Here

By 2030, renewables will account for half of the world's energy mix.

Case for gas as partner to renewables is present but under-told

MIT — **Can We Skip Straight to Renewable Energy Without Natural Gas? Not Yet.**

What we're seeing right now is the two technologies coming together sensibly, with natural gas providing cleaner power than coal, and buying time for the development of the technologies and economic systems necessary to eventually transition to a renewable-based energy system.

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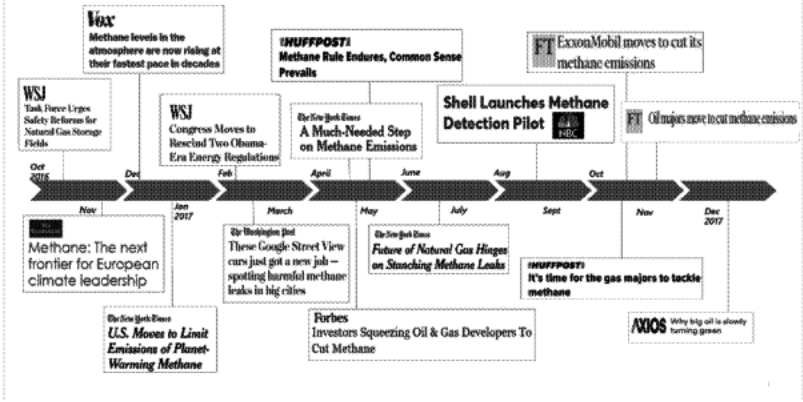
3. Emergence of methane as a flashpoint for gas

Fugitive emissions - becoming integral to credibility of gas as a low carbon transition fuel



FINANCIAL TIMES

Methane has become a flashpoint in the energy debate...here is growing recognition within the energy industry that it must tackle methane leakage if it is to secure a role for natural gas as part of the solution to the threat of climate change. ***Andrew Ward, November 2017***

AXIOS

Companies want to grow demand for natural gas, which is an increasingly large portion of their portfolios, in the electricity space and elsewhere. **When burned, gas is cleaner than coal and oil, but there are concerns about emissions of methane**, a potent greenhouse gas that's also the primary component of natural gas. ***December, 2017***

Campaign strategy on gas

On the basis of the conversation analysis, the campaign on gas has three strategic planks to reframe the conversation on gas – each with its own role:

Advance and protect the role of gas – and BP - in the future of energy conversation

Continue to contrast gas as a low carbon alternative to coal

Underpinning message
- Switch from coal
- Vital to meet Paris climate goal

Positively present gas as a partner to renewables

Reinforcing the opportunity
- Gas – safe, clean, reliable, low carbon partner to renewables
- Align with the renewables opportunity

Take leading role on methane as Achilles' heel of gas case

Campaignable angle
- Authenticate seriousness on low carbon
- Mitigate against emerging concern

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Key elements of campaign strategy

- **Confidently and conspicuously join the external conversation vs. transmit messages**
- **Start with the shared ambition for low carbon**

- Targeted at influential audiences - expanding universe of supportive stakeholders
- Underpinned by action and commitments
- Structured around 2-4 high points in the year
- Multi-year, starting in 2018
- Driven by agenda-setting content to frame the debate
- Working with partners to signal common cause and build credibility

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Core messages

1. **The world needs more energy, and wants more of it to come from lower carbon sources. BP is well positioned to accelerate to that future.**
2. **BP is producing more gas to meet this demand for cleaner energy**
   - Cleaner burning than coal and half the carbon intensity
   - A safe, clean, reliable partner to renewables
3. **Advantaged position on gas**
   - Best basins
   - Efficient operations
4. **Bigger role for gas means taking greater leadership in tackling the challenge of methane**
   - More potent than carbon as a GHG
   - That's why BP wants to lead the sector on methane reduction
5. **To accelerate the transition to a lower carbon future, we want to see a price on carbon**
   - To create low carbon businesses at scale, we need even stronger and clearer policy signals

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Present as blocks

Campaign building blocks

Even at the start of 2018 there are a lot of building blocks on which to construct the campaign

BP advantaged position in gas

- 6 of the Significant 7 projects
- Further 8 planned by 2020
- Growing gas production more than any other major
- State of the art operations
- Southern Gas Corridor project
- Strengthening LNG shipping capacity

Commitment to lead on methane reduction

- Mapping of fugitive methane emissions
- Satellite data of methane emissions
- New technology solutions for reducing methane – among best in the world: Oman
- Princeton University Research on the science of methane emissions
- Analysis of BP's Lower 48 operations
- BP GHG emissions metrics and targets
- OGCI commitment to methane
- Participation in Methane Roundtable

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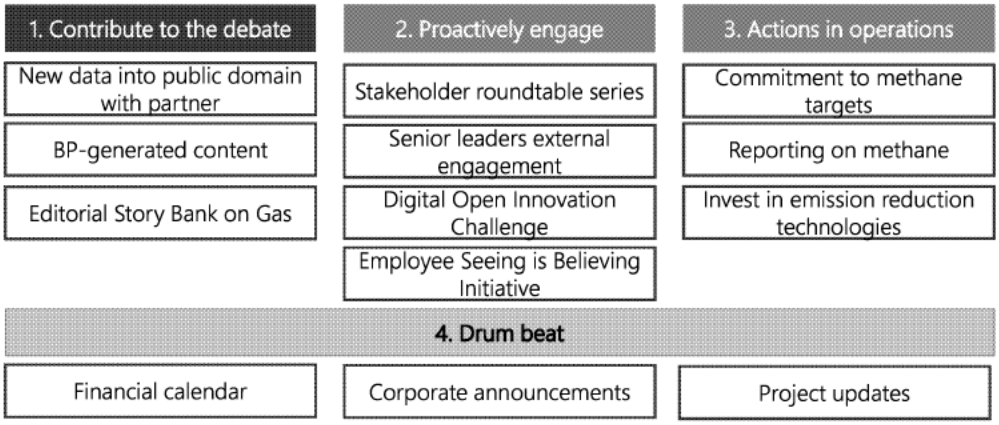
Campaign advocacy



1. New data into public domain with partner

- Agenda-setting IP created in partnership with third party expert as contribution to tackling the challenge.
- Use findings as content for proactive engagement across all channels through 2018.

Core programme: Princeton

a

- **Global View: Science cycle of methane**
- **Publication of findings (phase 1)**
- **Shared platform at Princeton (RWD speech)**
- **Stakeholder convening series partnership**
- **Joint op ed in global title**
- **Final findings (date tbc)**

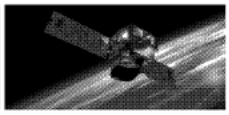
The Economist

Bloomberg
NEW ENERGY FINANCE

Key builds

In addition or as alternative to Princeton: work with – EDF, IED, NPL, Masdar to produce other leadership content:

b **High tech story - Satellite data of methane emissions**
Select small number of geographies and publish findings



c **Action on the ground - In-depth study of methane management in operations**
Identify locations that dramatise the opportunity / challenges e.g. Angola or Oman

2. BP-generated content

- Leverage BP set-piece content throughout the year for gas and methane opportunities- for media, speaker platforms, online channels.
- Create suite of new BP generated digital content to support the campaign.

Core programme: BP set piece content

Message and comms plan alignment with report owners and topic specialists:

- BP Energy Outlook
- Statistical Review of World Energy
- BP Technology Outlook
- + 2018 Sustainability and ALC Report

Key builds: New BP content

Films or White papers dimensionalising the challenge and opportunity

- Articulating why methane emissions matter and BP's approach
- Mapping CO2 savings from shift from coal to gas
- Gas as partner to renewables – e.g. in Power/Transport

Feature operational learnings to demonstrate transparency and show leadership in the sector

- Group wide performance
- Operational deep-dives e.g. Angola turn-around story / Lower 48 on findings for future

Amplified via targeted paid digital marketing

3. BP Editorial Story Bank on Gas

- Exploit the positive storytelling potential of existing gas stories for media.
- Work with BP topic experts to define a 'story bank' of editorially compelling and strategically valuable gas storylines based on existing BP materials for proactive engagement through 2018.

Story-mining on gas
Carve up the argument for gas to resonate with seven different journalist segments relevant to the gas and methane agenda:

1. Energy
2. Environment
3. Science
4. Science and Technology
5. Transport
6. Foreign correspondent
7. Sustainable business

Use as basis for:

- One on one journalist briefings
- Journalist roundtables
- Potential journalist site visit to best in class operations
- Briefings at speaker engagements
- Rapid issue hijacks

Example story territories

Gas As Vital Partner To Reducing Renewable Energy Costs – gas to meet integration cost challenges in new solar / wind builds.

Fixing Gas' Achilles' Heel As a Natural Low Carbon Fuel – *op ed to accompany new targets and Princeton research.*

Innovating on Frontline Of The Methane Challenge – *journalist field trip to Oman/Lower 48.*

Each story developed with BP topic experts.
Underpinned by proof points and proprietary IP where available.

BPA_HCOR_00024696

1. Global Stakeholder Round Table Series

- Initiate, deepen and augment relationships with ~100 interconnected influencers on gas and methane agenda.
- Use shared concern on methane as a convening theme for stakeholder engagement – creating visibility of BP in a critical gas conversation and authenticating BP's commitment to low carbon.

Core programme: Global Roundtables

Controlled mechanism to engage expert and elite opinion formers in key global hubs

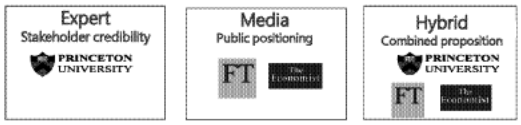
Round Tables, focused on understanding perspectives and establishing common ground – initially low-key:

- Approx. 30 people
- 3x geographies – US (DC), Europe (London/Berlin), Middle East/Asia
- Key civil society partner – eg: Princeton in US, NPL in UK

Bringing together top influencers on methane/gas

- NGOs/Academia/Energy/Public policy
- Informed by mapping stakeholder universe and extending BP's reach

Potential builds: partner options



Flexible activation model

1. Number of roundtables, timeframe, geographies
2. Partners – and types of partners
3. Framing the use content – scene-setters to new expert IP
4. Level of profile:
   - *From:* private dinner series
   - *To:* publicly visible summit

2. Senior leaders external engagement

- Maximise the advocacy value of BP executives and experts on gas and methane topic throughout the year.
- Structured around campaign high points + individual engagement plans.

Core programme: Exec profiling

Personalised 2018 engagement plans per Executive, including:
- Bob Dudley
- Bernard Looney
- Spencer Dale
- David Eyton

Align media activity to maximise impact at key events
E.g. at WGC
- Washington Post op ed on gas by Bob Dudley
- CNBC Power Lunch, Squawk Box or Mad Money – RWD/BL
- Facebook live/Linkedin Q&As with WGC exec appearances

2018 platforms – relevant to gas and methane advocacy:

Bob Dudley:
- CERA Week keynote
- World Gas Conference
- Economist Oil & Money
- Princeton/Stanford, tbc
- BNEF Future of Energy, tbc
- TEDtalk, tbc

Bernard Looney:
- EGYPS Petroleum Show
- OTC
- World Gas Conference

Spencer Dale
- Energy Outlook
- BRITCHAM International Energy Seminar

David Eyton:
- Technology Outlook
- OTC
- Economist Energy Summit, tbc

3. Digital Open Innovation Challenge

- Core principle – create a vehicle designed to directly involve a wider global set of audiences that BP wants to engage on gas.
- Harness shared nature of methane challenge as basis for bringing them into the conversation via an open innovation competition.

THE IDEA

- Identify set of specific shared issues related to methane challenge – informed by IP, Stakeholder Roundtables, BP operations
- Partner with a digital co-creation platform to crowdsource potential ideas from academia, NGOs, entrepreneurs, young engineers
- Leverage as a platform to bring alive the complexity of the issue and the commitment to partner on the solution.

EDF ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

Imperial College London

Peer examples: Harnessing open innovation to build advocacy and reputation

Unilever

Global Challenges and Wants

- Launched 10 shared challenges informed by sustainable business
- Used act of transparency to authenticate commitment to the issues + created hook for engaging wider audiences
- Ran by its R&D Director - with commitment to progress most viable ideas

Open Innovation

We have a vision of a better future for our world and our business and we want partners to share it. If you have a new design or technology that could help us grow our business and solve the challenges we've set, we'd like to work with you through Open Innovation.

FT "Big companies look to 'open innovation'"

GE

Ecomagination Challenge

- GE launched an open content for entrepreneurs to revamp the US's aging power grid
- Committed $200m to finding, funding, piloting most viable ideas
- Received 4000 entries, from 150 counties
- Leveraged as a global communications platform for corporate reputation on climate and energy

GE ANNOUNCES $200 MILLION POWER GRID CHALLENGE

Meet the Winners!

4. Employee Seeing is Believing Initiative

- Use the ambition to lead on methane reduction to engage employees and potential graduate recruits.
- Select a small group of BP employees who can become a taskforce for seeing and reporting on the challenge at the frontline as basis for internal and external gas advocacy.

Internal ambassadors

Deploy the group to communicate internally – humanising BP's commitment and showcasing spirit of enterprise and ingenuity.

External advocates

Next generation leadership platforms

Target universities for recruitment

Leverage in content and as peer ambassadors for external communications – BP's leadership in the face of the challenge.

Commitments – targets, reporting, new technologies

- Use commitment[s] on methane reduction to demonstrate seriousness of intent on low carbon – walking towards the dual challenge through a response driven from the core of the business.
- Sequence and amplify announcements to create momentum – e.g. starting with announcement of BP commitment to map the problem, set targets, explore new partnerships and/or investigate new technologies.

Core programme

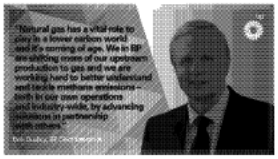
WITHIN THE OPERATIONS: Publication of ghg targets to build trust through transparency, completeness and granularity of methane reporting. Leverage ALC Report as communications platform

CONTRIBUTION TO WIDER ISSUE- IP that adds to the public debate through research and new data and can act as a catalyst for change in methane emissions reduction in and beyond the industry

Potential build

Invest in and deploy new technologies

- Draw on OGCI and other work on new tech
- Make an announcement of how BP will support one/more technologies by backing new ventures or deploying them in your sites.
- Report on improved outcomes to show commitment to raising standards across the industry



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Drum beat – news flow

- Maximise financial calendar, corporate announcements, and project milestones, to generate newsflow and profile on the gas issue throughout the year.

Financial calendar	Corporate announcements	Project updates
• Leverage Results to reinforce positioning on growth through gas, whilst tackling the issue of methane.	• Treat announcements of new partners/investments as campaign platforms to support BP gas story, rather than as isolated activities.	• Use project milestones as hooks for digital content, feature pitches, and interviews.

Taking to next level

Press and stakeholder trip:
- Oman AND/OR Lower 48
- Bringing alive Advantaged Gas + state of the art methane management

Looking ahead – opportunities into 2019

CONVENING
Extend Global Roundtable Series beyond oil and gas – convening multi sector stakeholders methane e.g, agriculture and construction

INTERNAL
Establish an employee challenge – internal prize for helping to crack the methane challenge

ACTION
Establish a new research centre / project with partner – responding to an opportunity from 2018 programme

SPONSORSHIP – Increase BP visibility on gas by sponsoring a global platform e.g. World Future Energy Summit

WORLD FUTURE ENERGY SUMMIT
PART OF ABU DHABI SUSTAINABILITY WEEK

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Campaign advocacy - options

Planks of the programme	Core programme	Key builds
1. Contribute to the debate	❑ New data into public domain with partner	❑ Satellite data ❑ On the ground study
	❑ BP generated content – leverage set pieces	❑ New digital assets – films + white papers
	❑ Editorial Story Bank on gas and proactive media outreach	
2. Proactively engage	❑ Global Stakeholder Roundtable Series	❑ + Media partner
	❑ Senior Leaders External Engagement programme	
	❑ Digital Open Innovation Challenge	
	❑ Employee Seeing is Believing Initiative	
3. Actions in operations	❑ Ghg targets	❑ Invest in new technologies
	❑ 'Best in class' methane reporting	
4. Drumbeat	❑ Financial calendar	❑ Journalist site visit
	❑ Corporate announcements	

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Measuring success

	Outputs
1. Contribute to the debate	• Agenda-setting IP/thought leadership content • Suite of BP content on gas/methane issue • Editorial Story Bank for media outreach
2. Proactively engage	• Stakeholder Roundtable Series - number and quality of key influencers engaged • Participation of senior leaders in key events and forums • Proactive top tier media engagement
3. Actions in operations	• New commitments on methane reduction • Best in class reporting on methane
4. Drumbeat	• Leveraging of key corporate moments for gas and methane • Sustained levels of engagement across 2018 and beyond

Outcomes

Profile, Awareness and Advocacy for BP position on gas and methane

- Top tier international media
- Online/social channels
- BP reputation tracker results
- Net Promoter Score – stakeholders
- Employee satisfaction and pride score

Budget

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Risks

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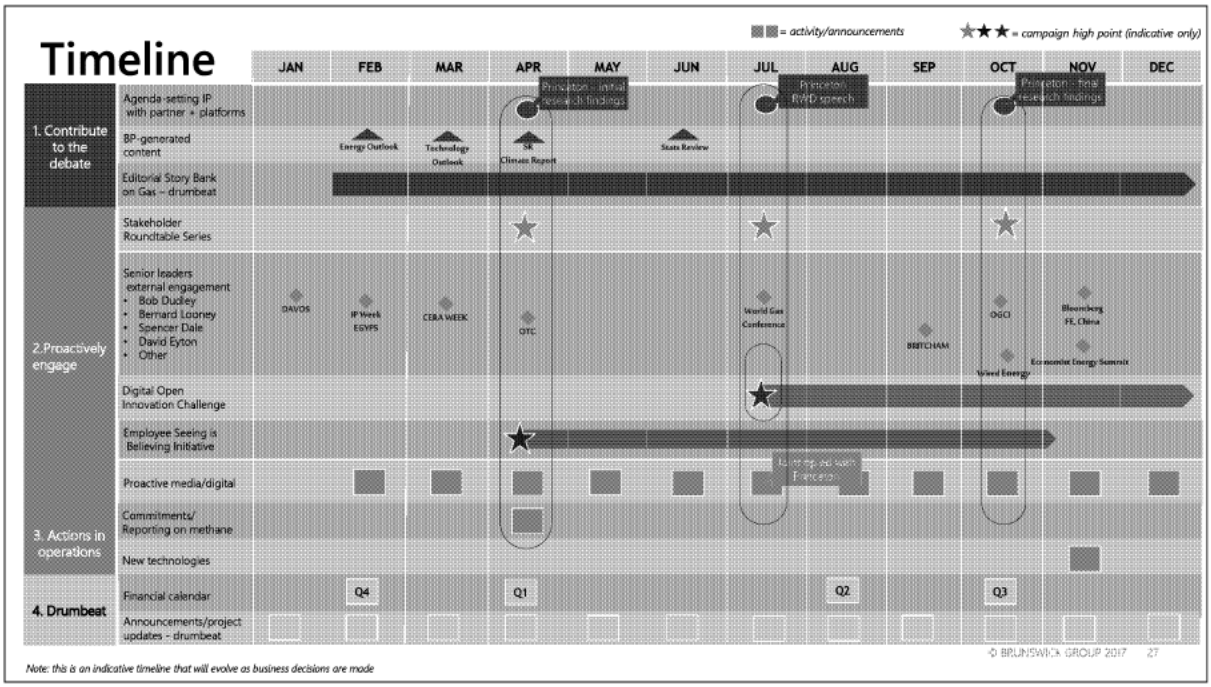
Timeline
= activity/announcements
= campaign high point (indicative only)
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1. Contribute to the debate
Agenda-setting IP with partner + platforms
Princeton - initial research findings
Princeton RWD speech
Princeton - final research findings
BP-generated content
Energy Outlook
Technology Outlook
SE Climate Report
Stats Review
Editorial Story Bank on Gas – drumbeat
2.Proactively engage
Stakeholder Roundtable Series
Senior leaders external engagement
+ Bob Dudley
+ Bernard Looney
+ Spencer Dale
+ David Eyton
+ Other
DAVOS
IP Week EGYPS
CERA WEEK
OTC
World Gas Conference
BRITCHAM
OGCI
Vivid Energy
Bloomberg FE, China
Economist Energy Summit
Digital Open Innovation Challenge
Employee Seeing is Believing Initiative
Proactive media/digital
3. Actions in operations
Commitments/ Reporting on methane
New technologies
4. Drumbeat
Financial calendar
Q4
Q1
Q2
Q3
Announcements/project updates – drumbeat
Note: this is an indicative timeline that will evolve as business decisions are made
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27

Key decisions

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Nature of the campaign

Return to re sequence in deck and language – defensive/abstact?

What it is...

- A sophisticated stakeholder and editorial engagement programme
- Both defensive and offensive – protecting + advancing advocacy for role of gas in the transition to a low carbon future
- Targeted at influential audiences – expanding BP's universe of supporters

...and what it isn't

- A marketing or ad campaign overtly and directly focused on building profile for BP's advantaged gas position

Message (Digitally Signed)

From: Stout, Robert [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=03DABEB0BF8D45E99472DED8F9F4E8ED-STOUT, ROBE]
Sent: 24/04/2019 07:45:06
To: Eyton, David G P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=a59b8e0e72fa44ebbc5d7568890e6f1c-Eyton, Davi]
CC: Dudley, Robert [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=acf29cc6b35c4d30a1f3091635801ea4-Dudley, Rob]; Hill, Gardiner [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=67ffd5c490cf4ed9bcdcc919fc513e58-Hill, Gardi]; Sanyal, Dev [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d24834d67091411c8a698e59e26d7b71-Sanyal, Dev]; Yeilding, Cindy [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=177049344af2433483f35665757451c4-Yeilding, C]; Strank, Angela RE [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=529f24a0dd9742589c7f9e2409eebd54-Strank, Ang]; Morrell, Geoff [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=68a33e1f188a46299e8acb2c84440814-Morrell, Ge]; Streett, Mary [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=be3e9aaa98684f67a347034a266e714c-Streett, Ma]
Subject: Re: My "valedictory" is attached
Attachments: smime.p7s

Let me also add my thanks for your note, Bob, along with gratitude to Cindy, Gardiner and of course David for nurturing this important relationship with Rob, Steve Pacala and others at Princeton.

I would only add that in addition to the value in informing our understanding of climate science and policy, these relationships (along with those we have with Harvard, Tufts and Columbia) are key parts of our long-term relationship-building and outreach to policy makers and influencers in the US and globally. Many of the academics we interact with in these programs were formerly senior government policy makers themselves, and others are acknowledged leaders in the E-NGO community (as Steve Pacala advises Fred Krupp and others at EDF). We do not always agree on matters of policy, but we do get valuable intel on the evolving perspectives and priorities of the environmental community and are able to tell the story of what we are doing and why in a more personal and compelling way. In return they are able to give us valuable input on our strategies and messaging

Best regards
Bob Stout

Sent from my iPhone

On Apr 24, 2019, at 7:35 AM, Eyton, David G P <[redacted]> wrote:

Thank you Bob,

Much of the credit should go to Gardiner Hill who has been SPA for the CMI programme since its inception.

We gave Rob a great send-off last week, Cindy Yielding led the annual CMI review from BP's side of things, and I formally announced the extension of the programme out to 2025 (the 3rd such extension during my tenure as head of technology).

The annual review gave the BP team had a chance to reconnect with the substance of the CMI's work. Our understanding of climate drivers and effects gets better, and we had some great presentations on methane, the oceans, and extreme weather. We are also heard about negative emissions technologies, and what it might take to understand and utilise soil carbon and other carbon sinks.

It is easy to be disheartened by the lack of international progress against contributions to the Paris Goals; but then again CMI is clear that solutions exist and that with political and corporate will these can be delivered.

Personally I was most struck by the criticality at this time of CCUS. If O&G companies do not capitalise on the opportunities presented by 45Q in the USA and projects like those in Rotterdam and Teeside in the EU, then the energy transition will be more difficult and our role marginalised.

All the best

David Eyton
Telephone: [redacted]
BP plc, 1 St James's Square, London SW1Y 4PD
Registered in England and Wales No 102498

From: Dudley, Robert [redacted]
Sent: 23 April 2019 14:57
To: Sanyal, Dev [redacted]; Eyton, David G P [redacted]; Yeilding, Cindy [redacted]; Hill, Gardiner [redacted]; Strank, Angela RE [redacted] Stout, Robert [redacted]
Subject: RE: My "valedictory" is attached

Angela, Gardiner, Cindy, David, Bob, and Dev,

Dev, forwarded to me Bob Socolow's 'valedictory' remarks. What a very nice set of comments! It says a lot about the company, but it particularly says so much about each of you.

My best, Bob

From: Sanyal, Dev [redacted]
Sent: 12 April 2019 17:21
To: Dudley, Robert [redacted]
Subject: FW: My "valedictory" is attached

From: Robert H. Socolow [redacted]@Princeton.EDU>
Sent: 28 March 2019 19:05
To: Yeilding, Cindy [redacted]; Rogers, Liz [redacted]; Eyton, David G P [redacted]; Stout, Robert [redacted]; Sanyal, Dev [redacted]; Strank, Angela RE [redacted]
Cc: Hill, Gardiner [redacted]; Stephen W. Pacala [redacted]@Princeton.EDU>; Holly P. Welles [redacted]@Princeton.EDU>; Caitlin M. Daley [redacted]@Princeton.EDU>
Subject: My "valedictory" is attached

Cindy, Liz, David, Bob, Dev, and Angela:

The back pages of the 2018 CMI Annual Report, currently being printed, will have a valedictory from me (attached). I want each of you to receive it directly from me, rather than in some round-about way. Until now, I have shared it only with Gardiner.

I reflect on CMI"s history and accomplishments, I propose areas where BP can get even further involved in low-carbon, and I say some thank yous. My thank yous are inadequate. CMI has been an incredible experience for me. I appreciate so very much the ways each of you has welcomed me into your world.

Yours, Rob

Message

From: Stutz, Rachel [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]
Sent: 24/03/2016 14:58:38
To: Bondy, Rupert [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]; Lynch, John E Jr. (Jack) [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN[redacted]; Morrell, Geoff [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]; Minge, John C [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]; Commins, Riona [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]; Nash, Mike A (Legal) [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]; Gase, Karen K [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]; Sidoti, Elizabeth [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]
CC: Moskowitz, Ellen (Brunswick Group) [redacted]
Subject: RE: Privileged/Confidential -- For Monday Call -- Columbia Journalism School inquiry

Privileged/Confidential

By way of update -- as discussed, Geoff had an initial conversation with Steve Coll, the dean of the Columbia Journalism School. Coll was not fully engaged with this particular story, so suggested we talk with the editor of the story, Susanne Rust. Geoff plans to follow-up with her, again off the record, in the coming weeks to see what more we can learn about this story and where it is headed. We can then consider whether a simple response along the lines we discussed is appropriate.

Let us know if you have any questions.

Rachel Stutz
Office: [redacted]
Mobile: [redacted]

This email message and any attachments are confidential and may be privileged. If you are not the intended recipient of this email, please advise the sender immediately.

From: Stutz, Rachel
Sent: Friday, March 18, 2016 3:23 PM
To: Bondy, Rupert; Lynch, John E Jr. (Jack); Morrell, Geoff [redacted]; Minge, John C [redacted]; Commins, Riona; Nash, Mike A (Legal); Gase, Karen K; Sidoti, Elizabeth [redacted]
Subject: Privileged/Confidential -- For Monday Call -- Columbia Journalism School inquiry

Privileged/Confidential

All,

In advance of Monday's call, I wanted to provide some additional context on the below request from a reporter with the Columbia Journalism School.

A few things to keep in mind as we discuss the best course of response:

- This reporter is with Columbia's Energy and Environment Reporting Fellowship, which is investigating the industry to see how companies managed internal climate research and what was disclosed to the public. (mission to "conduct a wide-ranging investigation into how major fossil fuel companies carried out and managed internal research about climate change, how this research squared with their public statements and disclosures, and how internal scientific insights into climate change might have figured in the companies' corporate planning and business operations. From the start, the project reporters have investigated these questions at many companies, including but hardly limited to ExxonMobil.")

- The group has written a few stories on XOM that have been cited in the related congressional letters and calls for AG/SEC/DOJ investigations. This group also wrote a piece about Shell's activity in the North Sea that led to calls for the investigation to include Shell as well.

- This group has partnered with the Los Angeles Times to publish their initial findings. Stories in the LA Times include:

What Exxon Knew About the Earth's Melting Arctic
How Exxon Went From Leader to Skeptic on Climate Change Research
Big Oil Braced for Global Warming While It Fought Regulations

I look forward to our discussion on Monday. Let me know if you have any questions in the meantime.

Best,
Rachel

Rachel Stutz
Office: [redacted]
Mobile: [redacted]

This email message and any attachments are confidential and may be privileged. If you are not the intended recipient of this email, please advise the sender immediately.

From: Nicholas, David H
Sent: Tuesday, March 15, 2016 11:10 AM
To: Sidoti, Elizabeth; Stutz, Rachel; Clanton, Brett
Subject: For LitComms: re Exxon Valdez

Liz, Brett, Rachel

Given the origin of these questioners – Columbia Journalism School in association with LA Times, who led on the recent allegations regarding Exxon Mobil climate disclosures – and the specifics of their questions – on Alaska, Alyeska etc - can I pass this one over to you to take on and deal with?

The questions appear to follow the EM model in talking about disclosures to shareholders. They may be a little optimistic in expecting someone who wrote a report 32 years ago to still be with us.

Please let me know how, if at all, I can support you in replying to this.

Thanks a lot

David

David Nicholas
Head of Group Press Office, BP.
Tel: [redacted]
Email: [redacted]

BP International Limited. Registered office: Chertsey Road, Sunbury-on-Thames, Middlesex, TW16 7BP. Registered in England and Wales, number 542515.

From: Dino Joseph Grandoni [redacted]@columbia.edu]
Sent: 15 March 2016 14:03
To: Nicholas, David H
Cc: Susanne Rust Papenfus
Subject: Exxon Valdez

Hi David,

Hope you're well. My name is Dino Grandoni, and I'm a reporter based at Columbia Journalism School as part of its Energy and Environment Reporting Fellowship. Our stories are published in the Los Angeles Times. Susanne Rust, the editor of the fellowship, is CC'd, as well.

In 1975, the U.S. Geological Survey started issuing warnings that the Columbia Glacier in Prince William Sound was becoming increasingly unstable as a result, in part, of climate warming, and that it was likely to start to calving icebergs into the shipping lanes around Valdez, potentially imperiling the tankers moving through them.

Representatives from Alyeska and its member companies, including Sohio, then a BP subsidiary, met with USGS glaciologists twice to discuss the glacier — once in 1975 and again in 1984, when it was clear the glacier was receding.

Also in 1984, Art Klingle, an employee of Sohio, published a study on the flow of icebergs into shipping lanes. He determined that it would increase as the glacier retreated.

On March 24, 1989, the Exxon Valdez, filled with oil from the Alyeska pipeline, moved out of the shipping lanes to avoid icebergs. Although the accident was largely blamed on the mishandling of the crew (captain was drinking, not present on deck) - it was ice that caused the tanker to move off-course in the first place.

In 1994, the Overseas Ohio, chartered by BP, collided with an iceberg in Prince William Sound. It did not spill oil because it was empty.

Here are our questions for BP:

1) It is clear from the documents we've obtained that BP was aware of the risks the deteriorating glacier posed to its oil tankers. Did BP disclose these risks to shareholders? If so, by what means? If not, why?

2) Can we speak with Art about his iceberg study, if BP would make him available for comment?

Thanks in advance. We look forward to your comments.

Sincerely,
Dino and Susanne

-

Dino Grandoni | [redacted]

Lamar McKay April 2016

Princeton Carbon Mitigation Initiative (CMI)

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1. Princeton CMI's Perspective – Key messages and recommendations for responsible action

This is an update on the Princeton CMI's key messages we shared last year that are relevant to our oil and gas business. It also includes Princeton's recommendations on what an oil and gas company, like BP, should do to address climate change in a sustainable manner.

1.1 Context

1.1.1 Risks to BP from climate change

The climate problem has the potential to disrupt BP's business in at least three ways:

i. Effective climate policies can emerge that discourage fossil fuel consumption, that impose environmental performance standards on production processes, and that subsidize or promote efficiency and low carbon energy.
ii. Climate-motivated research can create disruptive new energy technology.
iii. Climate impacts can directly disrupt BP's investments in energy production infrastructure and supply chains.

1.1.2 Much has changed and is changing

- Low-carbon energy is arriving unevenly: wind, solar, and vehicle fuel efficiency are being realized at a one-wedge pace, (scaled up to reduce emissions by at least 1 billion tons of carbon per year over 50 years) while hydrogen power, CCS and nuclear power are faltering. Wind, solar, and vehicle fuel efficiency have developed to the point where they are now being effectively scaled up.
- Innovation in the energy sector has been dramatically affected by the arrival of shale gas and oil and low energy prices.

- In climate science new modeling capability is enabling forceful, credible statements about extreme events.
- Following the Paris COP21 meeting, a global agreement to limit temperatures to 2 degrees C, and an ambition to 1.5 degrees C has been generally welcomed, including by BP. However, at the country level the "nationally determined contributions," or pledges, do not deliver the 2 degrees. Governments, supported by other actors (including oil and gas), will need to strengthen plans to enable delivery of the Paris COP agreement.

1.1.3 BP supports CMI to help manage risks

- CMI sharpens BP's corporate perspective on climate change. It provides BP with strategic understanding of the potential physical, biological and human systems impacts.
- BP benefits when CMI disseminates sound information that supports effective public policy discussions.
- BP leverages the much larger research programs of the CMI investigators.

1.2 CMI Key Messages

1.2.1 Science messages

Three independent lines of evidence support a scientific consensus that manmade greenhouse gas emissions are causing climate change and that fossil-fuel CO_2 is the single most important contributor:

i. ***The geological past:*** During the ice-age cycles, temperature and atmospheric CO_2 rose together.
ii. ***The historical past:*** Manmade greenhouse gases and the Earth's temperature increased rapidly after the industrial revolution.
iii. ***Physical understanding and models***: Climate models predict observed climate change and associate the change with manmade greenhouse gas emissions and aerosols.

Natural sinks: Carbon sources and sinks in balance after 2050 (Paris Agreement): Over half of emitted CO_2 is kept from the atmosphere by being stored in terrestrial and oceanic "sinks". CO_2 absorption in the oceans is making seas more acidic. On land, there is an overall growth in forests, despite deforestation. The sinks have continued to grow with increasing emissions, but climate change will affect carbon cycle processes in a way that will exacerbate the increase

of CO_2 in the atmosphere

Increased variability and impacts: Climate change will bring significant increases in temperature, altered patterns of precipitation, ocean acidification, sea-level rise due to ocean thermal expansion and decreased continental ice volume, and rapid increases in extremes of heat, extreme precipitation and drought. Risks of the most serious consequences of warming increase significantly for 2-3°C of mean warming. Global risks include widespread disruption of food production, multi-meter sea-level rise from loss of a continental ice sheet, and widespread extinctions. As for extreme events, a new National Academy of Science (NAS) report on "attribution" says……"It is now often possible to make and defend quantitative statements about the extent to which human-induced climate change …has influenced either the magnitude or the probability of occurrence of specific types of events or event classes."

1.2.2 Technology messages

***Methane leakage*:** Methane is the second most important manmade greenhouse gas (after CO_2), and it causes multiple times more warming than an equal mass of CO_2 in the atmosphere. However,

- Natural gas combustion produces about half the CO_2 emissions per unit of energy, compared to coal, but leakage of methane during production and distribution reduces this advantage.
- Research suggests that natural gas causes less warming than coal, provided methane leakage is well managed. For example the peer reviewed EDF analysis of the Barnet, reports a highly skewed distribution of emissions, with 10% of well sites accounting for 70% of emissions.

CO_2 capture and storage (CCS):

- CCS creates the option of low-carbon fossil fuel energy.
- CO_2 from coal or natural gas power plants can be captured chemically and stored in geological formations for hundreds of years in volumes that are material to climate change mitigation.
- Models indicate that buoyancy-driven leakage along old wells will not be a 'show-stopper' – i.e. the potential leakage rates are so low that they wouldn't negate the climate benefit.
- It is much cheaper to capture CO_2 from the flue gas of a coal power plant than from ambient air, where it is 300 times more dilute – and from a natural gas power plant, where it is 100 times more dilute.

1.2.3 Integration messages

Studies on the relationship between emissions and projected temperature rises have shown the following:

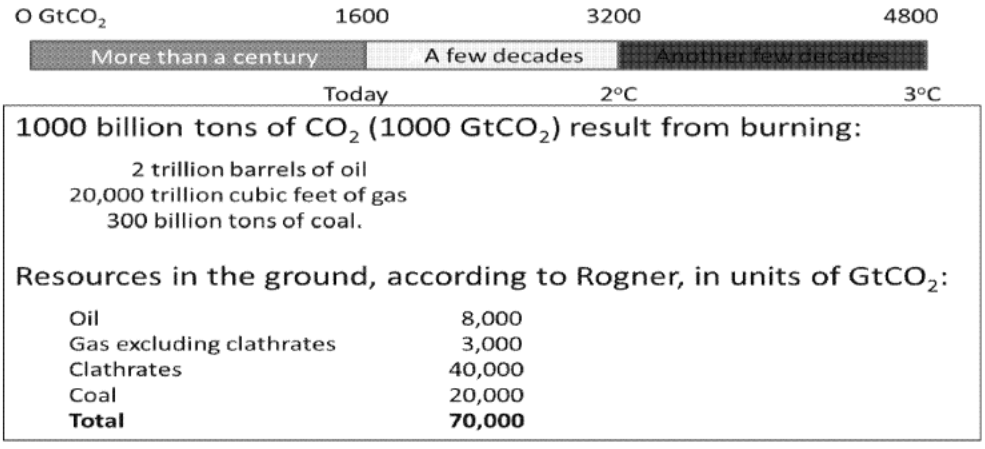
1°C rise: Man-made emissions of CO_2 already emitted to date will create 1°C of warming. This cannot be stopped.

2°C rise: If the same quantities of emissions that have been released since the industrial revolution are released again, it would bring the Earth to the 2°C target. This will occur within four decades at current emissions rates. A hard stop (i.e. immediate emissions curtailment) is required after that to prevent further warming. Alternatively, an immediate emissions reduction is required to provide a more gradual path to the 2° C target.

3°C rise: Tripling the amount of emissions emitted to date would bring us very roughly to 3°C. This is expected to occur in about eight decades at current emissions rates. Either a hard stop would then be needed to prevent further warming, or the current emissions rate would need to be maintained for a few decades followed by a more gradual decline.

Emissions "budgets" mean choices:

Fossil fuels are so abundant that, for any cumulative-emissions target, even a weak one, attractive fossil fuel would need to be left in the ground. For example, emissions of 4,800 $GTCO_2$ would lead to a warming of 3°C but if total fossil fuel resources were burnt, then by one estimate 70,000 $GTCO_2$ could be emitted (see figure below).



1.2.4 How will various industries respond to a specific economy-wide carbon price whose objective is to induce new investment?

For the sake of argument, consider \$100/tCO_2 – what is the impact of this on product prices and how much of this might be passed through to the customer?

- Upstream, the impacts are particularly dramatic upstream. \$100/tCO_2 is:
  - \$40/barrel of oil
  - \$5/million Btu of natural gas
  - \$200/ton of high-quality coal
  - Enhanced oil recovery (EOR): 1 bbl oil contains ~120 kgC, and 1 tCO_2 contains 273 kgC. Thus, EOR at 2 to 3 barrel produced per ton of CO_2 stored (typical) stores one carbon atom for each carbon atom produced. At \$30/barrel and \$100/tCO_2, the two revenue streams are about equal
- Downstream, if price-independent distribution costs are added, retail price increases are smaller, in percent. \$100/tCO_2 is:
  - \$0.80/U.S. gallon of gasoline
  - \$0.08/kWh electricity from coal
  - \$0.04/kWh electricity from natural gas

2. CMI recommendations to the Oil and Gas industry

2.1 CMI Recommendation #1

Address your core activities;

- Upstream CO_2: Lead in curtailing flaring, promote CCS where gas is processed, redesign EOR for when CO_2 storage becomes a revenue stream.
- Upstream fugitive CH_4: Demonstrate best practices – minimal release, fast response to carelessness. Beyond safety.
- Gas for coal: Work out the limits on how much and how fast, e.g., to restrain the juggernaut in Asia.

- Gas for “firming”: Provide dispatchable power via partnerships where gas backs up intermittent renewables.

2.2 CMI Recommendation #2

Engage policymaking and understand technology implications proactively;

- Be real and helpful about carbon pricing. What should we expect to see happen at $5/t$CO_2$? What about $100/t$CO_2$, reached by a ramp that is credible?
- Identify yourselves with carbon efficiency. Examples:
    - When bringing gas to new cities, assure efficient buildings/appliances.
    - Help your industrial and power-plant customer to use your fuel efficiently (the customer’s side of the meter).
- Understand the potential for CCS to enable the full use of fossil fuels across the energy transition and beyond.

Climate Change

Key messages

- Climate change is an **important long-term issue** that justifies global action.
- BP **welcomes** the direction provided by **the Paris Agreement**, for countries to determine their contributions to holding temperature rise well below 2°C – but meeting these ambitions will be complex and challenging
- **There are multiple actors and actions**. Agriculture and land use emit about a quarter of global GHGs. Slowing deforestation could dramatically reduce CO_2 and help protect the world's biodiversity.
- **Energy demand is growing**, driven by population and economic growth in the developing world. Access to energy helps alleviate poverty and provides energy security.
- **Society's challenge** is to provide access to energy for the greatest number of people that is secure, affordable and lower carbon.
- Meeting this challenge will require a **diverse mix of fuels.** Fossil fuels will continue to play an important part. Renewables are growing rapidly but from a low base.
- **All fossil fuels are not equal**. Coal is the most carbon intensive fossil fuel and accounts for about 60% of potential carbon dioxide (CO_2) emissions from burning known fossil reserves. Natural gas is an affordable replacement that would cut CO_2 combustion emissions from power in half compared with coal.
- **There is a variety of resource holders and users**. National oil companies control about 90% of known oil reserves. Consumers account for about 90% of CO_2 emissions from oil products.
- **Governments must lead** by providing a clear, stable and effective policy framework if companies are to provide and use energy competitively, and limit GHGs.
- A well-designed **carbon pricing framework** is the most comprehensive and economically efficient policy. It would make energy efficiency more attractive and lower-carbon energy sources more cost competitive.
- Within a clear policy framework **energy companies have a key role** to play by deploying innovative technological and commercial solutions at scale.
- **BP wants to play its part** and has a wide-ranging programme of action:
  - Internal carbon price - \$40/tonne of CO_2 into investment appraisals and engineering designs in industrialised countries.
  - Operational efficiency - assess, prioritize and implement technologies and systems to improve energy usage, flaring and emissions control in our operations.
  - Efficiency of our products – optimising our fuels and engine oils in partnership with car and equipment manufacturers.
  - Lower-carbon energy investment - BP's Upstream portfolio is about half oil and half gas, with a growing proportion of gas. We invest in biofuels, wind and innovative low carbon businesses.
  - Climate change adaptation - with new projects assessing risk from climate impacts and guidance for operations on climate adaptation.
  - Scientific research – assessment of climate change technology and policy risks through supporting research and science.

Related briefs: Biofuels, BP programme of action on climate change, Carbon offsets, CCS, Climate change adaptation, Energy efficiency, Life cycle assessment, Low carbon fuel standards, Methane, Paris climate agreement , Role of natural gas, Unburnable carbon.

Additional information

Climate change and GHG emission trends

BPA_HCOR_00041316

- BP uses the peer reviewed Intergovernmental Panel on Climate Change (IPCC) process as the recognised source of research assessment in climate science. The IPCC reports that warming of the climate system is "unequivocal", and it is "extremely likely" that human influence has been the cause. It notes that keeping warming to 2°C, the threshold recognized by governments as limiting the worst impacts of climate change, will require substantial and sustained reductions of GHG emissions.
- BP's own analysis of likely trends suggests that global CO_2 emissions from fossil fuels may be 25% higher in 2035 than they were in 2013, partly as a consequence of coal use in rapidly growing economies. This is a projection of what we think is likely to happen, not what we would like to see.
- More ambitious energy policies could lead to slower growth in CO_2 emissions but this would probably still not be enough to keep warming to 2°C, given current trends in energy demand and political, economic and technological challenges.

International climate change agreements and policies

- We are pleased the Paris Agreement creates the possibility for carbon pricing to help deliver global goals and national contributions. We recognise different national prices are a necessary and practical first step but would like to see convergence towards a single global carbon price over time.
- We recognise that different national approaches are a necessary and practical first step. Domestic sectors or installations that are energy-intensive and exposed to unequal international competition should be protected from national carbon prices until approximate global carbon pricing equivalence exists.
- BP has signed the Carbon Price Communique and endorsed the World Bank statement supporting a carbon price. We are also members of the Carbon Pricing Leadership Coalition and the CEO-led Oil & Gas Climate Initiative (OGCI).

Policy measures

- A carbon price should be applied equally to all sectors economy-wide – unless overlapping or duplicative policies already exist, for example for transport.
- We have no preference between cap and trade and carbon taxation to create a carbon price. Either policy can be effective and is acceptable if it is well-designed.
- Targeted additional measures can promote energy efficiency, research and development, raise public awareness and help emerging low carbon technologies**.**

Major options for limiting GHG emissions

- Improved agriculture and land use management - accounts for ~quarter global GHGs.
- Less coal - the most carbon-intense fuel and accounts for about 60% of potential CO_2 emissions from known fossil reserves.
- Natural gas - emits about half the CO_2 of coal when burned for power.
- Energy efficiency (especially in transport) - helps with affordability (less energy), security (reduced import dependence) and sustainability (reduced emissions).
- Renewables - growing rapidly but starting from a low base.
- CCS - could enable continued large-scale use of fossil fuels in a tightly carbon-limited world but faces substantial technology, commercial and logistical challenges.
- Nuclear - significant potential but waste disposal & consumer acceptance challenges.

Contact Paul Jefferiss

BPA_HCOR_00041317

Message

From: van Hoogstraten, David Jan [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Sent: 16/05/2016 12:31:49
To: Stout, Robert [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted] Coburn, Craig [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
CC: Chen, Matthew [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Subject: FW: The Guardian: Shell creates green energy division to invest in wind power

Well, Shell had/has a small wind business. The investment numbers they are mentioning below do not add up to a huge initiative it doesn't seem, but I was struck by the move having come after Chatham House predicted a "short, brutal end" to our business within 10 years.

David J. van Hoogstraten
Senior Director, Regulatory Affairs (Environmental)
BP America Inc.
1101 New York Avenue, NW
Washington, DC 20005
Direct: [redacted]
Mobile: [redacted]

From: Chen, Matthew
Sent: Monday, May 16, 2016 8:13 AM
To: Nardini, Christian (NEXTSOURCE); van Hoogstraten, David Jan; Williams, Lance
Subject: Fwd: The Guardian: Shell creates green energy division to invest in wind power

FYI

Sent from my iPhone

Begin forwarded message:

From: Virginia Northington <[redacted]@brunswickgroup.com>
Date: May 15, 2016 at 8:04:19 PM EDT
To: "Arturo Silva [redacted], "Brett Clanton - BP [redacted], "Elizabeth Sidoti - BP [redacted], "Geoff Morrell - BP [redacted] "Jason Ryan - BP [redacted]>, Jessica Gonzalez <[redacted], "Joe Ellis [redacted], "Karen Gase - BP [redacted], Mary Perkins <[redacted], "Mary Streett - BP [redacted], "Matthew Chen - BP [redacted], Mike Nash <[redacted]>, "Rachel Stutz - BP America [redacted], "Ray Dempsey [redacted], Rebecca Raftery <[redacted], Robert Stout [redacted] "Shanan Guinn - BP [redacted]
Cc: Ellen Moskowitz <[redacted]@brunswickgroup.com>
Subject: The Guardian: Shell creates green energy division to invest in wind power

Shell creates green energy division to invest in wind power
By Terry Macalister

The Guardian
May 15, 2016

Shell, Europe's largest oil company, has established a separate division, New Energies, to invest in renewable and low-carbon power.

The move emerged days after experts at Chatham House warned international oil companies they must transform their business or face a "short, brutal" end within 10 years.

Shell's new division brings together its existing hydrogen, biofuels and electrical activities but will also be used as a base for a new drive into wind power, according to an internal announcement to company staff.

With $1.7bn of capital investment currently attached to it and annual capital expenditure of $200m, New Energies will be run alongside the Integrated Gas division under executive board member Maarten Wetselaar.

Insiders said the group chief executive, Ben van Beurden, wants to ensure Shell is at the forefront of oil company innovation.

"He does not want to get out so far in front where he dilutes investor returns but he does want to make sure Shell is at the leading edge of transition [to lower-carbon economies]."

The Anglo-Dutch group may already be trailing Total of France, which already has its own New Energies division and boasts of being the world's second-ranked solar energy operator through its affiliate SunPower, bought for £800m in 2011.

Shell has made no formal announcement so far about New Energies but the new business is expected to be revealed at a public strategy briefing in London on 7 June.

Company insiders claimed Shell wants to play down the importance of New Energies for fear it will be written off as a "greenwash" exercise by environmentalists, but said the company believes the new business could become very big – although not for a decade or more.

It is unlikely Greenpeace and others will be impressed by New Energies, given that the division's annual spending level is less than 1% of the total $30bn Shell pumps into oil and gas.

Van Beurden has not yet signalled a slowdown in the high-cost oil and gas investment that has made Shell a target of anti-fossil fuel campaigners, who believe such investments will only result in so-called stranded assets – carbon made unburnable by international commitments to limit greenhouse gas emissions.

Shell has pulled back from high-risk Arctic drilling but is still engaged in deepwater projects and in the high-CO2 Canadian tar sands – although it is trying to cut emissions by developing a carbon, capture and storage facility.

The Shell boss told investors at a company meeting in London last week he did expect oil and gas demand to continue strongly but the company also took its responsibilities to tackle global warming seriously.

"The big challenge, both for society and for a company like Shell is how to provide much more energy, while at the same time significantly reducing carbon dioxide emissions," he said.

The following day Shell announced it was bidding in a partnership to build two windfarms off the Dutch coast that will be big enough to power 825,000 households.

Shell already holds interests in nine other wind projects in North America and Europe, although spending on wind, solar and hydrogen projects was suspended by former chief executive Jeroen van der Veer in 2009. A substantial solar operation had been largely sold off three years before that.

Rival BP also promised to go "beyond petroleum" and established an Alternative Energy business with its own London headquarters and chief executive, only to gradually wind it down.

Paul Stevens, a fellow at the Chatham House thinktank, said in a research paper that the oil majors were no longer fit for purpose – hit by low crude prices, tightening climate change regulations and wrongheaded strategies.

In the report, Stevens argued the only way forward for the companies lay in diversifying into green energy, drastically reducing their operations or consolidating through mega-mergers.

"The prognosis for the IOCs [international oil companies] was already grim before governments became serious about climate change and the oil price collapsed … their old business model is dying," said Stevens, a visiting professor at University College London.

Virginia Northington
Account Director
The Brunswick Group
M: [redacted]

On May 15, 2016, at 7:42 PM, Virginia Northington [redacted]@brunswickgroup.com> wrote:

R&D cutbacks hit Big Oil's ability to invest in new technologies
By Ed Crooks
Financial Times

Most of the world's largest oil companies have cut research spending sharply since 2013 as they strived to save money in the face of the slump in crude prices, raising concerns about their ability to compete in a changing energy landscape.

BP made the biggest cuts, reporting a 41 per cent drop in its research and development spending for 2013-15, in part because of its decision to stop work on advanced cellulosic ethanol.

The other large western oil groups have mostly made cuts of 15-20 per cent, company reports show, with the exceptions of ExxonMobil of the US and Eni of Italy, which have cut by just 3 and 2 per cent respectively.

The fall in R&D budgets prompted warnings that the companies were undermining their ability to develop more challenging oil and gas resources, or to invest in alternatives to fossil fuels.

After the plunge in the oil price that began in mid 2014, most of the largest oil companies, with Eni the principal exception, pledged to maintain dividends. They have been cutting capital spending and operating costs to keep their borrowings under control.

BP says it is focusing R&D spending on where it will have the most impact. Brian Gilvary, chief financial officer, told analysts last month that the company would not "drive the bus off a cliff" in sacrificing long-term growth to hit short-term financial targets.

However, analysts and investors worry that R&D cuts will slow the introduction of new technologies and reduce future oil and gas production.

David Lawrence of Lawrence Energy, an investment firm, said large companies had been putting a lot of effort into techniques for enhanced oil recovery, squeezing additional output from mature oilfields. “If new methods are going to be delayed, that could take its toll in terms of downwards pressure on supplies,” he said.

R&D cuts also hit the development of new technologies that could replace fossil fuels.

Varun Sivaram, of the Council on Foreign Relations, a think-tank, said entrepreneurial efforts to develop alternative energy faced difficulties because the costs of deployment are so high. “The fact that there are few oil companies willing to play a role in clean tech has reduced the opportunities for entrepreneurs,” he said.

Total of France, which last week agreed to buy battery manufacturer Saft for €950m and also owns 60 per cent of solar company SunPower, is unusual among big oil groups in supporting commercial deployment of alternative energy, but it too cut its R&D spending by 15 per cent over 2013-15.

Vijay Swarup, vice-president of research and engineering at Exxon, said the company’s commitment to its R&D programme was “very encouraging”.

Exxon has high-profile long-term research programmes, including work on extracting biofuels from genetically modified algae launched in 2009, and the alliance to develop new technology for capturing carbon dioxide from power plants, announced earlier this month.

“Markets fluctuate, but we know that science does not,” Mr Swarup said. “You have to be patient. The cycle from discovery to deployment can take decades.”

Virginia Northington
Account Director
The Brunswick Group
M: [redacted]

On May 15, 2016, at 9:25 AM, Virginia Northington <[redacted]@brunswickgroup.com> wrote:

More than 1,000 expected to protest BP Whiting Refinery
By Joseph S. Pete
The (Munster, IN) Times
May 14, 2016

Protestors expect more than 1,000 people, and maybe as many as 5,000, to rally outside the BP Whiting Refinery Sunday as part of a global "Break Free from Fossil Fuels" campaign taking place this month.

A rally and march to the BP Whiting Refinery will begin at 1 p.m. at the Whiting Lakefront Park, 1798 119th St., Whiting. Organizers intend to say "enough is enough" to petcoke, a byproduct of the oil refining process, and heavy crude from the oil sands region of Canada.

Environmentalists around the world have been organizing for 12 days in favor of transitioning to renewable energy and ending the use of oil, coal and gas as part of the "Break Free from Fossil Fuels" action. Other protests will take place outside the White House and Los Angeles City Hall.

"We need all this stuff out of our communities," said organizer Sheilah Garland, with National Nurses United. "The big message is just we need a transition to clean energy and green jobs. We want to work with the workers and unions in these industries on the transition to green jobs."

Participating groups include Honor the Earth, National Nurses United, Railroad Workers United, Black Lives Matter Gary, Southeast Side Coalition to Ban Petcoke, and the Flint Democracy Defense League.

The rally at the refinery on Lake Michigan's southern shore is expected to be the largest "Break Free from Fossil Fuels" rally in the United States, Garland said.

"The communities of this country are at a tipping point," she said. "We can no longer sit idly by while they're polluting our planet. This is the opening salvo in a fight that's going to take several generations. It's about saving our lives and saving our planet."

The refinery in Whiting has been the subject of previous environmental protests, including by Southeast Side Coalition to Ban Petcoke, whose activism against large open piles of powdery petcoke led BP to stop shipping it to Chicago. The refinery has also drawn the ire of protestors because it processes more crude from the oil sands of Canada due in large part to a $4.2 billion modernization project completed two years ago.

Last year, Reverend Billy and the Stop Shopping Gospel Choir, a New York City-based street theater activist group that was featured in the Morgan Spurlock-produced documentary "What Would Jesus Buy?" staged an exorcism in the hope of making the refinery more environmentally-friendly.

The refinery produces 430,000 barrels a day, supplying gasoline to most of the Upper Midwest. BP says it invested more than $1 billion in environmental improvements during the modernization project, including ones that reduced air emissions and removed sulfur from gasoline.

Virginia Northington
Account Director
The Brunswick Group
M: [redacted]

On May 15, 2016, at 9:15 AM, Virginia Northington [redacted]@brunswickgroup.com> wrote:

Client Alert: Law Firms Tell Fossil Fuel Companies They Could Be Next in "ExxonKnew" Probe
By Steve Horn
DeSmog Blog
May 15, 2016

Some of the country's biggest law firms have recently penned “client alert” memoranda, suggesting to their clients that they closely monitor the ongoing Attorneys General investigations occurring in states nationwide on the potentially fraudulent behavior of ExxonMobil.

DeSmog tracked down alerts written by three different firms: Crowell & Moring, Pillsbury Winthrop Shaw Pittman, as well as King & Spalding. All of them have maintained fossil fuel industry clients as well as tobacco industry clients, a DeSmog review has revealed.

Two of the alerts came out in recent weeks, published in the aftermath of a press conference in New York City in which many new states announced they would join New York Attorney General Eric Schneiderman's Exxon investigation, launching the “AGs United for Clean Power” coalition.

All of the attorneys whose names are listed on the client alerts denied requests for on-the-record comment when contacted by DeSmog.

Crowell & Moring

Crowell's three-page alert came out just five days after Schneiderman's office subpoenaed ExxonMobil.

The memo, titled "The Widening Circles of the Exxon Mobil Climate Disclosure Investigation and Its Implications for Energy Companies," took note of both the Los Angeles Times and InsideClimate News investigations that put "Exxon Knew" as a meme on the map. It pointed to them as evidence that the investigation has already gotten off to a head start, given the breadth and depth of the journalism.

"The Exxon Mobil investigation could prove even more complex, and the results more far-reaching, because of the long history of the company's own research into climate-related issues and its own public disclosures (including SEC filings) on the topic," reads the alert.

"[I]n addition to the information likely to be yielded by the scope of the [New York AG] subpoenas, the Exxon Mobil public record has already been enhanced by two widely reported independent private investigations by news organizations, including a joint Los Angeles Times/Columbia University School of Journalism study, which describes in detail Exxon's climate research in the Arctic and the company's corresponding statements to, and omissions from, the investing public about the perceived business threat from climate change."

Former Crowell attorney Victor Schwartz — now with Shook, Hardy & Bacon and a member of the American Legislative Exchange Council's board of scholars — formerly represented tobacco giant Philip Morris on behalf of the firm. Crowell has maintained Shell, Chevron, Koch Industries subsidiary Georgia-Pacific, Duke Energy, Alpha Natural Resources, Peabody Energy, General Electric, American Petroleum Institute, Arch Coal, Schlumberger and others as legal clients.

A Koch-funded front group, the Competitive Enterprise Institute, has already received a subpoena from the Attorney General of the Virgin Islands. And the American Petroleum Institute serves as one of the subjects of an InsideClimate News investigative piece, having studied the impacts of industry-created carbon dioxide in the atmosphere beginning back in the late-1970's only to proceed with funding climate denial in the following decades.

King & Spalding

On April 18, King & Spalding published its four-page client alert.

One of King's clients is Chevron, which it represented in the still-ongoing pollution case in Ecuador. **It also has represented Shell Oil, ConocoPhillips, Georgia-Pacific, Halliburton, General Electric, Anadarko Petroleum, Peabody Energy, Occidental Petroleum, Marathon Oil, Motiva Enterprises, BP and Big Tobacco companies.**

King & Spalding opened up the alert by stating that the "growing focus by state AGs on climate change could present significant challenges for energy companies going forward."

"These new investigations are a striking reminder of the increasingly aggressive role that state AGs play in the government investigations arena," King went on to write. "In recent years, state AGs have become increasingly involved in high-profile policy issues like climate change that are part of ongoing national debates. In some situations, these investigations look more like prospective policymaking than retrospective enforcement action."

In the alert, King & Spalding also touted its "strategic partnership" with former Wisconsin Republican Attorney General J.B. Van Hollen, launched in October 2015, and its past attorney-client relationship with Brown and Williamson Tobacco Company (which has since merged into R.J. Reynolds Tobacco Company).

Pillsbury Winthrop Shaw Pittman

Pilsbury, like the others, told its clients that although Exxon has come first in this investigation, there's a chance they could fall next in line. Not only that, the firm recommended deferring the legal costs of such an investigation to their insurance companies.

"Although the details of future enforcement activity are not clear, it is reasonable to expect increasing government scrutiny of climate change-related disclosures," wrote the firm to its clients.

"Our White Collar and Insurance Recovery and Advisory attorneys routinely evaluate CIDs and subpoenas and help clients not only to develop strategies to respond, but to maximize the potential that our clients' insurance companies pay for that response. In most cases, we are able to review and evaluate specific situations for relatively low cost or fixed fee arrangements, which enable us to assist our clients to proactively improve our clients' position and minimize their risk."

The firm's client list has included the likes of Chevron, British American Tobacco, Schlumberger, as well as Duke Energy.

Contemplating Similar Fate?

A recent report published by the Center for International Environmental Law (CEIL), based on documents put up on the website SmokeAndFumes.org, moved back the time clock of what the fossil fuel industry knew and when it knew it with regards to carbon dioxide pollution and global warming. The report concluded that knowledge dated back at least to the 1940's, which coincided with the industry proceeding to create a disinformation campaign to confuse the public about the impacts of emitting carbon dioxide into the atmosphere.

CEIL president Carroll Muffett described DeSmog's findings as important on a number of levels.

"These notices to clients demonstrate that, even as Exxon and its allies attempt to minimize and dismiss the AG investigations in the media, the fossil fuel industry recognizes their significance for individual companies and for the industry as a whole," Muffett told DeSmog.

"That oil companies are turning to the same firms that represented tobacco is telling: once it began, tobacco litigation continued for decades and ultimately ensnared the entire industry. Fossil fuel producers are now clearly–and legitimately–contemplating a similar fate," Muffett said.

Virginia Northington
Account Director
The Brunswick Group
M: [redacted]

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Message

From: Sykes, Starlee R [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B03445C685FB4EB299F90D0E11726E57-SYKES, STAR]
Sent: 25/04/2021 20:05:23
To: Kassia Yanosek[redacted]@mckinsey.com]
Subject: RE: Morning Consult Energy: What's Ahead & Week in Review

Maybe but we are so schizophrenic about this…

From: Kassia Yanosek[redacted]@mckinsey.com>
Sent: Sunday, April 25, 2021 2:55 PM
To: Sykes, Starlee R [redacted]@bp.com>
Subject: RE: Morning Consult Energy: What's Ahead & Week in Review

Ha! On their website: **https://energyfactor.exxonmobil.com/insights/partners/houston-ccs-hub/**

Do you think you could partner??

From: Sykes, Starlee R [redacted]**@bp.com**>
Sent: Sunday, April 25, 2021 2:39 PM
To: Kassia Yanosek [redacted]**@mckinsey.com**>
Subject: [EXT]FW: Morning Consult Energy: What's Ahead & Week in Review

See the idea from ExxonMobil below. Sound familiar?!

From: Morning Consult <**reply@em.morningconsult.com**>
Sent: Sunday, April 25, 2021 8:33 AM
To: Sykes, Starlee R [redacted]**@bp.com**>
Subject: Morning Consult Energy: What's Ahead & Week in Review

Energy

Essential energy industry news & intel to start your week.

APRIL 25, 2021

BY LISA MARTINE JENKINS
Twitter Email

As was debuted last week, the new Sunday newsletter looks a little different; beginning today, we will be sending it out in the mornings so that you have more time to get caught up on the week ahead. If you have a moment, **please let us know what you think** of the new format.

But before we get into the week ahead: Can you guess how many Democrats say governments have "a lot" of influence to alter the impacts of climate change? Here are your options (answer at the bottom of the newsletter):

A: 73% B: 65% C: 58% D: 47%

What's Ahead

Energy Secretary Jennifer Granholm will be featured in Monday's Politico Playbook Virtual Interview, in discussion with journalist Tara Palmeri at 11 a.m. **Why it's worth watching:** While Granholm has been very active in summits and events recently, the Politico event will go in-depth into the Biden administration's plans for infrastructure and climate, both via the more than $2 trillion American Jobs Plan and via the Department of Energy's existing plans to embrace renewable energy, electric vehicles and new technologies.

There are two upcoming events on the Hill with implications for climate and finance; on Tuesday, the Senate Finance Committee will hold a hearing titled "**Climate Challenges: The Tax Code's Role in Creating American Jobs, Achieving Energy Independence, and Providing Consumers with Affordable, Clean Energy**" at 10 a.m. A few hours later, the Senate Environment and Public Works Committee's Clean Air, Climate, and Nuclear Safety Subcommittee will hold a **hearing on S. 283, the National Climate Bank Act,** at 2:30 p.m. **Why they're worth watching:** The financial sector has increasingly been in the spotlight as the federal government considers its "all of government" approach to combating climate change. The hearing on the tax code comes in the wake of Senate Finance Committee Chair Ron Wyden (D-Ore.) introducing a bill that would eliminate tax breaks for the fossil fuel sector and incentivize investment in clean energy.

The Federal Energy Regulatory Commission will hold a **technical conference to discuss "electrification and the grid of the future"** on Thursday at 10 a.m. **Why it's worth watching:** The conference is separate from FERC's monthly meetings, and will begin a dialogue between the commission and stakeholders on how to make the administration's electrification goals a reality. It will focus on the shift to electric sources at

the point of final consumption: to fuel vehicles, heat and cool homes and businesses and provide process heat at industrial facilities.

Events Calendar

View Full Calendar

Week in Review

Ah, Earth Week. It was a busy one, with multiple countries, companies and international organizations announcing emissions cut commitments and climate change mitigation efforts before or during President Joe Biden's climate summit, which took place on Thursday and Friday. To kick it off, Biden **made his own commitment to at least halve U.S. emissions** by 2030 (compared with a 2005 baseline).

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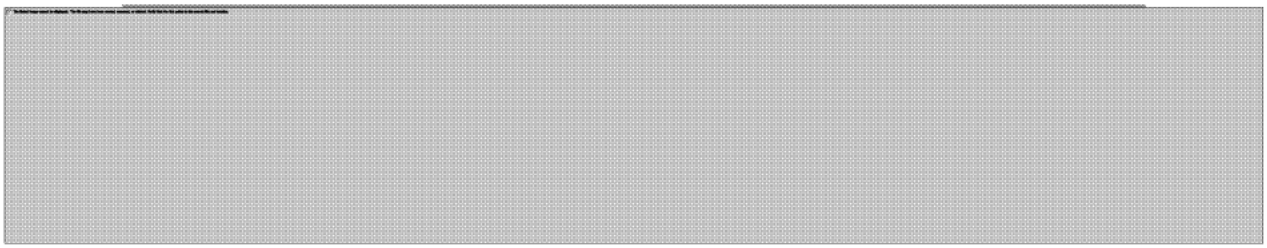

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Sent: 25/04/2021 22:48:27
To: Emembolu, Emeka [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ba7f2ad20a07440c818f457b2dc3c82a[redacted]; Evans, Peter J [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=0a474005d28447cfa55839e07f9d58c5[redacted]
Subject: RE: Morning Consult Energy: What's Ahead & Week in Review

Maybe… Peter, let's see what the seismic says and whether it's worth another go?! Maybe Exxon is a better possibility than Equinor but they are getting out of the GoM generally.

From: Emembolu, Emeka [redacted]
Sent: Sunday, April 25, 2021 3:08 PM
To: Sykes, Starlee R [redacted] Evans, Peter J [redacted]
Subject: Re: Morning Consult Energy: What's Ahead & Week in Review

Star
I read about it. I wonder if they'll do it.

We could have been in the driving seat, but probably not for $100bn though.

Could be a good way to get the BPLT interested.
E

From: Sykes, Starlee R [redacted]
Sent: Sunday, April 25, 2021 9:04:13 PM
To: Emembolu, Emeka [redacted]; Evans, Peter J [redacted]
Subject: FW: Morning Consult Energy: What's Ahead & Week in Review

See the idea from ExxonMobil below. Sound familiar?!

From: Morning Consult <reply@em.morningconsult.com>
Sent: Sunday, April 25, 2021 8:33 AM
To: Sykes, Starlee R [redacted]
Subject: Morning Consult Energy: What's Ahead & Week in Review

Energy

Essential energy industry news & intel to start your week.

APRIL 25, 2021

BY LISA MARTINE JENKINS
Twitter Email

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But before we get into the week ahead: Can you guess how many Democrats say governments have "a lot" of influence to alter the impacts of climate change? Here are your options (answer at the bottom of the newsletter):

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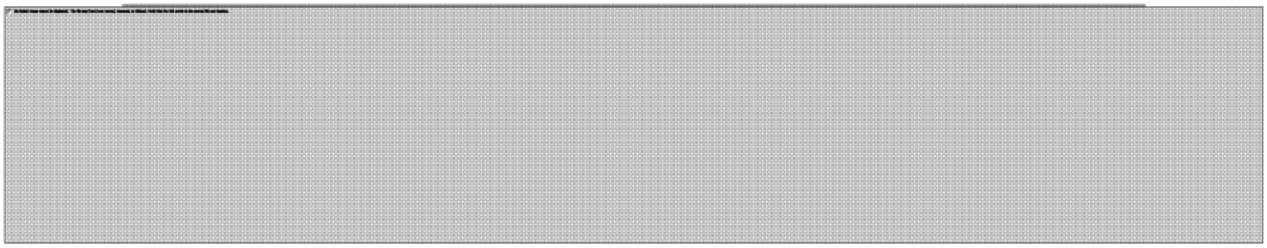

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Sent: 26/04/2021 01:56:09
To: Kassia Yanosek [redacted]@mckinsey.com]
Subject: RE: Morning Consult Energy: What's Ahead & Week in Review

Will do.

From: Kassia Yanosek [redacted]@mckinsey.com>
Sent: Sunday, April 25, 2021 6:56 PM
To: Sykes, Starlee R [redacted]@bp.com>
Subject: RE: Morning Consult Energy: What's Ahead & Week in Review

Still worth flagging to Gordon/Bernard. Keep me posted on the seismic!

From: Sykes, Starlee R [redacted]@bp.com>
Sent: Sunday, April 25, 2021 3:05 PM
To: Kassia Yanosek [redacted]@mckinsey.com>
Subject: [EXT]RE: Morning Consult Energy: What's Ahead & Week in Review

Maybe but we are so schizophrenic about this…

From: Kassia Yanosek [redacted]@mckinsey.com>
Sent: Sunday, April 25, 2021 2:55 PM
To: Sykes, Starlee R [redacted]@bp.com>
Subject: RE: Morning Consult Energy: What's Ahead & Week in Review

Ha! On their website: https://energyfactor.exxonmobil.com/insights/partners/houston-ccs-hub/

Do you think you could partner??

From: Sykes, Starlee R [redacted]@bp.com>
Sent: Sunday, April 25, 2021 2:39 PM
To: Kassia Yanosek [redacted]@mckinsey.com>
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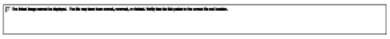

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Twitter **Email**

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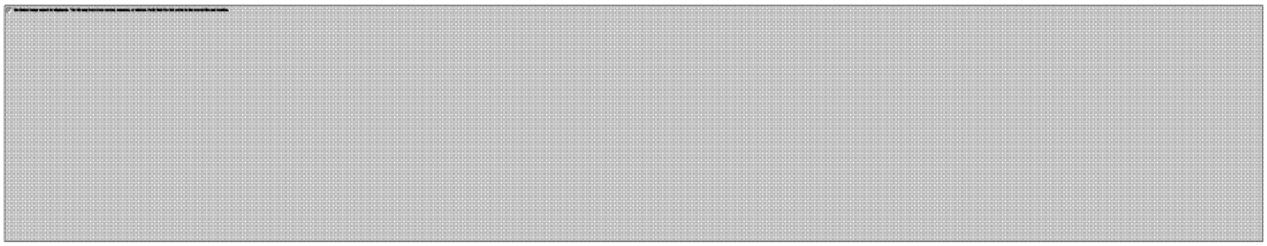

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Sent: 25/04/2021 22:56:56
To: Tijerina, Alisa E [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=63a1d2b0c8b24e319f5676570f8cadce[redacted]; G GOM SPU RLT [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d5a8f786c2a349dc9e8adc2c2b603272-G GOM SPU R]
Subject: RE: REQUEST: Potential projects integrating renewables with existing bp operations
Attachments: Morning Consult Energy: What's Ahead & Week in Review

Thanks Alisa. I was also struck by the Exxon idea in the attached. Our idea was to take carbon from the Houston ship channel and inject it into the Paleogene and it would pay for itself. They are asking for $100 Bn and government support to make it happen. Granted the scale is bigger but it's further reinforcement that it's a decent idea.

From: Tijerina, Alisa E [redacted]
Sent: Sunday, April 25, 2021 5:30 PM
To: Sykes, Starlee R [redacted]; G GOM SPU RLT [redacted]
Subject: RE: REQUEST: Potential projects integrating renewables with existing bp operations

Star – Sure thing, I'll connect with Fiona and her team. Along with the work Steve Kopeke has done, I am sure there is other info we could provide.

Thanks,
Alisa

From: Sykes, Starlee R [redacted]
Sent: Thursday, April 22, 2021 7:59 PM
To: G GOM SPU RLT [redacted]
Subject: FW: REQUEST: Potential projects integrating renewables with existing bp operations

FYI. I know we won't be at the front of this but I would like to share the scoping work on power from shore and anything else we have done. Alisa, can you work with Fiona and others to share with Martin anything we have?

From: Bitar, Fawaz K [redacted]
Sent: Thursday, April 15, 2021 8:41 AM
To: Bastos, Adriano [redacted]; Campbell, David SM [redacted]; Emembolu, Emeka [redacted]; Flores, Ariel D [redacted] Jones, Gary R [redacted] Krieger, Andy G [redacted]; Lawler, David [redacted]; Russell, Amber [redacted] Sykes, Starlee R [redacted] Mukundan, Sashi K [redacted]; Fitzpatrick, Claire [redacted]; Ismayilov, Emil [redacted]; Alaa, Karim M [redacted]; Zaki, Nader H [redacted]; Willis, Stephen H [redacted]
Cc: Collins, Andrew [redacted]; Drummond, Ewan [redacted]; Krieger, Andy G [redacted] Sparkman, Douglas [redacted] Harbridge, Anthony P [redacted]; Bitar, Fawaz K [redacted]
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Dear All,

I hope you are safe and well.

As part of our drive to net zero, an agile squad has been stood up to evaluate how renewable power could be used to reduce emissions associated with power needs across the business.

The squad is collating a list of ideas and projects in development where businesses would use renewable power to provide power to operated facilities in order to reduce emissions associated with that power demand.

To develop a full picture, we are requesting your help. Is any part of your business considering the use of renewable power, provided either through power supply contracts or physical build of generation equipment, to meet its operational power needs?

If so, we would be grateful for the following information:

- At what site?
- For what duty?
- What is the power demand (in MWh or MW)?
- At what stage of investigation is the work: idea generation and coarse evaluation; concept development; or more detailed stage of development?

If you do have any opportunities or projects in progress please could you provide this information to Martin Snodgrass who is leading the squad or simply put us in touch with your SPA and we will get the details direct.

Regards,
Fuzzy.

GoM Possible Hot Topics and Issues

U.S. Well Control Rule

On May 2, the U.S. Department of Interior released the final version of the Well Control Rule. Implemented by the Obama administration after the DWH accident the final rule has been viewed as a rollback. The 2019 Well Control Rule revises 68 of the old rule's 342 provisions and adds 33 new provisions. According to BSEE, blowout preventer, real-time monitoring and drilling margin requirements remain intact but amended.

Q: What is BP's position on the administration's rollback of the Well Control Rule?

- We are currently reviewing the final Well Control Rule.
- Safety is BP's top priority and the publication of the final rule doesn't change our commitment to safety.

Additional background/if pressed:

- Since 2010 BP has endeavored to promote understanding of the causes of the Deepwater Horizon accident, share the lessons learned with industry (including taking a leadership role in the Center for Offshore Safety) and regulators around the world and implement fundamental, systemic enhancements to prevent such an accident from ever happening again.

- This is all part of our continuous effort to further enhance safety and risk management throughout our global operations and across the industry. Steps we've taken include:
  - Creating a robust Safety and Operational Risk organization
  - Adopting new deepwater drilling standards in the Gulf of Mexico that exceed current regulatory requirements, and
  - Adding additional checks and balances to our procedures through training programs and on-shore monitoring capabilities.

If asked about 9 years since DWH accident

- It has been just over nine years since the Deepwater Horizon accident. We remember the eleven men who lost their lives and continue to work hard, as we have every day since the accident, to become an even safer company.

Interest in Anadarko deepwater assets

Reuters recently asked us about our interest in Anadarko's deepwater assets since Occidental Petroleum does not operate any deepwater offshore assets.

Q: Since Occidental does not operate any deepwater assets is BP interested in acquiring any of Anadarko's deepwater assets or leases?

A: As you know, we don't typically comment on market rumors or speculation.

Tigris/Kaskida

Context: Last year Chevron decided to relinquish their leases for the Tigris project (Tiber, Gila and Gibson prospects).

BP statement on Tigris

- BP will continue to assess development for the Tigris project and we are evaluating our options going forward.
- Tigris has been in the pre-FEED (front end engineering and design) phase and is conceptualized as a multi-field hub development for the area.
- The deepwater Gulf of Mexico is one of BP's core areas globally, and BP believes it has significant opportunities for future growth based around four major producing hubs, four non-operated hubs and a highly prospective acreage position.

What does this mean for Kaskida?

- We have not relinquished the Kaskida leases and are continuing to pursue development options.

Project 20k

- We are investing in and making progress to develop 20ksi technology.
- BP contributed what we have learned and developed into the joint development, and we remain committed to working with others in industry to progress the development of 20ksi technology.

GoM Lease Sale 252

- We are the apparent high bidder on 23 bids that BP submitted for a total of $15.45 million.
- The leases we bid on support BP's strategy of pursuing growth opportunities around our four operated and four non-operated production hubs, and in areas where we see potential for future developments.
- BP's participation is also consistent with our ongoing commitment to the deepwater Gulf of Mexico, where we are one of the largest investors, one of the largest leaseholders and a leading oil and gas producer.

GoM Deepwater Royalty Rates

- BP believes there are additional steps that BOEM can take to support the administration's goal of increasing exploration and production in the Gulf of Mexico.
- We support lowering the royalty rates for deepwater leases to 12.5 percent aligning them with the federal leases onshore and in the shallow waters of the Shelf.
- We believe that a royalty rate of 12.5 percent for all new OCS leases could help stimulate and attract increased interest back in the Gulf of Mexico by providing a consistent federal royalty rate.

New BP GoM Semi-Submersible Being Planned

In March 2019 *Upstream's* Kathrine Schmidt reported that BP is in the hunt for a new lightweight semisubmersible concept in the GoM and that we have been soliciting input from a wide range of topsides specialists, hull providers and shipyards. The report noted no field specified and few specifics but looking at similar profile to Shell's Vito or LLOG's Delta House. Offers being reviewed from EPC contractors with in-house hull design, potentially with field narrowed to three or four candidates.

- We are not commenting.

Expanded Atlantic Access

- We welcome the administration's efforts to help companies like ours find and produce the energy that drives the American economy. While we have no specific plans to explore in any of those areas we generally support expanded access to hydrocarbon basins.
- Exploration is one of BP's core strengths, and we consistently evaluate both emerging and established areas around the world for new sources of oil and gas.
- BP generally supports expanded access to potential hydrocarbon basins.
- We will review additional opportunities as they arise.

Safe Harbor on Tariffs

- BP has long supported free trade, doing business in 80 countries around the world depends on the free movement of goods and services.
- We appreciate President Trump's leadership on tax reform, and his goal of helping the U.S. economy achieve a sustained growth rate of 3 percent. The steel and aluminum tariffs could undermine that goal.
- As a global company with complex supply chains, we are concerned about the potential impact of the tariffs and the likelihood that retaliation/trade wars will negatively impact the oil and gas industry in the U.S., negating benefits of the just-passed tax cuts.

Mad Dog 2 Overseas Construction and Development

The project is on schedule and on budget with first oil projected for late 2021. First steel was cut in March 2018. At Samsung Heavy Industries the lower hull has been completed with all 4 columns were recently erected to their full height. Progress on the other parts of the floating production unit – upper hull and topsides – is also proceeding to plan.

If asked why it is not being constructed in the U.S. given the administration's America First platform:

- Although certain structural elements of the platform are being constructed overseas, Mad Dog 2 is a long-life project that we expect to be in operation for over 30 years, with significant benefits to the U.S. economy and domestic energy security.
- Of the nine companies that submitted bids to construct the hull and topsides, three were based in the United States. However, even the U.S. companies had partnerships with fabrication yards in the Far East, the global hub for this type of work.
- The Mad Dog 2 project represents $9 billion of new investment in the U.S. Gulf of Mexico and will help unlock an estimated resource base of 5 billion barrels of oil, making a significant contribution to U.S. energy security.
- The project was designed and engineered in the U.S., with a project team of 135 based at BP's U.S. headquarters in Houston, TX. That team grew to about 160 people by the end of 2017.
- Once online, the platform also will be staffed by a large, permanent U.S. workforce and supported by dozens of American companies, providing everything from oilfield service equipment and services to helicopter transport of offshore workers.

U.S. Policy/Legislation

Methane Regulation

- BP appreciates what the Trump Administration has done, through tax and regulatory reform, to create a favorable environment for continued investment and growth in the U.S. energy sector.
- Recognizing the opportunities this environment creates, last year we made our largest global acquisition since 1999, a $10.5 billion-dollar purchase of BHP shale assets in Texas and Louisiana.
- Moving forward, we continue to support policies that encourage energy investment while protecting the environment.
- We believe natural gas can play a key role in helping governments, industries and individuals meet the dual challenge — the challenge of producing more energy with fewer carbon emissions.
- However, to maximize the advantages of gas, we need to control methane emissions. Regulations are a necessary complement to voluntary efforts by BP and other companies to reduce emissions.
- To minimize methane emissions across U.S. operations, **we believe that EPA should directly regulate methane emissions through well-designed, cost-effective regulations**.
- A single federal regulation of methane emissions by EPA is preferable to a patchwork of regulations by multiple federal or state agencies.
- We are committed to working with EPA to reform the existing methane regulations to make them more flexible so that new, more effective technologies for leak detection can be deployed.
- We prefer for EPA to complete the process they have started to improve those existing regulations rather than to start a new process to eliminate the direct regulation of methane.
- But BP is not waiting for regulations; we are already taking action across our U.S. onshore business to minimize methane emissions.
    - For example, we have replaced around 99% of our high-bleed pneumatic controllers with continuous low-bleed and intermittent pneumatic controllers and are testing and deploying drones and other new remote leak detection technologies.
    - We are members of the Environmental Partnership, which aims to continually improve industry's environmental performance through reducing emissions of methane and volatile organic compounds (VOCs).
- At the global level, BP is a founding member of the Oil and Gas Climate Initiative, which brings together 13 of the world's largest energy companies. Together, we're working to eliminate routine gas flaring while investing heavily in detecting, mitigating and preventing leaks from pipes and production facilities.

Q: Does BP support the regulation of methane?

- Yes. BP supports the direct regulation of methane by the EPA. We prefer one set of well-designed federal methane regulations that apply over time to new as well as existing wells. However, we do not oppose well-designed state regulations.

Q: Does BP oppose the Trump Administration's "roll back" of methane regulations?

- BP supports revising the current EPA methane regulations to make them more flexible to enable the deployment of new technologies for leak detection, e.g. drones.
- BP would prefer that EPA complete the process of revising the current regulations rather than initiating a new rulemaking to remove the direct regulation of methane.

Background

- In 2016 the Obama Administration EPA issued a regulation which for the first time directly regulated methane emissions from ***new or modified*** wells. The rule was supported by EDF and other NGOs but opposed by API as unduly prescriptive and legally flawed.
- In 2018 the Trump Administration EPA issued a proposed rule (the so-called "technical fixes" rule) revising the prior regulation to make it less prescriptive, e.g. reducing required inspection frequencies. BP filed comments suggesting that the rule be made more flexible to accommodate deployment of new technologies and to address Alaska-specific issues.
- **The Trump Administration has been preparing to issue another rule** (the so-called "policy rule") **that would remove the direct regulation of methane** from the ***new/modified*** source regulation altogether. This step would also strip EPA of the authority to issue a future regulation for ***existing*** sources.
- EDF and other ENGOs have been harshly critical of EPA and pushing BP and other companies to oppose repealing the direct regulation of methane. API and its members are divided on the issue, with several majors like BP, Shell and XOM supporting continued direct regulation of methane and Chevron, Devon and others supporting repeal. As BP requested, the issue was referred to the API Executive Committee which decided to retain its position opposing the direct regulation of methane.
- **Our goal is to support the continued direct regulation of methane, consistent with our methane leadership commitments, while avoiding undue surprise or backlash from the Trump Administration.** We have met privately with various Administration officials, including EPA Administrator Wheeler, to apprise them of our position and supporting rationale.
- The above talking points seek to achieve that balance. We should keep our comments within this frame and avoid commenting on the specifics of the EPA rules. Notably, EPA has not yet issued a proposed rule repealing the direct regulation of methane, and many not until later in 2Q.
- Bernard Looney and Fred Krupp signed a Memorandum of Understanding (MOU) with EDF at CERA to collaborate on advancing the understanding, technology and management of methane emissions.

Green New Deal

- The Green New Deal includes a broad array of policy concepts, some of which could form the basis for the development of specific legislative proposals in the future.
- At BP we continue to focus on which specific policies would be most efficient and effective for reducing greenhouse gas (GHG) emissions.
- We believe a well-designed price on carbon would provide the best foundation for achieving this objective.
- We continue to engage actively with federal and state policymakers to support well-designed policies to reduce GHG emissions.

Background

- The Green New Deal is a provocative **concept** initially championed by new

Democratic members in the U.S. House of Representatives.
  - It is being used as a political organizing proposal (like "Medicare for All") by progressive Democrats and 2020 Presidential election candidates.
  - The Green New Deal concept has only been introduced as a resolution. Resolutions that pass both bodies still may not go to the president for signature but otherwise have no power of law. A non-binding resolution was voted on in the Senate to force members to take a position. It failed with no votes in favor of it.
  - Legislation pursuing some or all of the goals outlined in the resolution is likely to be introduced at some point in the House. If any such legislation were to pass the House, it would have essentially zero chance of passing the Senate.
  - **We should steer clear of the politically polarized debate over the Green New Deal, neither endorsing nor criticizing it and instead returning to our general principles of supporting well-designed policies such as a carbon price.**

Climate Policy, Carbon Price & Washington State

- A well-designed price on carbon — either a tax or a cap-and-trade system — is the most efficient way to reduce greenhouse gas (GHG) emissions.
- Key design elements of an effective carbon pricing policy include economy-wide coverage and pre-emption of future and existing regulations that would duplicate or overlap with the carbon price.
- **BP has and continues to support well-designed carbon pricing policies, including cap-and-trade or carbon tax legislation at the federal or state level.** For example, we are Founding Members of the Climate Leadership Council (CLC), which advocates for the US Congress to pass a nationwide carbon price.
- BP opposed and campaigned against the Washington State ballot initiative in 2018 because it was poorly-designed policy that exempted many industries and would not have been effective in reducing emissions.
- We worked closely with Washington state policymakers to develop and introduce cap-and-trade legislation in March. BP publicly supported the bill. The bill is not likely to become law this year but will be considered in next year's session.

  Background
  - Although ENGOs, academics and companies like BP and XOM have called for Congress to enact carbon pricing legislation, the current prospects for this are weak and it may take years for it to gain traction in Congress.
  - In the meantime, BP is continuing to engage with CLC and other groups to develop and advocate for potential future legislation by Congress, while also advocating for well-designed carbon pricing legislation in the states.
  - In addition to Washington, the State of Oregon is considering carbon pricing legislation. For the past year we have worked closely with the Oregon Governor's office and legislators in its development of a cap and trade bill. The bill has significant gaps, notably it does not repeal the Oregon low carbon fuel standard nor local or regional carbon prices, but we continue to work with the Oregon government to amend the bill. While we have not supported the bill, we are not opposing it.

Alaska National Wildlife Refuge (ANWR)

- BP supports responsible exploration and development of oil and gas resources.

- The industry has proven ways to safely develop oil and gas resources while minimizing environmental impacts.
- BP supports BLM's (Bureau of Land Management) implementation of a robust environmental impact statement and decision-making process to analyze the potential ecological, social and economic impacts of a leasing program, as identified during the public process.

Q: If the ANWR lease sale goes forward as planned later this year, does BP plan to participate?

- We regularly evaluate potential exploration opportunities around the world. But for competitive reasons we do not comment in advance on our participation in specific lease sales.

Background

- In 1984, BP (25%), Sohio (25%) and Chevron (50%) signed an Exploration Agreement (EA) with Arctic Slope Regional Corporation (ASRC) obtaining leasehold rights to 92,000 gross acres owned by ASRC.
- The majority, but not all, of this acreage is located within the Arctic National Wildlife Refuge (ANWR) Coastal Plain (1002 Area).
- As a result of the merger with Sohio, BP and Chevron each now own 50%. Chevron is the designated operator.
- BP and Chevron drilled the only exploration well in ANWR (KIC #1 Well) in 1986. The results of the KIC #1 well are classified Secret and few have access to it.
- The leases were basically suspended until the U.S. Congress passed legislation that opened ANWR for development in late 2017. The legislation stipulated 2 lease sales, the first of which is supposed to occur in 4Q19.
- In February 2019, the Department shared that, due to delays from the 5-week government shutdown in January, SAExploration's seismic survey would not be undertaken this winter.
- This leaves industry in limbo regarding a 4Q19 lease sale without recent seismic data on potential reserves. The only seismic studies in ANWR were done three decades ago during the winters of 1983-84 and 1984-85, with less-effective 2-D technology.

The 'NOPEC' Act

- The NOPEC legislation could harm U.S. business interests while having limited impact on the market concerns driving the legislation.
- Rather than threatening OPEC, the legislation could undermine the historical and ongoing success of the U.S. oil & gas sector in the global markets.

Background

- The No Oil Exporting and Producing Cartels (NOPEC) Act was re-introduced in Congress by Representative Steve Chabot (R-OH) on February 4 and quickly approved by the relevant House committee. The rushed nature of the introduction caught industry and even some in House Democratic leadership by surprise. While the bill moved quickly through committee, we have no word yet if it will be formally voted on by the House of Representatives. If House leadership does allow the bill to comet to the floor for a vote, the bill is likely to be approved.

- Even if it is approved by the House, the likelihood of full Senate passage appears relatively low at this time. President Trump has previously indicated he could support NOPEC, so efforts to stop the bill are focused on the Senate. We continue to monitor its progress.
- The current version of the bill would permit only the U.S. Attorney General to file antitrust lawsuits against OPEC or its members.
- Note: During CERA Week, US Secretary of Energy, Rick Perry, came out against NOPEC.

Russia Sanctions

- We comply with all applicable sanctions and regulations and closely monitor BP's activities with sanctioned countries, persons from sanctioned countries and companies subject to U.S. and EU sanctions.

Q. Are you aware of the new DASKA bill introduced in the U.S. Congress to enact further sanctions against Russia? What do you think of the bill?

- I am aware that the bill has been introduced and our team is reviewing the contents of the bill.

Q. If pressed – are you on the Hill lobbying against the bill given your significant stakes in Russia?

- We routinely have discussions with people in the administration and in Congress to hear from them what policies and legislation they are considering enacting.
- During those discussions, we often talk about the intended and sometimes unintended consequences of the policies they are considering.

Q. If pressed – are you concerned about additional sanctions being placed on interactions with Russia's business sector?

- We currently operate in many locations fully in line with sanctions laws that have been enacted by the United States, the European Union and other entities. We will always continue to do so, even as sanctions are modified.

  Background
  - Senators Lindsay Graham (R-SC) and Bob Menendez (D-NJ) have introduced Russia sanctions legislation, the Defending American Security from Kremlin Aggression Act (DASKA), a similar bill introduced last Congress.
  - In addition, Russia-related draft legislation exists in both the House and the Senate.
  - While we don't believe any of these bills will move any time quickly in a Republican-controlled Senate, an outside event could give the bill momentum.

  .

Trade

- As a global company with complex supply chains, we are concerned about the potential impact of steel and aluminum tariffs and the likelihood that retaliation/trade wars will negatively impact the oil and gas industry in the U.S., negating benefits of the recently-passed tax cuts.

- These policies could disrupt the global supply network and discourage investments in the U.S.
- We appreciate President Trump's leadership on tax reform and his goal of helping the U.S. economy achieve a sustained growth rate of 3 percent. The steel and aluminum tariffs could undermine that goal.
- BP has long supported free trade: doing business in 70 countries depends on the free movement of goods and services.

Background

- In March 2018, President Trump announced his intention to impose tariffs on steel (25%) and aluminum (10%) imports
- There are two paths to exemption:
  - Country-specific: managed by the Office of the U.S. Trade Representative, working with international diplomats;
  - Product-specific: managed by the Commerce Department's Bureau of Industry and Security.
- The 25% tariff applies to steel and pipe mill products, e.g., OCTG and line pipe. It does not apply to finished products. However, costs have risen for finished products manufactured from steel (e.g., fabricated equipment such as wellheads) due to pass-through costs.
- Impact on BP depends on (1) exclusions (country and/or product), (2) suppliers passing through the tariff's costs (if steel costs are not already contractually agreed), and (3) PSCM's success negotiating against increases and identifying alternative solutions with the line.
- GoM and Alaska's estimated 2018 impact for OCTG and Line Pipe is up to $21m.The total 2018 impact including finished products is forecast to be $25m - $80m. A similar impact is expected in 2019.
- BP has submitted 29 requests for steel tariff exclusions. Twelve have been approved, 5 were denied and have been reapplied for, and decisions are still pending for the remaining 12.

Carbon, Capture, Use and Storage (CCUS)

- CCUS technologies are proven, reliable, and in use. Accelerated scale-up of deployment is essential to meet the dual challenge of providing the energy needed for a growing world while achieving deep emissions reductions at lowest cost. This will also help protect U.S. jobs and economic prosperity.
- **CCUS scale-up requires targeted policy support to achieve further cost reductions**, through:
  - Shared CO_2 transport and storage infrastructure
  - Continued collaboration between government and industry, enabled through incentives such as the US 45Q tax credit, which rewards CO_2 use to enhance oil recovery ($35/ton) and underground storage ($50/ton)
  - A sustained carbon price to underpin broader, longer-term deployment
- BP is supporting CCUS through its own activities, including:
  - Leadership of the US National Petroleum Council (NPC) CCUS Study;
  - The Oil and Gas Climate Initiative (OGCI); and
  - The Energy Advance Center (EAC), a U.S. group which advocates for policies and incentives to support CCUS deployment (BP is a founding member along with XOM and Chevron).

- **BP encourages the Treasury Department to quickly issue guidance or regulations to clarify key terms in the 45Q legislation.** Projects are not likely to move forward until Treasury clarifies the key terms.
    - "Secure geological storage" should be defined in a way that recognizes that enhanced oil recovery does not require the same level of assurance as deep saline aquifer storage.
    - Treasury should work with DOE and EPA to quickly resolve this issue.

Background

- CCUS is the only cost-effective means of achieving deep emissions reductions in existing power infrastructure and energy-intensive industries that rely on the use of fossil fuels.
- CCUS for power generation is in the early, high-cost stage of development. Further advances in CO2 capture technology are needed to compete with continued advances being made in renewable energy sources and energy storage.
- Societal concerns with CCUS include extending the use of fossil fuels, and the potential risk for CO2 leakage. Not all forms of CO2 use result in a net reduction in GHG emissions, so high quality options need to be real, additional, verifiable, permanent and effective.
- BP is involved in two active CCUS projects and pursuing a portfolio of new CCUS projects with the potential to be value accretive. BP Ventures has invested in companies which use CO2 to make products – Solidia (pre-cast concrete), and Carbonfree Chemicals (baking soda and bleach).
- The OGCI Climate Investment (CI) fund has also invested in 4 projects, including Solidia, and acquired a UK project (Teeside) to design a full-scale gas power plant with CCUS and attract government and private support.
- To stimulate investment in carbon capture, the 2018 US Budget Bill expanded incentives for CCUS projects by raising the existing so called '45Q' tax credit from USD22 t/CO_2 to USD 50 t/CO_2 in 2026. In addition, carbon storage via EOR and other utilization processes receive tax credit of USD 35 t/CO_2 by 2026. BP opportunities include a portfolio of CCUS projects and investment opportunities for utilization projects. The key next step is to clarity IRS requirements on long-term liabilities and reporting while securing the tax credits, with a potential value ~$28m over the next 3 years.
- BP is a founding member of the Energy Advance Center (EAC) – a voluntary association dedicated to development and deployment of CCUS. EAC focus areas include reforming injection control requirements for permitting, 45Q reporting requirements, encouraging more incentives for wider deployment, promoting infrastructure and land availability for storage and support for R&D funding. Other members include Chevron, ExxonMobil, Southern Company.
- In September 2017, U.S. Secretary of Energy Rick Perry requested the advice of the National Petroleum Council (NPC) on two major topics: to analyze U.S. infrastructure for transporting oil and natural gas; and to define pathways for commercializing CCUS. John Mingé has agreed to Chair the NPC CCUS study on behalf of BP, which will undertake a comprehensive study on the further deployment of CCUS. The study is expected to be completed by the end of 2019.

Well Control Rule

- BP has already adopted deepwater drilling standards in the Gulf of Mexico that exceed current regulatory requirements and has shared our expertise and experience in applying these standards.
- We are aware that the Bureau of Safety and Environmental Enforcement (BSEE) has proposed changes to the Well Control Rule and have been monitoring and providing input on such changes though API and other industry groups.
- BP's commitment to safety in our operations will remain unwavering.

Background

- In response to Executive Orders from the Trump Administration, BSEE reviewed the existing regulations regarding oil and gas drilling operations, which were finalized under the Obama Administration.
- Its goal was to identify ways to reduce unnecessary regulatory burdens while ensuring that offshore oil and gas drilling operations are conducted in a safe and environmentally responsible manner.
- The revisions were published in April 2018, and BP participated in crafting the joint trades comments but purposely did not take a public position or submit our own comments. The revisions are under review at the Office of Management and Budget and expected to become final in 2H2019.

U.S. Economic Impact

Overall Economic impact

- BP has been operating in the U.S. for more than 150 years through our heritage companies.
- BP has a larger economic footprint in the U.S. than in any other nation, and it has invested more than $115 billion here since 2005.
- We support over 125,000 jobs across the country — including our 14,000 U.S. employees — and we reinvest every dollar we earn here right back into the U.S. economy.
- In 2018, BP operations contributed $100 billion to the American economy through our business activities.
- We invest more here, and have more shareholders here, than we do in any other country.
- Since the (November) 2016 election, BP has announced a new $9 billion project in the deepwater Gulf of Mexico called Mad Dog 2, a $10.5 billion acquisition of BHP's U.S. unconventionals assets and a $1.3 billion Atlantis Phase 3 development.

Production

- In 2018, BP produced 772,000 barrels of oil equivalent per day in the U.S. (up from 712,000 barrels of oil equivalent (boe/d) in 2017.)

Refining

- BP is a major refiner in the U.S., with the net capacity to process 746,000 bbl/day of crude oil at its three U.S. refineries: Cherry Point, WA; Whiting, IN and Toledo, OH.

Retail

- BP's U.S. retail presence consists of roughly 7,200 BP- and ARCO-branded sites, along with more than 1,000 *ampm* convenience stores in California, Oregon, Washington, Arizona and Nevada.

- In 2017 BP re-introduced its *Amoco* brand and made it available as a complementary brand for select U.S. retail stations.
- BP markets more than 13 billion gallons of gasoline and diesel in the U.S., with about seven billion gallons sold to consumers at our branded retail sites annually.
- BP owns and operates Castrol, one of the world's most recognized lubricant brands, which directly serves around 500,000 customers across the globe, and more than 200 million people use its products.

Gulf of Mexico

- BP and its heritage companies have been at work in the Gulf of Mexico since the 1950s, and we have been exploring in the deepwater Gulf for more than 30 years.
- BP is one of the largest leaseholders in the Gulf, with acreage in ~200 lease blocks.
- BP continues to be a leading oil and gas producer in the region. Over the last five years, BP's net production in the Gulf of Mexico has increased by more than 60 percent, rising from less than 200,000 boe/d in 2013 to more than 300,000 boe/d today. BP anticipates its production growing to around 400,000 boe/d through the middle of the next decade.
- The deepwater Gulf of Mexico is one of BP's core areas globally and BP believes it has significant opportunities for future growth based around four major producing hubs, four non-operated hubs and a highly prospective acreage position.
- BP announced in January 2019 that it approved a major expansion at the Atlantis field in the U.S. Gulf of Mexico and has also identified significant additional oil resources that could create further development opportunities around the production hubs it operates in the region. The $1.3 billion Atlantis Phase 3 development is the latest example of BP's strategy of growing advantaged oil production through its existing production facilities in the Gulf.
- By executing projects through existing infrastructure at our major hubs we are leveraging our portfolio of high-value, longer-life assets to provide BP with operational momentum for years to come.
- Our business activities help support thousands of jobs across the Gulf Coast region.

Lower 48/BPX Energy

- In 2015, our U.S. lower 48 onshore business, now called BPX Energy, began operating as a separate business, with its own governance, processes and systems.
- The goal of this change was to promote nimble decision making and innovation so that BP could be more competitive in the U.S. onshore market while ensuring safe, reliable and compliant operations.
- In October 2018, BP completed a $10.5 billion acquisition of BHP's U.S. unconventional assets in a landmark deal that will significantly upgrade BP's U.S. onshore oil and gas portfolio and help drive long-term growth. BP became the operator of these assets on March 1st.
- The acquisition adds oil and gas production of 190,000 barrels of oil equivalent per day (boe/d) and 4.6 billion oil equivalent barrels (boe) of discovered resources in the liquids-rich regions of the Permian and Eagle Ford basins in Texas and in the Haynesville natural gas basin in East Texas and Louisiana.
- BP plans to complete more than $10 billion in divestments over the next two years, including the $5-6 billion announced in conjunction with the BHP acquisition. (The BPX assets identified for divestment include legacy positions in Wyoming, Colorado, New Mexico, Oklahoma and the Texas Panhandle.)
- BP's U.S. onshore oil and gas business before the BHP acquisition produced around

315,000 boe/d from operations across seven oil and gas basins in five states with resources of 8.1 billion boe.

Alaska

- BP is committed to maintaining a safe, compliant and sustainable Alaska business.
- For the past several years, BP Alaska has successfully combatted production decline at Prudhoe Bay through rate adding well work and improved operating field efficiencies with near zero decline the result. For 2018, Greater Prudhoe Bay production averaged more than 270,000 barrels of oil per day (down slightly from 280,000 bpd from 2015-2017).
- BP Alaska improved its operating efficiency from 80 percent to upwards of 85 percent. That represents an additional 10,000 to 15,000 barrels of oil flowing through the Alaska pipeline every day.
- BP believes Alaska is uniquely positioned to support the global energy transition, both by producing oil more efficiently and by supplying the world with LNG.

Alaska LNG project

- BP has worked with industry partners and the state government to advance the Alaska LNG project.
- If sanctioned, this project would move North Slope gas to overseas markets, allowing Alaska to play a key role in the global gas transition.
- BP is doing its part to make that happen. In May 2018, the company announced a Gas Sales Precedent Agreement between BP Alaska and the Alaska Gasline Development Corporation — an important milestone in moving the project forward

Chairman's Report to BPA Board 23-May 2019

1) 1Q Group results announced – in line with projections
    a. 2.9 bn upstream
    b. 1.7 bn downstream
    c. (0.4) OB&C
    d. Underlying RCP 4.2bn, post tax 2.4bn
    e. Rosneft 0.6 bn
    f. Gearing 30.4%
    g. Cash flow (excluding DWH Payments) 5.9bn. Expecting 2.2bn in DWH payments (post tax)
2) Safety – personal safety trend is solid, however, there are significant concerns around the trend on process safety – with Tier 1 and Tier 2 events disproportionately high in the US
3) Geopolitical – tensions remain evident
    a. Climate Change – resolution passed at AGM this week. We continue to balk at taking accountability for the emissions of our products. There will be continuing pressure in this area.
    b. Trade Association transparency – we are being heavily pressured to provide transparency on our policy positions against those of our trade associations. We have made an overarching statement and have committed to providing more information in due course.
    At the AGM on Tuesday the Chairman announced our intention to undertake a review of associations that are actively engaged on climate change and the energy transition. The full scope is yet to be defined, but the review will likely include our main trade associations' positions, whether there are any material differences from our own and, if so, how those differences are managed and overseen.
    c. Gwin'ichn request to meet with Bob Dudley and Susan Dio – they have an initial meeting with Paul Jefferiss this week. We will need to stay coordinated on our response to these requests.
    d. Greenpeace – demonstration shut down SJS for 2 days. Demonstrations in Denver
    e. Gender and minority equity a raising social issue, and the first open questions at the AGM.
4) Competitor Highlights
    a. Contested bid for Anadarko
    b. Shell announced – they will be on of the largest electricity companies by 2030
    c. Occidental – to be carbon neutral through GHG use for Enhanced Oil Recovery
5) Group Leader meeting next week in Houston

John Mingé, Chairman & President, BP America, Inc.
2016 EY Energy Executive Insight Session
Houston, TX
October 12, 2016

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BP Staff & Contact Information

Alex Franceschi
Mobile: [redacted]

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Executive Summary

Date: October 11 and 12, 2016

Location:
October 11, 2016
EY Reception with Senator Orrin Hatch and Speakers' Dinner
The Houstonian Hotel
Manor House
111 North Post Oak Lane
Houston, Texas 77024

October 12, 2016
2016 EY Energy Executive Insight Session
Omni Shoreham Hotel
Grand Ballroom
Houston, TX
4 Riverway
Houston, TX 77056

Reception and Speaker's Dinner Objective: The reception creates an opportunity for Senator Orrin Hatch to deliver remarks in a more intimate setting. Following the reception you will join your fellow panelists at a small speaker's dinner. This is an opportunity to discuss your panel with the other speakers and the moderator from EY. Attendees at the dinner include EY executives Deborah Byers and Randy Cain and the speakers on the panel.

Panel Objective: EY is currently BP's external auditor. They reached out to Mike Robertson about having you participate in the panel to further our relationship. This also creates an opportunity for BP to provide thought leadership and commentary on the current transformation of the energy industry.

Background: EY has been BP's auditors for many years. Per financial regulations, BP is currently in the bidding process to replace EY due to worries that 'independence' could be a concern because of the long-term relationship of the two companies.

JCM Schedule

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Wednesday, October 12, 2016

5:00 p.m	***JCM and Jackie arrive at EY Reception***
5:00 p.m. – 6:30 p.m.	EY Reception with Senator Orrin Hatch Location: Houstonian Hotel, Manor House Attire: Business Note: This is a mix and mingle reception where Senator Hatch will make remarks. EY noted that this will be a small reception for VIP and executive attendees. Deborah Byers, EY moderator for the panel, can make introductions to other panelists.
6:30 p.m. – 8:30 p.m.	*EY Panel speakers' dinner* *JCM and Jackie will be seated with panel speakers and EY Executives. Bios for dinner attendees are included in the brief.*

Thursday, October 12, 2016

8:00 a.m. **JCM arrives and is greeted by Alex Franceschi. JCM proceeds to the Grand Ballroom and takes his seat at the Speaker's table.**
Location: Omni Shoreham Hotel, Grand Ballroom
Attire: Business
Note: Breakfast will be provided.

8:30 a.m. U.S. legislative insights and outlook by Orrin Hatch, President pro tempore of the U.S. Senate

9:30 a.m. U.S. oil and natural gas outlook Adam Sieminski, Administrator for the U.S. Energy Information Administration

10:00 a.m. Break

10:30 a.m. **Strategic positioning for the future**
Moderator: Deborah Byers, U.S. Energy Leader, EY
Panelists:

- **Dan Borgen, CEO, US Development Group**
- **Ken Medlock, Senior Director, Center for Energy Studies at Rice University's Baker Policy Institute**
- **John Mingé, CEO, BP America**
- **Scott Sheffield, Chairman and CEO, Pioneer Natural Resources**

11:30 a.m. Panel ends

11:45 a.m. JCM departs the Omni Shoreham Hotel

EY Energy Executive Insight Session

Panel Format:

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- Moderator will introduce each panelist
- Panelists will give 5-6 minutes of remarks
- Moderator will ask questions of the panelists
- Moderator will open for audience questions

Panel Topics:

The panel will discuss the transformation of the energy industry. Launched by the shale production in the U.S, this oil abundance era is even forcing OPEC to evolve. These factors created a global pricing dynamic that no longer responds to traditional supply, demand and geopolitical triggers. The panelists will discuss how the North American energy industry is transforming for success. The topics that will be covered are:

- What are the key regulatory/legislative issues we face for the U.S.?
    - What does the U.S. need to do to compete globally and what would be particularly negative to the industry?
    - EY would like to focus on legislative and regulatory challenges not the 2016 presidential race
- What are BP's key investments coming out of low oil? Any specific ones in Mexico, Argentina, JVs? ---and the future of offshore investments?
- How will Argentina's shale impact North American shale?
    - Deborah Byers will start with Pioneer, given they had operations in Argentina for 12 years, and then will move to BP's perspective given BP does not have operations there.
- How do you see the industry capitalizing on emerging technology in data analytics combined with Artificial Intelligence/Robotics?
- What is around the corner for the industry – are there any surprises ahead?
- What is your personal view on demand trends—will it continue to increase as everyone assumes or do you see this flattening further or even declining?

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Moderator Biography

Deborah Byers

Ernst & Young LLP

U.S. Energy Market Segment Leader

Deborah Byers is the U.S. Oil & Gas Leader, a Transactions Tax Partner and the Managing Partner of the EY Houston office. She is as an energy expert, a champion of women in business and a local community advocate. With nearly 29 years of transactions and industry experience, she helps multinational energy companies navigate volatile markets and complex business issues in order to drive shareholder value. She also directs the firm's national strategy and investment into the oil and gas industry. In the Houston office, she oversees more than 1,500 employees as EY strives to become the leading professional services organization and a $50 billion enterprise by 2020. Her expertise includes structuring and financing corporate expansions and joint ventures, integrating assets, and working with cross-border transactions. She also specializes in reviewing tax and economic considerations in transactions involving master limited partnerships, and assisting new investment into the U.S. by global entities.

Panelist Biographies

Dan Borgen

U.S. Development Group

Chairman, Chief Executive Officer and President

Mr. Borgen is a co-founder of USDG and its predecessor companies and has served as Chairman, CEO and President of USDG since its inception. Additionally, Mr. Borgen served as President of U.S. Right-of-Way Corporation, a private company, since 1993. Prior to USDG, Mr. Borgen worked for 11 years in investment banking in mergers and acquisitions, portfolio management and strategic planning. He began his career with a private investment firm focused on the oil and gas industry. Mr. Borgen has served on the board of directors of several corporations and currently serves on the board of Vertex Energy Inc., an environmental services company that recycles industrial waste streams and off-specification commercial chemical products. Active in several community organizations, he is chair of the USD Foundation and a trustee of Boys and Girls Club of America. Mr. Borgen received a degree in petroleum management and finance from the University of Oklahoma. He was recognized by Goldman Sachs as one of 100 Most Intriguing Entrepreneurs in 2013 and was a finalist for Ernst and Young's 2014 Gulf Coast Entrepreneur of the Year.

Kenneth B. Medlock III, Ph.D

Center for Energy Studies at Rice University's Baker Policy Institute

Senior Director

Kenneth B. Medlock III, Ph.D., is the James A. Baker, III, and Susan G. Baker Fellow in Energy and Resource Economics at the Baker Institute and the senior director of the Center for Energy Studies. He is also the director of the Masters of Energy Economics program, holds adjunct professor appointments in the Department of

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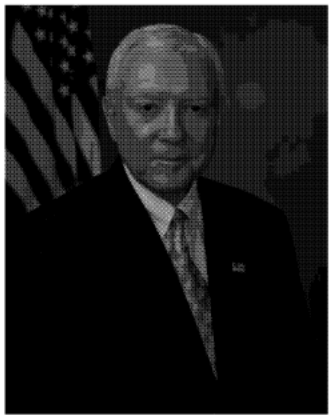
Economics and the Department of Civil and Environmental Engineering, and is the chair of the faculty advisory board at the Energy and Environment Initiative at Rice University. He teaches advanced courses in energy economics and supervises Ph.D. students in the energy economics field. Medlock is a principal in the development of the Rice World Natural Gas Trade Model, which is aimed at assessing the future of international natural gas trade. He has published numerous scholarly articles in his primary areas of interest: natural gas markets, energy commodity price relationships, gasoline markets, transportation, national oil company behavior, economic development and energy demand, and energy use and the environment. He has testified multiple times on Capitol Hill on U.S. oil and natural gas exports, has spoken at OPEC, and is frequently asked to speak about global and domestic energy issues. Medlock is currently the vice president for conferences for the United States Association for Energy Economics (USAEE), and previously served as vice president for academic affairs. In 2001, he won (joint with Ron Soligo) the International Association for Energy Economics Award for Best Paper of the Year in the Energy Journal. In 2011, he was given the USAEE's Senior Fellow Award, and in 2013 he accepted on behalf of the Center for Energy Studies the USAEE's Adelman-Frankel Award. In 2012, Medlock received the prestigious Haydn Williams Fellowship at Curtin University in Perth, Australia. He is also an active member of the American Economic Association and is an academic member of the National Petroleum Council. Medlock has served as an advisor to the U.S. Department of Energy and the California Energy Commission in their respective energy modeling efforts.
Medlock received his Ph.D. in economics from Rice University in May 2000.

Scott D. Sheffield

Pioneer Natural Resources
Chairman and CEO

Sheffield has held the position of Chief Executive Officer for the Company since August 1997 and assumed the position of Chairman of the Board of Directors for the Company in August 1999. He was President of the Company from August 1997 to November 2004. Sheffield is a distinguished graduate of The University of Texas with a Bachelor of Science degree in Petroleum Engineering. He was the Chairman of the Board of Directors and Chief Executive Officer of Parker & Parsley, a predecessor of the Company, from January 1989 until the Company was formed in August 1997. Sheffield joined Parker & Parsley as a petroleum engineer in 1979, was promoted to Vice President - Engineering in September 1981, was elected President and a Director in April 1985, and became Parker & Parsley's Chairman of the Board and Chief Executive Officer in January 1989.
Before joining Parker & Parsley, Sheffield was employed as a production and reservoir engineer for Amoco Production Company. Sheffield also serves as a director of Santos Limited, an Australian exploration and production company.

Conference Speakers Biographies



Senator Orrin Hatch (R-UT)

President pro tempore of the U.S. Senate and Chairman of the Senate Finance Committee
Orrin Grant Hatch was born on March 22, 1934, to Jesse and Helen Hatch. He married Elaine Hansen of Newton, Utah in

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1957. Orrin and Elaine Hatch are the proud parents of six children, 23 grandchildren and 14 great-grandchildren. Now in his seventh term as Utah's senator, Orrin Hatch is the most senior Republican in the Senate. Among his many initiatives are the Balanced Budget Amendment to the Constitution, the Strengthening Our Commitment to Legal Immigration and America's Security Act, the Religious Freedom Restoration Act, the Americans with Disabilities Act, the Antiterrorism and Effective Death Penalty Act, and the Utah School Trust Lands Exchange Act. Senator Hatch continues to lead in the fight to repeal Obamacare. He is on the front lines of legislative battles to secure the nation's borders, stop the forced unionization of American workers, and to bring fiscal restraint back to Washington by ending the reckless spending that threatens to bankrupt the nation. Hatch is Chairman of the Senate Finance Committee, which makes him the top Senate tax-writer with exclusive jurisdiction of the Treasury Department's actions on tax policy. He has been a vocal critic of Treasury's unilateral and unprecedented action on 385, and has written two letters expressing deep concerns with the scope, impact and pace at which Treasury is moving ahead with the proposed regulations. He is also a member (and former Chairman) of the Judiciary Committee; a member (and former Chairman) of the Senate Health, Education, Labor, and Pensions Committee; and a member of the Joint Committee on Taxation. He also has the honor of serving on the Board of Directors for the Holocaust Memorial Museum in Washington, D.C.

BP Relationship:

Positive relationship. Hatch is supportive of the oil and gas industry on tax issues. BP PAC has contributed $2,500 thus far towards his 2018 re-election.

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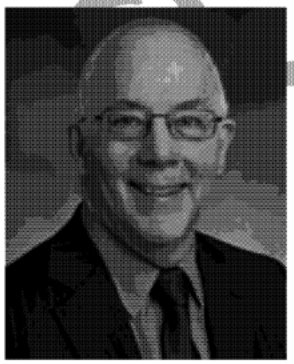
Adam Sieminski

Administrator for the United States Energy Information Administration



Adam Sieminski was sworn in on June 4, 2012, as the eighth administrator of the U.S. Energy Information Administration (EIA). From March 2012 to May 2012, while awaiting confirmation as EIA administrator, Mr. Sieminski served as senior director for energy and environment on the staff of the National Security Council. From 2005 until March 2012, he was the chief energy economist for Deutsche Bank, working with the Bank's global research and trading units. Drawing on extensive industry, government, and academic sources, Mr. Sieminski forecasted energy market trends and wrote on a variety of topics involving energy economics, climate change, geopolitics, and commodity prices.

From 1998 to 2005, he served as the director and energy strategist for Deutsche Bank's global oil and gas equity team. Prior to that, from 1988 to 1997, Mr. Sieminski was the senior energy analyst for NatWest Securities in the United States, covering the major U.S. international

integrated oil companies. He also had acted as a senior adviser to the Energy and National Security Program at the Center for Strategic and International Studies, a nonpartisan policy think tank in Washington, DC. He is a senior fellow and former president of the U.S. Association for Energy Economics, and served as president of the National Association of Petroleum Investment Analysts. In 2006, Secretary of Energy Samuel Bodman appointed Mr. Sieminski to the National Petroleum Council (NPC), an advisory group to the secretary of energy, where he helped author the NPC's Global Oil and Gas Study: The Hard Truths.
In addition to his affiliation with the Center for Strategic and International Studies, he was also an advisory board member of the Global Energy and Environment Initiative at Johns Hopkins University/SAIS. He had also served as chairman of the Supply-Demand Committee of the Independent Petroleum Association of America, and as an advisory member of the Strategic Energy Task Force of the Council on Foreign Relations. He is a member of the Washington, DC, investment professional society, and holds the Chartered Financial Analyst (CFA) designation. He received both an undergraduate degree in civil engineering and a master's degree in public administration from Cornell University.

EY Executive at Speakers' Dinner Biography

Randy Cain

Vice Chair and Southwest Region Managing Partner at EY

As Vice Chair and Southwest Region Managing Partner for EY, he is responsible for the firm's practice across nine states with more than 4,000 people in 14 offices. A member of the firm's Americas and U.S. Executive Boards, he regularly works to ensure their clients are consistently provided with exceptional client service and have access to the global resources EY provides. Previously, he served as the Southwest Region Tax Managing Partner and San Antonio Office Managing Partner. Randy has held a variety of leadership roles throughout the course of his over 30 years with EY, including Southwest Region Tax Managing Partner, San Antonio Office Managing Partner and Gulf Coast Tax Managing Partner. He has also been a member of the Americas Area Diversity Task Force, the Winning in the Marketplace Task Force and the Global Tax Strategy Enhancements Committee. Additionally, He served as the tax services coordinating partner to some of the Region's most significant clients including many large public and private companies in various industries such as telecommunications, energy, media and retail. He is also highly involved in the Texas community. He is passionate about Texas A&M, and a very active member of the Aggie community. Randy and his wife created the Randy and Jyl Cain Accounting Education Excellence Fund to help ensure continued excellence in accounting education at A&M's Mays Business School. He has also held leadership positions in several civic and charitable organizations including the American Heart Association and Junior Achievement.

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EY Energy Executive Insight Session Remarks

America's energy renaissance

- When we talk about the history and future of America's energy renaissance, it's important to emphasize three things right up front.
    - No. 1: The renaissance has been driven by our country's unique combination of abundant natural resources, strong property rights, technological expertise and a culture of innovation.
    - No. 2: It's been a tremendous boon to the U.S. economy.
        - In fact, according to a new report from the U.S. Chamber of Commerce's Institute for 21st Century Energy, America's energy renaissance led to the creation of 4.3 million U.S. jobs while adding

$548 billion dollars to our national economy.[1]

- No. 3: It's helped make the U.S. a global leader in reducing carbon dioxide emissions, because natural gas has been displacing coal in the power sector.

  - To put things in perspective: Between 2005 and 2015, U.S. natural gas production increased by 52 percent. Over that same period, America's energy-related CO2 emissions declined by 12 percent.

The oil price challenge

- Of course, the fall in oil prices since 2014 has created enormous challenges for all oil and gas producers, including shale producers here in the U.S.

- The price downturn has forced everyone — big companies and small companies alike — to reduce capital expenditures, operating costs and headcount.

- Last month, the International Energy Agency projected that global upstream investments would fall by 24 percent this year, after falling by 25 percent last year.

- "The total fall exceeds $300 billion over the two years — an unprecedented occurrence," the agency said. "Furthermore, there are no signs that companies plan to increase their upstream capital spending in 2017."

- The IEA also projected that global crude oil supplies would exceed demand through the first half of 2017, and perhaps longer.[2]

How technology is changing the industry

- As the world continues adjusting to the new oil price reality, there's no question that technology will play a major role in helping us drive down costs throughout the supply chain while also helping us increase oil and gas recovery.

  - In fact, BP believes that innovative technologies could reduce today's cost of supplying oil and gas by as much as 25 percent by 2050.

  - We also believe that technology could increase the world's recoverable oil and gas resources by about 35 percent by 2050.

- To give you a brief sense of how BP is using innovative technology to become more efficient:

[1] http://www.energyxxi.org/sites/default/themes/bricktheme/pdfs/er-fullreport-16.pdf
[2] http://www.reuters.com/article/us-energy-investment-iea-idUSKCN11J2SH

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- *ISS* technology

  - Seismic imaging allows us to explore deep into the Earth's subsurface, and BP's *ISS* (Independent Simultaneous Source) technology makes large-scale, 3-D seismic surveys faster and more cost-effective.

  - In 2015, for example, our *ISS* survey at Prudhoe Bay in Alaska delivered a tenfold increase in productivity, enabling us to acquire higher-quality images in just one winter season.

  - BP processes this type of geophysical data — collected from seismic surveys around the globe — at our Center for High-Performance Computing in Houston, which is home to one of the world's largest supercomputers for commercial research.

- Digital technology

  - Digital technologies, meanwhile, help us enhance both safety and efficiency.

  - Among our many initiatives, BP has formed a strategic collaboration with GE to develop and pilot a new digital solution for unplanned downtime in our Gulf of Mexico operations. The software will introduce new process surveillance and predictive analytic tools to provide early warnings of potential facility issues, which will give crews time to intervene proactively.

- Enhanced oil recovery technology

  - BP also remains a global leader on EOR technologies, which help us extract additional oil from existing reservoirs.

  - In fact, our *Designer Water* and *Designer Gas* technologies deliver over 10 percent of the world's conventional EOR oil production — more than any other international oil company. These technologies include *Bright Water* and *LoSal* EOR.

    - *Bright Water* is a microscopic, thermally activated particle that expands deep in a reservoir, diverting injection water into poorly swept areas and, thereby, increasing oil recovery. On average, it costs less than $5 per barrel.

    - *LoSal* is a low-salinity water flooding technology that increases oil recovery compared with conventional seawater flooding. BP is already deploying LoSal in the North Sea,

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and we are evaluating its use in a Gulf of Mexico project.

- BP's head of upstream technology, Ahmed Hashmi, has said: "As an industry, we have probably reached the point when the potential from existing reservoirs exceeds what we will find through exploration. EOR, improved oil recovery, and production optimization technologies will continue to make an important contribution to delivering that potential."

- Thunder Horse water injection project

  - In 2016, BP successfully launched a major water injection project in its Thunder Horse field in the Gulf of Mexico. The three-year project will allow for the recovery of an additional 65 million barrels of oil equivalent

- "Multilateral" wells in the San Juan Basin

  - In 2015, our Lower 48 onshore business bought all of Devon Energy's assets in the San Juan Basin of New Mexico, a region in which BP has operated for more than 30 years. The expansion added nearly 15,000 net acres to its portfolio.

  - With decades of experience in the San Juan Basin, BP has a deep understanding of its reservoirs, and our Lower 48 business has combined that knowledge with innovative technology to help boost production efficiency.

    - In 2015, for example, our Lower 48 business made history by completing its first-ever "multilateral" wells in the basin.

    - Multilateral wells feature multiple horizontal wells connected to a single drilling hole, or "wellbore," allowing producers to access more of the oil and gas in a given reservoir while reducing the number of drilling sites.

    - Our Lower 48 business expects that a majority of its new wells in the San Juan Basin will be multilaterals, and it is pursuing similar well-design improvements across all its operations.

Conclusion

- Here's the bottom line: With oil prices staying lower for longer, we need to be doing everything possible to make our operations more efficient and more productive.

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- I've listed a few examples of how technology can help; but really, this has to be a transformative effort that cuts across all of our business lines.

- Getting it right matters, not only to oil and gas companies, but also to people throughout the world.

    - After all, the world is expected to need a third more energy by 2035 — and and the reality is that, despite what certain activist groups would like us to believe, it simply is not feasible to abandon fossil fuels overnight.

        - In fact, according to the most likely scenario outlined in BP's latest Energy Outlook report, fossil fuels are expected to account for nearly 80 percent of global energy supply in 2035.

        - Even in our "faster transition" scenario — a scenario in which the world moves aggressively on climate change, and we see global emissions peak in 2020 before declining to nearly 8 percent below 2014 levels by 2035 — even in that ambitious scenario, we project that fossil fuels will remain 70 percent of total energy in 2035.

- Again, we face serious challenges as an industry. Yet I'm confident that, in the years ahead, companies like ours can meet these challenges and continue delivering the energy the world needs.

- I look forward to discussing all these issues — and plenty more — with our distinguished panel and audience.

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Message

From: Jefferiss, Paul H. [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Sent: 23/09/2016 14:58:35
To: Stout, Robert [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]; Emery, Dominic [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]; Nash, Mike A (Legal) [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Subject: FW: The oil and gas we have already tapped will take us past 1.5°C
Attachments: OCI_the_skys_limit_2016_FINAL_2.pdf

FYI. We should think about how, if at all, we wish to position on this. It's mathematical conclusions are straightforward. But it lacks all context – political, economic, technological. How will demand otherwise be met?

Redacted - Privilege

From: McMahon, Michael (HSE)
Sent: 23 September 2016 15:23
To: Jefferiss, Paul H.
Subject: RE: The oil and gas we have already tapped will take us past 1.5°C

Paul,

This new study (attached) appears to be fairly well researched and paints a bleak future for fossil fuels in a post-Paris world.

OCI_the_skys_li...

It moves the carbon budget / stranded assets argument and analysis to the next level.

The base assumptions are:
•CCS is not developed
•Land use makes a modest contribution to GHG mitigation, ie the median level from the AR5 2 degree scenarios.

Just like the work I did for the value of CCS project, fossil fuels reduce to very low levels within a few decades, and the report concludes that the natural decline of **existing** fossil fuel production, even oil and gas is more that the atmosphere can accept. Ie there is no need to develop any reserves never mind explore for any new ones. Renewables fills the gap apart from coal for steel and cement and oil&gas as petrochemical feedstocks and some transport. The report dismisses concerns over the intermittency of renewables.

Clearly, you would get a very different answer if CCS is developed for both fossil and biomass application, and you use more optimistic projections of mitigation from forests.

BP is mentioned twice, and we should expect requests for our views.

Regards,

Mike.

BP International Limited. Registered office: Chertsey Road, Sunbury on Thames, Middlesex, TW16 7BP. Registered in England and Wales, number 542515.

From: Hammonds, Mark
Sent: 22 September 2016 08:04
To: Thompson, Bill (cHSSE); McMahon, Michael (HSE); Emery, Dominic; Mannion, Kathrina; Jefferiss, Paul H.; Prakash, Anant; Rogers, Liz; Andrews, Antony; Abrahams, Andrea D (PAN); Tyson, Louise
Subject: The oil and gas we have already tapped will take us past 1.5°C

http://www.climatechangenews.com/2016/09/22/carbon-in-existing-coal-oil-and-gas-fields-enough-to-breach-climate-limits-study/

https://www.newscientist.com/article/2106758-the-oil-and-gas-we-have-already-tapped-will-take-us-past-1-5c/

Message (Encrypted)

From: Jack Collins (BPX Energy) [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=F02DA1800C6F4F63B757594C868C5956-JACK COLLIN]
Sent: 26/03/2019 23:47:42
To: Auchincloss, Murray M [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=cb420edb39034c9cb2b96b619599ebea-AuchinMM]
CC: David Lawler [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=a798f8c9fe204190bec7126abf28e6b4-David Lawle]; Kola Fagbayi [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=22cd8b76be5e444d863a94aed1b2f675-Kola Fagbay]; Brandon Rumbelow [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=3728f247f409499cbaa349b68d9d1be8-Brandon Rum]; John Kruep [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=ddc8c149862a4a8a9e72d1ff3a27be08-John Kruep_]; Brian Pugh [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=4faa86cd8a5b414d840074d77ea00a7f-Brian Pugh_]
Subject: RE: Rem co
Attachments: BPX 1QPF; BPX 1QPF; GFO1 update context and request

Murray,

Thank you again for the feedback on the ACB. See responses/clarification on points you sent below, happy to discuss any of these in more detail.

If you are OK with these, we will update our ACB scorecard for them and re-submit.

Best Regards,

Jack

1) Adjustment only for accounting changes made in GFO1

a. Understand your guidance, and we will adjust. To clarify, the scope of the accounting changes made GFO1 was $158m vs. $100m (not sure if you were just using the order of magnitude number). $145m was a change in the midstream costs, moving from gross margin to other cash costs. $13m an increase in cash cost due to the consolidation of the Kinder Morgan JV. Both of these changes do not impact operating or free cash flow delivery. To give you comfort that the $158m is wholly consistent with the amount we flagged previously, attached is e-mail I sent to you as well as those Brandon sent to Kirsty's team with that number in them.
b. We will use the GFOz parameters (production, production cost, CAPEX), with the GFO1 prices, accelerated divestment schedule of GFO1, and accounting changes above as the basis for our FCF, production, and production cost metrics.

2) Conform Tier 1s + Tier 2s to match Segment approach

We will make this change. Proposed ranges/scoring follow. We are using the average of our 2018 and 2017 safety metrics to set all of our 2019 safety targets.

	2017 Actual	2018 Actual	2019 Goal	Measurement Scale				
Categories				0	0.5	1	1.5	2
Tier 1 and 2 PSE	27 (5 tier 1 and 22 tier 2	11 (2 tier 1 and 9 tier 2)	19 (3 tier 1 and 16 tier 2)	nil	23	19	15	11

3) Align on SERs

In March 2018, we made a SER commitment of 700k te CO2e (350k te CO2e by 2020 and 350k te CO2e by 2025) out of a an estimated ~1350k te CO2e on our legacy assets. As you know, nearly all of our legacy assets are now slated for divestment. As a result, assuming divestments occur as planned, our reported emissions on assets not slated for divestiture (SoHa) will only be ~150 te CO2e.

As further context, in 2017 & 2018 our actual SERs deliver on legacy assets was a combined ~135k te CO2e. Our forecasted SER for 2019 for legacy assets was 335k te CO2e assuming full execution of solar pump project in all legacy assets (285k te CO2e of which was Wamsutter). However, we have elected to halt nearly all of these projects in light of our divestment plans. We anticipate delivering a ~4k te CO2e SER in SoHa in 2019.

We are still learning about the BHP assets and hence do not have a high degree of confidence in their emission calculations and therefore our ability to define the appropriate levels of SERs that can be delivered in 2019. Given this lack of confidence, we would propose not having an SER target in our 2019 ACB, rather to start including one in our 2020 ACB scorecard.

The methane detection program we plan to deploy in all our business units in 2019 that integrates drone technology with sophisticated optical imagery (which Bernard mentioned at CERA) will help us set our 2020 ACB SER targets. As such we believe a metric tied to successful implementation of this methane detection program is a more appropriate ACB metric for 2019.

-----Original Message-----
From: Auchincloss, Murray M [redacted]
Sent: Monday, March 25, 2019 9:38 AM
To: Jack Collins (BPX Energy) [redacted]
Subject: Rem co

Jack, I spoke with Bernard today re your remco upcoming meetings. A few things please:

1. We will allow you to adjust for the $100m accounting update. Nothing else should be adjusted from GFO zero. The Segment cannot ask for relief, therefor the business cannot as well.

2. On safety we would prefer you align to the Segment measure of tier one and tier two pse's. Let us know if that causes issues for you.

3. On environmental, we would prefer you align to SER's - our internal and external measure. Again , let us know if there are issues with this.

Thanks.

M

Sent from my iPhone

Message

From: Ellis, Joe [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Sent: 11/11/2016 14:39:10
To: Stout, Robert [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]; Streett, Mary [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Subject: FW: Paris agreement

I cannot join a discussion about this today, of course, but I think it is bad to put a stake in the ground with a new administration, particularly since we have no deep relationships yet. Trump could likely see such a move as a shot across the bow, and we should not begin that way. If they already knew us and if we were already having private conversations, then we could give advance notice with context that would mitigate how such a move would be perceived. Without the opportunity for that, though, I think this is fraught with risk.

I also do not believe folks should infer that XOM will enthusiastically support a price on carbon despite continuing signals to that effect. We should remember that XOM is positioned differently than other companies because of ongoing work by several AG's who are not bound by the Trump administration.

Just adding my two cents since I cannot join you for a discussion today.

From: Morrell, Geoff
Sent: Friday, November 11, 2016 6:13 AM
To: Stout, Robert; Streett, Mary; Ellis, Joe; Sidoti, Elizabeth; Guinn, Shanan; Stutz, Rachel; Dempsey, Ray C; Currie, Duncan
Subject: Fwd: Paris agreement

For discussion today...

Geoff Morrell

Begin forwarded message:

From: "Eyton, David G P" [redacted]
Date: November 11, 2016 at 5:36:18 AM EST
To: "Morrell, Geoff" [redacted], "Stout, Robert" [redacted]
Cc: "Jefferiss, Paul H." [redacted], "Emery, Dominic" [redacted]
Subject: RE: Paris agreement

Sorry - I meant Geoff!

David Eyton
Telephone: [redacted]
BP plc, 1 St James's Square, London SW1Y 4PD
Registered in England and Wales No 102498

From: Eyton, David G P
Sent: 11 November 2016 10:26
To: Morrell, Geoff; Stout, Robert
Cc: Jefferiss, Paul H.; Emery, Dominic
Subject: FW: Paris agreement

Dear Jeff/Bob,

Please see e-mail exchange below.

I'd appreciate your advice on my reply to David, and any other actions you might support.

Thanks

David Eyton
Telephone: [redacted]
BP plc, 1 St James's Square, London SW1Y 4PD
Registered in England and Wales No 102498

From: Jefferiss, Paul H.
Sent: 11 November 2016 10:22
To: Eyton, David G P
Cc: Emery, Dominic
Subject: RE: Paris agreement

My initial reaction is that it's a reasonable proposal that Bob, perhaps on behalf of OGCI (and perhaps even more widely – see below), might consider, though I expect Dev would be more cautious.

We'd obviously also need to consult Geoff/Bob Stout's team, who are already more cautious in this space, given the need to work with the new administration. On the other hand, stepping out on the need for continued climate action post-election appears to be something even XOM is prepared to do. See
http://fuelfix.com/blog/2016/11/10/exxon-vp-calls-climate-change-serious-risk-in-tweet/

So my suggestion would be to run the idea past the DC team and then raise it with Dev, although you may judge it better to go straight to Bob (after consulting DC) on the back of David's email.

As for responding to David, if we think it's a non-starter I guess you could let him know that. If we think it has legs (I do), then either send him a holding response about internal discussions (but no expectations), or just wait until you get a response from Bob?

Hope that's helpful.

Paul

From: Eyton, David G P
Sent: 11 November 2016 10:08
To: Jefferiss, Paul H.
Cc: Emery, Dominic
Subject: FW: Paris agreement

Dear Paul,

I'd appreciate your advice as to how to reply to David, who is a TAC member, and was clearly very shaken at the meeting by the election result.

Thanks

David Eyton
Telephone: [redacted]
BP plc, 1 St James's Square, London SW1Y 4PD
Registered in England and Wales No 102498

From: David J Pine [redacted]
Sent: 11 November 2016 03:55
To: Eyton, David G P
Cc: Feil, Richard L; Haywood, Sandra E; Andy Hopper; Ann Dowling; David Pine; David Whelan; Jeroen Tromp [redacted]@princeton.edu); Ric Parker [redacted]@rolls-royce.com); Strank, Angela RE; ric.parker[redacted]
Subject: Paris agreement

Dear David,

As we all know, President-Elect Trump has pledged to cancel the Paris Climate Agreement that President Obama signed in September. The withdrawal of the United States from the Paris Agreement would be a major blow to the emerging global consensus about setting goals to combat climate change. I am writing to ask you if you could speak to Bob Dudley and ask if he would be willing to approach the CEOs of the other major oil companies and consider writing an open letter with them to President-Elect Trump urging Trump to reconsider his position of the Paris Climate Agreement and to support it. I understand that this would be an unusual action for the oil companies to take, but this is a critical time and it is particularly important that there be a consistent policy on which oil companies can depend so that the business community can effectively plan on how to address an important issue of our time.

Best regards

David Pine

DRAFT

2018 BP America Objectives

Priority	Objective
Oversight and Governance	• See through implementation of the final process safety recommendations agreed with the DOJ. • Oversee compliance with the Plea agreement, EPA Administrative agreement, EPA consent decree and all material obligations.
Protect and Deliver Value	• Ensure BP's interests are reflected in the comprehensive tax reform and in any new or amended major international trade agreement (e.g. NAFTA). • Anticipate and proactively manage legislative initiatives to protect BP's interests (e.g. Russia sanctions, RFS) • Reform key federal agency rules, rulemaking process and permitting policy to support BP's US business development plans and mitigate regulatory burden and risk. • Develop and implement a US methane engagement plan in coordination with L48, including communications as well as federal and state advocacy • Prevent further erosion of near-term support for gas vs. other fuels, protect role of gas as a bridge fuel in a low-carbon transition, and position gas as a destination fuel for the long term. • Protect against harmful legislation/regulation at local and state level. • Develop and implement integrated campaign to counter 'keep-it-in-the-ground' movement. • Execute GoM Access plan at pace to deliver regulatory and statutory changes that provide value to the Gulf of Mexico business. • Deliver Entity Plans in support of each US business.
Reputation and Outreach	• Build relationships and establish credibility with new government officials. • Continue to improve perception of BP as a 'safe and reliable operator' among target audiences. • Support the rollout of BP's Group-wide climate strategy in the US, developing and implementing aligned messages and communication/advocacy plans tailored for US stakeholders • Leverage BP membership in major trade groups, boards, and participation in events in service of top business priorities.
People	• Progress the US minority ambition, strengthen D&I performance in the workforce • Deliver BP America People Plan

Message

From: Jackson, Elizabeth M. [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8FABA4FC7674494DA79737D1BB8BC4F[redacted]

Sent: 17/03/2021 14:57:36

To: Goddard, Kelly[redacted]; Bitar, Fawaz K[redacted] Bisset, Claire M[redacted]; Chanchani, Sneha D[redacted]; Francis, Karrin[redacted]; Brennan, Andreia[redacted]; Hill, Gardiner[redacted]; Jefferiss, Paul H.[redacted]; Safavi, Nili[redacted]; Wingfield, Meryl[redacted]; Bickerton, David[redacted]; Woods, Rachel[redacted]; Morrell, Geoff[redacted]]; Haywood, Alan H[redacted]; Best, Andy[redacted]; Nash, Mike A (Legal)[redacted]; Marshall, Craig[redacted]; Dale, Spencer[redacted]; Emery, Dominic[redacted]; Lawson, Nicholas J.[redacted]; Buckley, Emily[redacted]; Williams, Fatima[redacted]; Allgood, Elaine (BP)[redacted]; De Sousa, Paula[redacted]; Ovion, Sarah[redacted]; Aliyev, Rza[redacted]; Khan, Omayma[redacted]; Wyness, Alistair[redacted]; Chierchia, Giulia[redacted]; Mamic, Ivanka[redacted]; Hagan, Nastassja[redacted] Russell, Leigh-Ann[redacted]; Johnston, Mark[redacted]; Streett, Mary[redacted]; Olson, Emily M[redacted]; Harrison, Dionne[redacted]; Riley, Donna[redacted]; Stuart, David Andrew[redacted]; Moore-Bridger, Clare[redacted] Freeman, Jon[redacted]; Faye Gerard[redacted]; Simpson, Helen[redacted]; Maclellan, Gemma[redacted]

. Divestments are, and continue to be, an important part of our strategy. They enable us to strengthen our balance sheet and high grade or diversify our portfolio. Going forward, divestments will help bp to create a resilient, lower cost and lower carbon oil, gas and refining portfolio that is smaller but high quality. Alongside cashflow from our businesses, they will help to fund our investment into transition activities – including low carbon businesses and convenience and mobility. We're aiming to increase our low carbon investment to around $5 billion a year by 2030.
While these divestments may not directly lead to a reduction in absolute global emissions, they accelerate the pace bp can grow low carbon businesses and underpin our aim to reduce our oil and gas production by around 40% by 2030. This puts us well on the way towards becoming a net zero company by 2050 or sooner.
For example, the sale of our Alaska business to Hilcorp, in 2020 is one of the divestments that has contributed to a reduc

Message

From: Lawler, David [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Sent: 12/07/2017 02:33:34
To: Fagbayi, Kola [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]
Subject: Re: Message from Lamar

Ok got it. Thank Kola.

Sent from my iPhone

On Jul 11, 2017, at 6:17 PM, Fagbayi, Kola [redacted] wrote:

Dave,

As requested, I had a 30 minute meeting with Lamar on June 26th where we discussed several subjects. He seemed to be most interested in Methane Emissions. Please find below what we requested:

A study to determine actual methane emissions on an integrated site (well and processing) to compare the data with EPA estimates we currently report. He promised that this request is not to burden our business with cost and he is happy to fund the work.

According to him reason for his request is that current data shows that L48 currently reports ~50% of the BP Group Methane emissions footprint and Environmental Advocates will demonize us as was done with the Power Industry. He needs the data to allow us be ahead of the advocates.

Lamar mentioned that he has tried to discuss this with you to no avail. He said this is very important to him and he would not want to publicly force us to undertake this study. To this end, he mentioned it to me so I can pass the message to you.

Regards,
Kola

Integrated Priority Discussion – BPA Board Meeting Lunch

Framework for discussion

1) Context: Consider the following: We should find there are ways we can work together to deliver more value and also where we can leverage what is already going on in the low carbon agenda. We can also work with Mary to get our messaging aligned – on BP's impact in the US (already much work done on this) and on Bp's role in the US with respect to the energy transition – so we are all out there delivering a consistent message on what Bp is going to do in the US. Key here is our role in US may be different to what we do in UK/Europe etc
2) CEO Transition is well underway. Bernard has articulated a different dual challenge - we must remain a vibrant investment opportunity while decarbonising. Transition work includes 3 workstreams:
    a. Engagement - includes investors and NGO's
        i. first phase is ensuring Bernard meets the right people in his buildup to day 1. In early Feb - Bernard will give a speech on our intentions/ambitions underpinned by a few concrete actions - such as announcing the liklihood we will sign up for TCFD, and the formation of a sustainability advisory board (similar to the TAC) - and announce our ambition on low carbon and absolute emission reductions. Then a capital markets day to happen in 3Q 2020.
    b. Organisation – a work in progress
    c. Energy Transition and Decarbonisation: Based on a number of conversations with academics, NGO's, investors and consultants - feedback is that a net zero ambition for the company is essential and we have to get ahead of this. Absolute energy reductions must feature as well as energy intensity. Must address include all scopes of emission

3) Early thoughts: Work on New Energy is focused on option generation. Some thoughts from Davie Eyton incude:

    a. A - advanced mobility unit - light duty transportation and electrification. Didi JV in China is a great example
    b. US is being deprioritised given the lack of pressure. Business case is weaker.
    c. Advanced Bioproducts - Paul Beckworth - specifically bio plastics and low carbon feedstocks. Best thought through and advanced of all work streams.Waste plastics to fuels - David Eyton is opposed to this.
    d. Carbon management - this is drifting. Offsets and CCUS are the big leavers. Rhetoric in America does not currently embrace Hydrogen. It is a smaller narrative in the NPC report than it would in China or other countries.
    e. Issue in BP - is the absence of a business championing CCUS. For US - it would be work in Whiting, Cherry Point, and Texas Coast. OGCI is creating a Texas Coast project. This is a more pressing issue for BP in the US than the policy side.
    f. Digital - we are currently only pushing on EMERGING (blockchain, quantum) technologies, but there is less interest in proven technologies. We need to leverage this more!!
    g. E - low carbon power and storage. Lightsource BP is going gangbusters. There is no clear strategy around power in BP.
    h. Circularity is emerging as a key issue

i. The US has a richness of resources to solve these issues, and it is sadly not been a priority. The technologies would be exportable, and would create value. Need to continue to push on renewable power

4) Framing of Priorities – based on input from Lamar. Areas to consider include
    a. Power
    b. CCUS
    c. Hydrogen
    d. Midstream
    e. Upstream
    f. Downstream
5) Other context from Lamar- call it an integrated agenda. Similar to what we are trying to do in India, china, US and Brazil - integrated priorities. There is going to be some organisational changes - including teams for ccus and sustainability,
6) 2020 priorities- early thoughts from Lamar

    a. Climate - energy transition
    b. In general - parallel and purpose and ambition and new strategy rollout that will happen in the first part of the year.
    c. Upstream, GOM and L48
    d. Downstream will continue with same strategy
    e. Washington advocacy - to make sure natural gas does not get squeezed out.
    f. Cost and capex will continue to be a focus area. Get cost equivalent out of the company
    a. climate messaging in US
7) Next Steps – open for discussion with BPA board. Is there interest in beginning to frame these priorities?

Members of the Board of Directors

Environmental Social Governance (ESG) context and approach to rating agencies

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ESG global context is rapidly evolving driven by several factors which reinforce each other. This includes global initiatives, changing societal expectations, and an expanding regulatory and third-party rating agencies landscape.

This is translating into a fundamental change in how investors approach ESG and their response to clients' expectations to win and conserve mandates. Investor are using their own methodology, combining internal research with external rating agencies' scores and are progressively disclosing their own climate impact under the TCFD framework. In summary, investors are increasingly seeking help to justify to their clients why it is ok to invest in oil and gas sector, including BP.

To respond to this changing ecosystem, IR has created the following guiding principles to frame ongoing activities and engagement:

- **Integrated narrative**: ESG narrative to be fully integrated in the evolving BP investment proposition, meeting investors' needs while supporting our societal license to operate
- **Data and disclosures**: Strategically identify the key ESG metrics the company will be measured by while tactically ensuring broader set of ESG data and disclosures are reaching relevant audiences including rating agencies.
- **Investor engagement**: C-suite to incorporate integrated narrative in external engagement; IR to expand mainstream programme of buy/sell-side engagement, conferences and investor meetings to include ESG targets

This approach is supported by organization evolution including Climate Advocacy Group convened by C&EA, ESG Working Group convened by IR, and new dedicated IR ESG resource.

Craig Marshall
November 2019

October 9, 2018

Dear Steering Committee Members,

The purpose of this note is to provide a status update on the NPC CCUS Study and solicit your feedback on findings to date and our proposed path forward.

Since kicking off the framing exercise in July, we have established an overall project governance structure, filled key roles within the Coordinating Subcommittee (CSC), task groups and subgroups, and aligned on an overall workplan and associated timeline to develop the report. We have also created an overarching framework for the study to inform the work the task groups will do over the coming months.

The following material summarizes emerging findings to date. These insights are based on a broad range of interviews, peer-reviewed publications, industry and government reports, NPC meetings and workshops, and the Carbon Capture Technology Development Forum, which was held in Birmingham, Alabama, in conjunction with a CSC workshop in September. It is an early draft and requires refinement by the task groups. In addition, information in red text represents preliminary and/or unknown data requiring further analysis.

The document is structured as follows:

- NPC study request & project charter (pg. 2)
- Synthesis of initial findings from seven-week framing effort (pg. 3-10)
- Integrated project timeline, owners, and open questions (pg. 11-13)
- Key summary slides from CSC framing workshop

During the framing exercise, a more detailed version of the emerging narrative and supporting analyses were completed. These will be shared with the CSC this week. If you would like a copy of this additional information, please let me know.

I welcome your feedback on the overall work to date and guidance going forward. Please feel free to send me any comments you have, and I will pull them together to share with you and the CSC.

Regards,

John Mingé
Chair, NPC Committee on CCUS

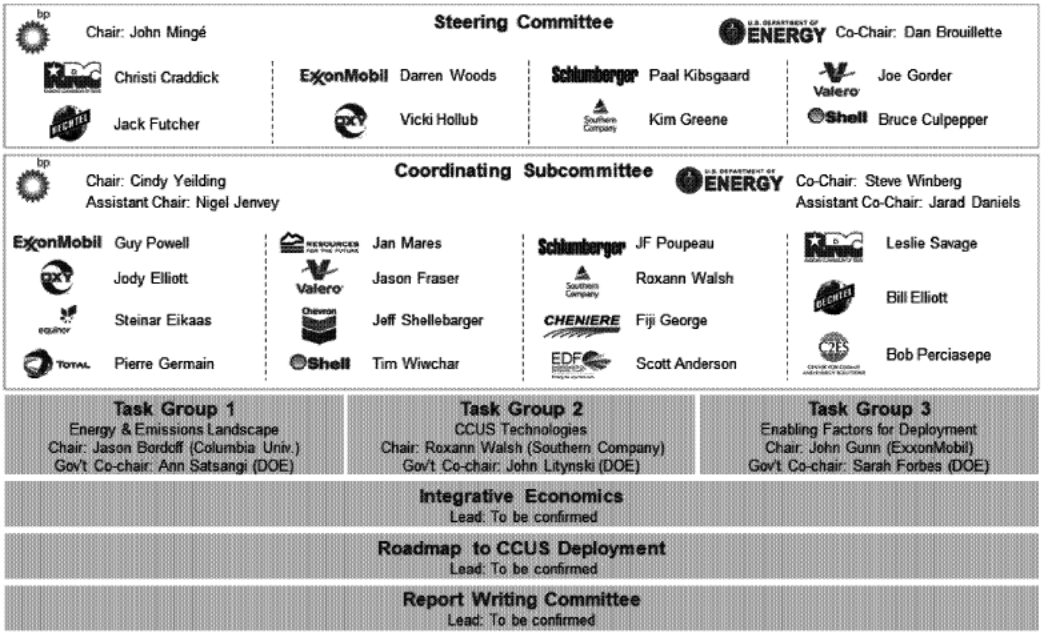
NPC study request & project charter

NATIONAL PETROLEUM COUNCIL (NPC) STUDY REQUEST

The NPC is a federally chartered and privately funded advisory committee established by the Secretary of the Interior in 1946 at the request of President Harry Truman whose sole purpose is to advise, inform, and make recommendations to the Secretary of Energy with respect to any matter relating to oil & natural gas. The US Secretary of Energy, Rick Perry, requested that the NPC undertake a study to define potential pathways for integrating Carbon Capture, Use & Storage (CCUS) at scale into the energy and industrial marketplace, with a specific emphasis on the petroleum industry. Key questions to be addressed in this report include:

1. **What are the United States' and global future energy demand outlooks** and, based on these outlooks, the environmental benefits resulting from the application of CCUS technologies in various end-use sectors?
2. **What research and development, technology, and infrastructure barriers must be overcome** to ensure the economic deployment of CCUS at scale in various end-use sectors?
3. **How should the success of CCUS at scale** be defined?
4. **What actions can be taken to establish a framework that guides public policy and stimulates private-sector investment to advance the development and deployment of CCUS technologies** capable of achieving substantive gains in efficiency, economics, and environmental performance?
5. **What regulatory, legal, liability, or other issues should be addressed** to progress commercial CCUS investment and enable US industry to be the global technology leaders?

EXHIBIT 1: NPC STUDY PROJECT CHARTER



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Synthesis of initial findings from seven-week framing effort

DISCLAIMER: The following represents a synthesis of the initial findings from the seven-week framing exercise. This work has been informed by interviews from a broad range of industries, academia, government, non-government organizations (NGOs) as well as multiple industry & government data sources. Information in red italics represents preliminary and/or unknown data needing further analysis from the NPC study team.

INITIAL FINDING 1: CCUS IS REQUIRED TO MEET THE DUAL CHALLENGE OF REDUCING EMISSIONS WHILE SATISFYING ENERGY DEMAND

The world faces a dual challenge: increasing energy production (expected to reach ~660 quad. btu by 2030) to meet global economic growth, while simultaneously reducing carbon emissions (reaching ~36 Billion tonnes per annum by 2030 out of which ~5.4[1] Billion tonnes per annum of is US emissions) to protect the environment.

Large-scale commercialization of Carbon Capture, Use & Storage (CCUS) is critical to address this dual challenge:

- Globally, a range of decarbonization & energy transition scenarios and models suggest that CCUS will need to play a role in abating *10-30%* of emissions by 2050[2].
- In the US, CCUS has the potential to reduce *X-Y %* of CO_2 emissions by 2030.
- In the longer term, CCUS is required for achieving zero net carbon emissions through application of carbon dioxide removal (CDR) techniques such as Bio-Energy with CCS (BECCS) and Direct Air Capture (DAC) or other emerging technologies.

Integrating CCUS into US energy and environmental plans would deliver benefits such as:

- Reduced US carbon emissions well beyond what substitution by other low carbon alternatives alone can achieve.
- Increased usage of existing US fossil fuel resources, protecting state and federal revenue sources and supporting the license to operate.
- Position the US for CCUS technology leadership and associated business opportunities.
- Potentially accelerated economic growth, job creation and exports, and enabling continued usage of existing infrastructure over the long-term.

1 US EIA, Annual Energy Outlook 2018 report specifies 5.2 Billion tonnes per annum of Energy-related carbon dioxide emissions for the US in 2030; projections of process emissions from large industrial point sources in 2030 are about ~0.2 Billion tonnes per annum (derived from emissions specified by EPA)

2 Loftus P. J., et al. WIREs 2015, 6:93–112. doi: 10.1002/wcc.324

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INITIAL FINDING 2: CCUS HAS A STRONG FOUNDATION IN THE US BUT DEPLOYMENT REMAINS RELATIVELY LIMITED DUE TO HIGH COSTS, INADEQUATE INFRASTRUCTURE, INSUFFICIENT INCENTIVES, AND REGULATORY UNCERTAINTY

CCUS has a strong foundation in the US, however, CCUS deployment remains quite limited with <1% of US emissions currently abated by CCUS projects. Today, *16* projects (mostly Enhanced Oil Recovery, EOR) abate *~28 Million tonnes per annum* of CO_2. These projects are economic because of high-purity / low-capture-cost CO_2 streams (*13 of 16*), short transportation distances between CO_2 sources and sinks (all *<150* miles), and/or a value-creating mechanism (*15 of 16* rely on CO_2-EOR to produce oil).

CO_2 sources needed to support CCUS end-use applications including EOR can be categorized into 3 major point-source sectors representing *47%* of current US emissions:

- **"High-purity-CO_2-sector"** (4% of 2017 US CO_2 emissions): Almost all CCUS in service today is linked to high purity CO_2 from natural gas processing (*13 of 16*): ammonia, ethanol, hydrogen, and pulp & paper production plants emit high-purity CO_2 streams that can be readily captured, compressed & transported.
- **Power sector coal & natural gas plants** (32% of 2017 US CO_2 emissions): A few (*3 of 16*) CO_2 projects (e.g. Petra Nova) link to power generation, but coal & gas power generation sources produce low purity CO_2 emissions which require significant capital & operating costs, limiting their ability to compete with other abatement technologies (e.g. wind, solar, H_2) on a regional basis.
- **Large industrial point sources** (11% of 2017 US CO_2 emissions): Iron & steel, cement, refining, and petrochemicals are process-intensive industries with high heat-intensity requirements that will likely remain dependent on fossil fuels. These are the hardest to abate CO_2 sources and have few substitutes.

Limited CCUS deployment in the US to date is a result of 6 primary hurdles:

- **Few at-scale, economically-viable, business cases for anthropogenic CO_2 use in CO_2-EOR:** CO_2-EOR is currently the only at-scale use-case for CO_2 (*>85%* of US CO_2 consumption[3]), however it is still minimal as compared to the total US CO_2-EOR potential (*0.3 Million bbl/d* of current EOR production vs. *~3.5 Million bbl/d* potential for the next 50 years[4]); the technology is proven but success requires both a relatively high oil price and strong CO_2 incentives to compete with other development types and production methods.
- **CO_2 storage in saline aquifers remains largely undeveloped:** Subsurface geologic storage is currently not developed to its potential. There exists only *1* at-scale storage project (Illinois Industrial CCS Project), storing *1 Million tonnes per annum* of CO_2 relative to US CO_2 storage potential (low estimate of *~2600 Billion tonnes*). These include depleted oil & gas

3 IHS Markit™ CO_2 2018 Chemical Market Handbook

4 Oil & Gas Journal EOR survey of current CO_2-EOR production, DOE / NETL "An In-Depth Look at 'Next Generation' CO_2-EOR Technology" (2013) which projected 63.3 B bbl of economically-recoverable oil for next-generation CO_2-EOR (21.4 Billion bbl with current CO_2-EOR best practices, and an additional 78 Billion bbl of technically-recoverable oil) at \$90/bbl oil price, 20% rate of return, and \$40/tCO_2 purchase price; Lower 48 recoverable resources only, and based on production for next 50 years

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fields (*7%* of total), unmineable coal (*2%* of total), & saline formations (*91%* of total), equivalent to *>400 years* of storage for all US emissions combined.[5] CO_2 storage is well proven, but requires advancement across topics like site characterization, monitoring, long term liability, pore space ownership, and site permitting before they can be implemented at scale.

- **High cost-of-capture for major combustion sources:** Carbon capture remains an engineering & capital efficiency challenge. CO_2 capture costs typically average *>$70-120/t$CO_2$* in the power sector, accounting for *>80%* of integrated CCUS project costs. Moreover, current CCUS capture equipment is physically large (requiring contactor towers, piping, boilers, etc.) and is custom engineered for each project, making deployment at scale a challenge. Research & Development (R&D) funding from industry and government in addressing carbon capture has been two orders-of-magnitude less than carbon substitution technologies like renewables, which typically have a shorter payback period and benefit from being less capital intensive and more modular.
- **Limited CO_2 transportation infrastructure:** CO_2 sources are seldom close to use / storage sinks. Existing CCUS pipeline infrastructure has been largely point-to-point & project-dedicated as building a large integrated network of CO_2 pipelines has not been a priority for either government or industry.
- **Few proven low-cost end-use applications:** Some volumetrically/regionally niche products exist, but no major end-use market demand exists beyond CO_2-EOR. End-use CO_2 applications for fuels, chemicals, and durable materials are possible, but R&D funding from industry and government has been limited and few pilots for these applications exist to date. While some incentives for decarbonized products exist, cost increases in goods and materials due to CCUS can be significant.
- **Lack of sponsorship and advocacy:** Underlying all these trends, CCUS has lacked influential energy industry sponsors, environmental group tolerance/support, and consumer pull for low-carbon products, including power / electricity sourced from low-carbon generation. As a result, policy support and public support for CCUS has been *de-minimis* relative to renewables, energy efficiency, and traditional fossil fuel sources.

[5] NETL Storage Atlas 5th ed. US DOE

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INITIAL FINDING 3: INTEGRATING CCUS AT SCALE INTO THE MARKET DEPENDS ON BROAD-BASED INNOVATION & CONTINUED INVESTMENT, ENABLED BY POLICY, LEGISLATION, REGULATORY, AND LEGAL IMPROVEMENTS TO OVERCOME CURRENT CHALLENGES

Deploying CCUS at scale requires broad-based public-private commitments across multiple pathways:

- **Significant *(~10x)* expansion of CO_2-EOR requires additional incentives:**
  - While CO_2-EOR is already an important component of today's oil production, it has potential to expand; an analysis commissioned by the US Department of Energy (DOE) projects potential oil resources recoverable with CO_2-EOR of *~140 Billion bbls*, with *~63 Billion bbls (or ~3.5 Million bbl/d* for *50 years)* economically-recoverable at a price of $90 a barrel, or more than *~10x* current production levels.[4]
  - DOE and American Recovery and Reinvestment Act (ARRA, 2009) grants to projects such as Petra Nova have had some impact but stronger incentives beyond 45Q policy changes under the Future Act will be needed to improve project risk/return profiles and attract private capital at scale for first-of-a-kind projects.
  - Several clarifications are needed to 45Q legislation, notably around A) determining what constitutes project start prior to the deadline, B) establishing a CO_2 use/storage certification process to qualify entities for 45Q credits, and C) clarifying the recapture credit provision after CO_2 disposal or use.
- **Developing large-scale secure geologic CO_2 storage hubs requires significant government and industry support:**
  - Developing geologic storage hubs is a possibility in the US given the capacity of potential storage sites. The DOE National Energy Technology Laboratory (NETL) Carbon Storage Atlas (Atlas V) provides low estimates of storage resources of *~2600 Billion tonnes* of CO_2 and the technology is well understood (e.g. Sleipner Project in Norway) but has seen limited commercial success in the US.
  - Economically-viable long-term secure geologic CO_2 storage requires policy innovation to ensure technically-viable storage projects with shorter development times, and improved project certainty & predictability. These include resolving issues around site characterization, monitoring, pore-space ownership, long-term liabilities, and site permitting.
- **Increasing capture from power and industrial point sources, along with carbon dioxide removal applications, requires incentives for R&D innovation and capital formation to reduce costs:**
  - Commitment to R&D and expansion of academic & industry research for carbon capture across multiple technology pathways (e.g. pre-/post-/oxy-combustion, direct air capture) is required to reduce unit costs, create competition, and help accelerate innovation. The costs of these capture technologies for large scale applications tend to be *>$70-120/tCO2*

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but if adequately funded, aggressive competition among these capture technology pathways could accelerate innovation and cost reduction.[6]

- An increase in demonstration grants would support proving the technology at a range of scales (e.g. 0.1 MW, 1 MW, 10 MW, 100+ MW), putting an emphasis on small, modular units (design one, build many approach), and at-scale power plants (e.g. *>200* MW for gas and *>500* MW for coal).
- Strong CO_2 capture incentives for producers, such as investment tax credits of *30%* of project costs (or more) and Master Limited Partnership (MLP) qualification, could support capital formation.
- Following adequate transitional incentives (e.g. 45Q), establish and support an economy-wide carbon price approach that could potentially further enable technology cost reduction and broad-based deployment.

- **Developing pipeline infrastructure requires federal, state, and industry support:**
  - Current CCUS project connections have tended to be point-to-point and limited to short distances (*<150* miles). Creating state level support for expanding these short-distance intra-state networks could be a significant near-term win.
  - Several inter-state pipeline concepts connecting major point-source emission regions to major economic CO_2 sink regions (e.g. connecting Midwest ethanol biorefineries and coal generators to the West Texas Permian basin EOR opportunities) have been proposed but would likely not achieve commercial rates of return without government financing and incentives[7]. Roughly 5 of these corridors transporting ~150 Million tonnes per annum of CO_2 could be achieved with the construction of ~2800 miles of new 30-inch trunk lines[8].
  - Both industry and government support would be needed to build common-carrier pipeline networks, reduce the cost of capital through investment tax credits, enable capital formation via MLPs or other mechanisms, and streamline permitting processes for these trunk lines.

- **Scaling CO_2 applications beyond CO_2-EOR into other end-use opportunities requires additional R&D funding to drive innovation, along with customer and regulatory support for low carbon solutions:**
  - R&D commitment for CO_2 end-uses is needed to scale CCUS beyond CO_2-EOR, particularly to expand usage in chemicals, fuels, durable materials (plastics, cements, carbon fiber, etc.) which can all be made from CO_2 plus energy[9]. Regulators and end-use customers have not put a premium on CO_2-derived products and have limited willingness to pay for the CO_2 abatement benefit. Developing large-scale or high-value end-use technologies could expand abatement dramatically, supporting the ongoing use of existing infrastructure, and positioning the US as a leader in end-use innovation.

6 DOE and KSA, Report of the Mission Innovation CCUS Experts' Workshop, 2017

7 Edwards, R. W. J. and M. A. Celia, Infrastructure to enable deployment of carbon capture, utilization, and storage in the United States, PNAS, 2018

8 Great Plains Institute, 21st Century Energy Infrastructure: Policy Recommendations for Development of American CO_2 Pipeline Networks, 2017

9 NETL, Global CCS Institute CO_2 reuse technologies

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- End-use applications of CO_2 must be promoted via government & industry-led procurement, emphasizing the use of de-carbonized end-products to enable scalable market demand for CO_2 outside of CO_2-EOR. For example, state level regulations requiring or crediting some proportion of low carbon products could accelerate CCUS deployment, much like renewable portfolio standards have supported renewable technology deployment nationally.

- **Building support for comprehensive commitment to CCUS requires broad stakeholder engagement across academia, NGOs, industry, federal & state government, and financial sectors.** This could be achieved by:
  - Simplifying the narrative around CCUS as an important low-carbon technology along with renewables and other low-carbon energy sources needed for the energy transition. CCUS remains an orphan with some environmental organizations that prefer substitution strategies like renewables over abatement strategies. Similarly, some in the industry have concerns that a major CCUS program would invite further regulation. Both groups need CCUS to be successful long term and there is high value in bridging the divide.
  - Educating financial institutions on the importance of CCUS to enable capital formation over the longer-term. These institutions need to better understand and underwrite CCUS projects going forward. CCUS projects require systems-thinking across emitters, transporters, and users, each often having different risk profiles, return expectations, and contracting strategies & structures.
  - Educating consumers on the merits of CCUS to enable consumer pull for low carbon products, including energy / electricity which need not be limited to renewables. There remains a lot of work ahead to simplify the narrative and rebrand CCUS technologies.
  - Helping state regulators integrate CCUS into state-level carbon abatement programs. Defining appropriate portfolio standards for CCUS fuels, for example, could expand CCUS penetration, support long term infrastructure utilization and investment, and support long term state and local royalty and severance revenue streams.

- **In conclusion, CCUS innovations would benefit from a number of supporting enablers to make installing capture equipment a preferred pathway. Simple price setting mechanisms in many arenas have shown a strong ability to drive efficient capital formation into markets like CCUS.**

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INITIAL FINDING 4: SCALING CCUS REQUIRES A PHASED APPROACH, DEVELOPING QUICK WINS WITH CAPTURE FROM HIGH-PURITY-CO_2 SOURCES WHILE ADVANCING TECHNOLOGIES TO SUPPORT LONGER-TERM AT-SCALE DEPLOYMENT

Developing a roadmap to scale CCUS will be a critical step towards increasing competition across all carbon reduction pathways and accelerating the speed of innovation within potential CCUS pathways such as:

- **High-purity CO_2 point-source CCUS pathway:** CCUS applied to point-source emissions from high-purity CO_2 point sources (e.g. ethanol, natural gas processing) to high-value end uses like CO_2 EOR offers the quickest, most economic opportunity to scale CCUS.
- **Lower-purity CO_2 point source CCUS pathway**: Innovative CCUS approaches applied to lower-purity CO_2 point sources (e.g. natural gas combined cycle & coal power plants and process-intensive heavy industries like cement) to scale CCUS penetration across a wider range of point sources.
- **Negative emissions CCUS pathway:** Direct Air Capture technologies and bio-energy with CCS which uses sustainably produced feedstocks and afforestation to generate 'negative' emissions.
- **Hydrogen economy with CCUS pathway:** Shifting industries like transportation, heating fuels, and industrial processes to hydrogen as a clean energy source when combusted, leveraging CCUS during the hydrogen production process which is still >95% fossil fuel based.

These pathways will compete with one another and also with other low-carbon pathways (e.g. renewable technologies such as wind, storage, batteries, next-generation advance nuclear technologies, green hydrogen, etc.). Fostering competition among these pathways will accelerate the energy transition needed to overcome the world's dual challenge of meeting energy demand & supporting economic growth while reducing carbon emissions. If implemented, we expect that CCUS could play a significant role in decarbonization, likely abating *X-Y Million tonnes per annum (P-Q %* of US total CO_2 emissions) by 2030, more than our business-as-usual projections of *W-Z Million tonnes per annum (S-T %* of US total).

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EMERGING HYPOTHESIS 5: CCUS COULD DELIVER MAJOR BENEFITS FOR BOTH INDUSTRY AND THE ENVIRONMENT

CCUS could have several major benefits, including:

- Abating *X-Y%* of US carbon emissions by 2030 and helping address the global dual-challenge
- Supporting an increase in US domestic crude production of *~X Million bbl/d*
- Contributing materially to federal and state revenues
- Enabling the US to take a clear leadership position in CCUS technology innovation that builds on the US's exceptional natural endowment and creates CCUS business models
- Maintaining *X-Y* jobs and creating *W-Z* jobs
- Securing the export of fossil fuels with CCUS to countries with tight carbon policies and regulations
- Continuing to use existing infrastructure over the long term

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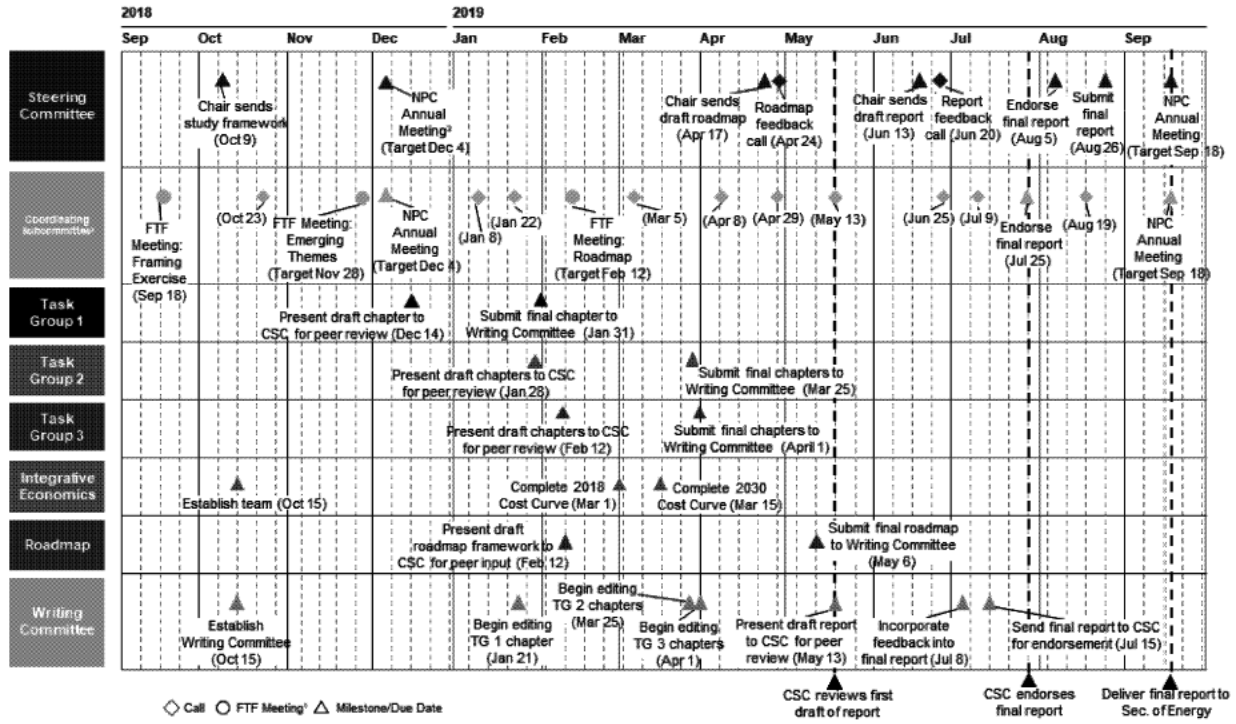
Integrated project timeline, owners, and open questions

The final NPC CCUS study report should be submitted by late August 2019 and delivered to Secretary Perry in mid-September 2019. Working backwards, the first draft of the full report that integrates the work of each task group, will be shared with the CSC on May 13, 2019. A more detailed timeline has been created with key project milestones for the CSC and each task group to ensure successful report delivery *(Exhibit 2).*

EXHIBIT 2: KEY PROJECT MILESTONES



1 Face-to-face meeting

2 All CSC calls, milestones and events include task group and subgroup leadership

3 NPC is targeting Dec. 4 for the 2018 Annual Meeting; alternate date is Dec. 13

The NPC study is divided into three main task groups, and supported by an integrative economics team, a roadmap team, and a writing committee. The three task groups are further divided into subgroups, focusing on specific topics, which are expected to form key chapters in the final study report *(Exhibit 3).*

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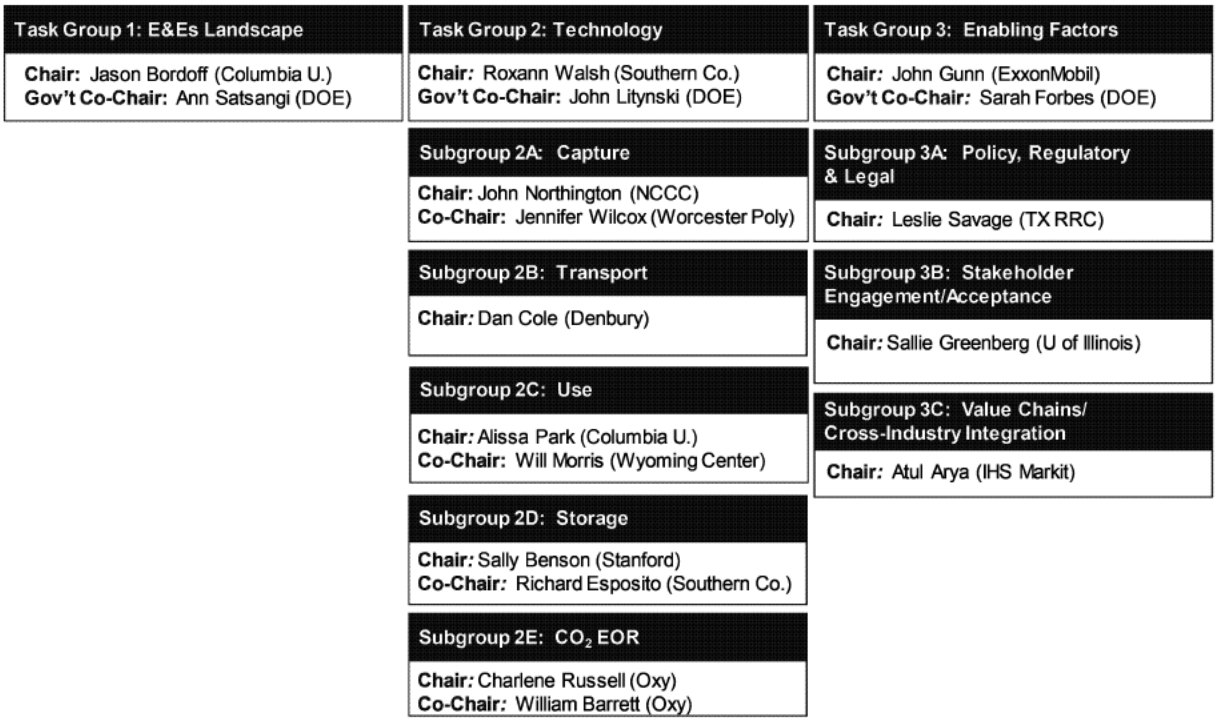
EXHIBIT 3: TASK GROUP AND SUB GROUP STRUCTURE



The initial findings have identified key open questions to inform the work the task groups will do over the coming months:

- **CO_2 emission abatement potential:** What could be the unconstrained abatement potential of CO2 for CCUS in the US by 2030 given today's (2018) economics, emissions & regulatory policy landscape? How does abatement potential improve post application of key enablers? How should the success of CCUS at scale be defined? ***(Integrative Economics team)***
  - **CO_2 capture costs:** How can unit cost of CO_2 capture be brought down (and by how much) for combustion in power & the industrial sectors? How can we pull forward new technologies that substantially reduce costs? ***(Subgroup 2A: Capture)***
  - **CO_2 end-uses:** What near term end-use sectors (e.g. cement, plastics) show promise? In long term how can use of CO_2 be increased in potential end-use applications (fuels, materials)? ***(Subgroup 2C: Use)***
  - **Capital for CCUS R&D / demonstration projects:** What is an optimum R&D investment pipeline to drive learnings and cost reductions? How should collaboration, including funding, be increased within industry and between government and industry to progress 'First-of-a-Kind' demonstration projects? ***(Subgroup 3A: Policy, Regulatory, & Legal)*** and progress development of technologies such as direct air capture and mineralization ***(Subgroup 2A: Capture*** and ***Subgroup 2D: Storage)***
  - **CCUS policy, legislation & regulations:** How can these help scale CCUS while preserving environmental integrity?
    - **Source industries:** How can a market-based approach develop 'de-carbonized' end products? ***(Subgroup 2C: Use)***

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- **CO_2-EOR:** What additional incentives can unlock the vast CO_2-EOR potential in the US? ***(Subgroup 2E: CO_2 EOR)***
- **Storage:** What US government enablers would be required to meaningfully grow the number and scale of CCS projects? ***(Subgroup 2D: Storage)***
- **Higher complexity end-use:** How could regulation and policy levers shape higher complexity end-use? ***(Subgroup 2C: Use)***
- **Carbon price:** Following transitional CCUS incentives, how do we establish an economy-wide approach? ***(Subgroup 3A: Policy, Regulatory, & Legal)***

– **CCUS transportation infrastructure:** What infrastructure is needed to connect CO_2 supply and demand and what is needed from industry, government and other stakeholders to ensure the appropriate oversized common-carrier infrastructure gets built ***(Subgroup 2B: Transport)***

– **CCUS project capital formation:** What is needed to enable private-sector capital formation for CCUS projects? ***(Subgroup 3C: Value Chains / Cross-industry integration)***

– **Public perception of CCUS:** How is CCUS currently perceived by different stakeholder groups and what steps could be taken to improve how it is viewed? ***(Subgroup 3B: Stakeholder engagement / acceptance)***

- **Low carbon products:** What impact will the incorporation of CCUS have on the cost of the product it is being applied to (power/fuels/materials)? How can consumer demand for these products be encouraged while also avoiding unintended consequences? ***(Integrative Economics team)***
- **Other benefits:** What would be the impact of scaling US CCUS in job creation, GDP growth, technology capability and energy security (e.g., exports, additional production via CO_2-EOR) across a range of CCUS adoption scenarios? ***(Integrative Economics team)***

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NPC CCUS Study
Framing Exercise

Steering Committee Summary | Oct. 9, 2018

BPA_HCOR_00138303

WORK IN PROGRESS

FOR TASK GROUPS TO REFINE

Executive summary

X = Directional placeholder numbers

Situation: CCUS is required to meet dual challenge of reducing emissions while satisfying energy demand; deployment of CCUS at scale may also provide benefits to US economy	• **The world faces a dual challenge**: increasing energy production to meet growing energy demand (expected to reach ~660 quad. btu by 2030) while simultaneously reducing carbon emissions (reaching ~36 Gtpa by 2030) to protect the environment • **Large-scale commercialization of Carbon Capture, Use & Storage (CCUS) is critical to address this dual challenge**; in the US alone, CCUS has the potential to reduce X-Y% of total CO_2 emissions by 2030 and achieve zero net carbon emissions in the longer term • **CCUS has a strong foundation in the US**: 16 projects abate ~28 Mtpa and CO_2-EOR has been successfully used for decades • **If deployed at scale, CCUS solutions could help ensure the US:** - Reduces its carbon emissions well beyond what substitution by other low carbon alternatives alone can achieve - Uses its existing fossil fuel resources, protecting state and federal revenue sources and supporting the license to operate - Positions the US for CCUS technology leadership and associated business opportunities - Potentially accelerates economic growth, job creation, exports, and enables the continued use of existing infrastructure over the long-term
Key challenges: Multiple factors have limited CCUS deployment; CCUS projects at-scale are currently uneconomic	• **CCUS has a solid foundation but its deployment remains limited with <1% of US emissions abated by it; 5 key reasons are:** - **Few economically-viable business cases for anthropogenic CO_2 use in CO_2-EOR:** US could scale EOR production by ~10x - **CO_2 storage in saline aquifers remains largely undeveloped:** Only 1 large project in the US exists with significant potential untapped - **High cost-of-capture for power and industrial point sources:** Remains a science & technology challenge with costs >$70-120/t$CO_2$ - **Limited CO_2 transportation infrastructure:** Existing CCUS pipeline infrastructure has been largely point-to-point & project-dedicated - **Few proven, low-cost, end-use applications:** Some good niche products exists, but no major end-use markets exist beyond CO_2-EOR - **Insufficient sponsorship and advocacy:** CCUS has lacked influential industry sponsors and environmental group tolerance/support
Enabling future CCUS at scale: Policy, legislation, regulatory and legal levers are needed to help spur innovation and unlock technology, capital and market challenges currently facing CCUS	• **Deploying CCUS at scale into the market will require broad-based commitments across multiple pathways:** - **Significant expansion of CO_2-EOR** requires additional incentives; recent 45Q policy changes & DOE/ARRA grants have made some impact but stronger near-term incentives will be needed to improve project risk / return profiles - **Developing large-scale secure geologic CO_2 storage** might benefit from clarification and/or modification to site permitting, monitoring, reporting & verification requirements, along with resolving long-term liability and pore-space ownership issues - **Increasing capture from power and industrial point sources** requires incentives for innovation & capital formation to reduce costs, e.g., • Major commitment to R&D for carbon capture across multiple innovation pathways (e.g. pre- / post- / oxy-combustion, direct air capture) • Strong CO_2 capture incentives for producers e.g. First-of-a-kind demonstration funding, investment tax credits, MLP qualification, etc. • Following transitional CCUS incentives, establish and support an economy-wide carbon price mechanism - **Developing transportation infrastructure** requires significant federal, state & industry support to build common-carrier pipeline networks, enable capital formation & reduce the cost of capital for these projects, and streamline the permitting processes - **Scaling end-use applications beyond CO_2-EOR** requires additional R&D funding to drive innovation into a large range of end-use opportunities like chemicals, cement, fuels, etc.; incentivizing through government and industry-led procurement can also help - **Building support for this kind of comprehensive commitment to CCUS** will require broad stakeholder engagement • **In absence of a price on CO_2, fostering support and market demand for low carbon products produced with CCUS along with various carbon reduction pathways** such as renewables, hydrogen, etc. will be critical in achieving the dual challenge

DRAFT WORK IN PROGRESS

Successfully addressing barriers will enable CCUS to play a major role in enabling industry to meet the growing energy demand while reducing carbon emissions and potentially accelerating economic growth

6 Key questions to answer going forward to develop enablers in scaling CCUS

WORK IN PROGRESS
FOR TASK and SUB GROUPS
Will require developing integrated CCUS cost curve – details follow

		Responsible[1]	Consulted
Impact of CCUS	• **CO_2 emission abatement potential:** What could be the unconstrained abatement potential of CO_2 for CCUS in the US by 2030 given today's (2018) economics, emissions & regulatory policy landscape? How does abatement potential improve post application of key enablers?	▪ IE	▪ TG1-3
	• **Low carbon products:** What impact will the incorporation of CCUS have on the cost of the product it is being applied to (power/fuels/materials)? How can consumer demand for these products be encouraged while also avoiding unintended consequences?	▪ IE	▪ TG2+3
	• **Other benefits:** What would be the impact of scaling US CCUS in job creation, GDP growth, technology capability and energy security (e.g., exports, additional production via EOR)?	▪ IE	▪ TG1-3
Technical	• **CO_2 capture costs:** How can cost of CO_2 capture be reduced for combustion in power & industrial sectors? How can we support new transformative technologies that substantially reduce costs and broaden application?	▪ SG2A	▪ SG3A
	• **CO_2 end-uses:** What near term end-use sectors (e.g. durable materials) show promise? In long term how can use of CO_2 be increased in potential end-use applications (fuels, materials, mineralization)?	▪ SG2C	▪ SG3A +SG3C
	• **Capital for CCUS R&D / demonstration projects:** What is an optimum R&D investment pipeline to drive learnings and cost reductions ? How should collaboration, including funding, be increased within industry, and between government & industry, to progress 'First of a Kind' demos and further deployment?	▪ TG2	▪ SG3A +SG3C
Non-technical	• **CCUS policy & regulations: How can these scale CCUS while preserving environmental integrity?**		
	- **Source industries:** How can market-based approach develop "de-carbonized" end products?	▪ SG3C	▪ SG2C
	- **EOR:** What additional incentives can unleash US vast CO_2 EOR potential? What is a practical and acceptable basis of ensuring secure geological storage for EOR?	▪ SG3A	▪ SG2E +SG3B
	- **Storage:** How can federal & state governments enable development of storage capacity in US?	▪ SG3A	▪ SG2D
	- **Higher complexity end-use:** How could regulations shape higher complexity end-use?	▪ SG3A	▪ SG2C
	- **Carbon price:** Following transitional CCUS incentives, how do we establish an economy-wide approach?	▪ SG3A	▪ SG3C
	• **CCUS transportation infrastructure:** How can government solve cross-state supply-demand mismatches by building "oversized" common-carrier infrastructure / supporting flexible transport?	▪ SG3A +SG3C	▪ SG2B
	• **CCUS project capital formation:** How can private-sector capital formation be enabled for CCUS projects that are perceived to be riskier and uncertain?	▪ SG3C	▪ IE
	• **Public perception of CCUS:** How is CCUS currently perceived by different stakeholder groups and what steps could be taken to improve how it is viewed?	▪ SG3B	▪ N/A

DRAFT WORK IN PROGRESS

1 IE = Integrative Economics; TG1 = Task Group 1 (Energy & Emissions landscape); TG3 = Task Group 3 (Enablers); SG2A = Subgroup 2A (Capture); SG2B = Subgroup 2B (Transport); SG2C = Subgroup 2C (Use); SG2D = Subgroup 2D (Storage); SG2E = Subgroup 2E (CO_2-EOR); SG3A = Subgroup 3A (Policy, Regulatory & Legal); SG3B = Subgroup 3B (Stakeholder Engagement); SG3C = Sub Group 3C (Value chains/cross-industry integration)

B Illustrative 2018 abatement cost curve based on today's economics

PLACEHOLDER NUMBERS TO BE REFINED BY INTEGRATIVE ECONOMICS TEAM WITH TASK AND SUB GROUP INPUTS

WORK IN PROGRESS

Assumptions

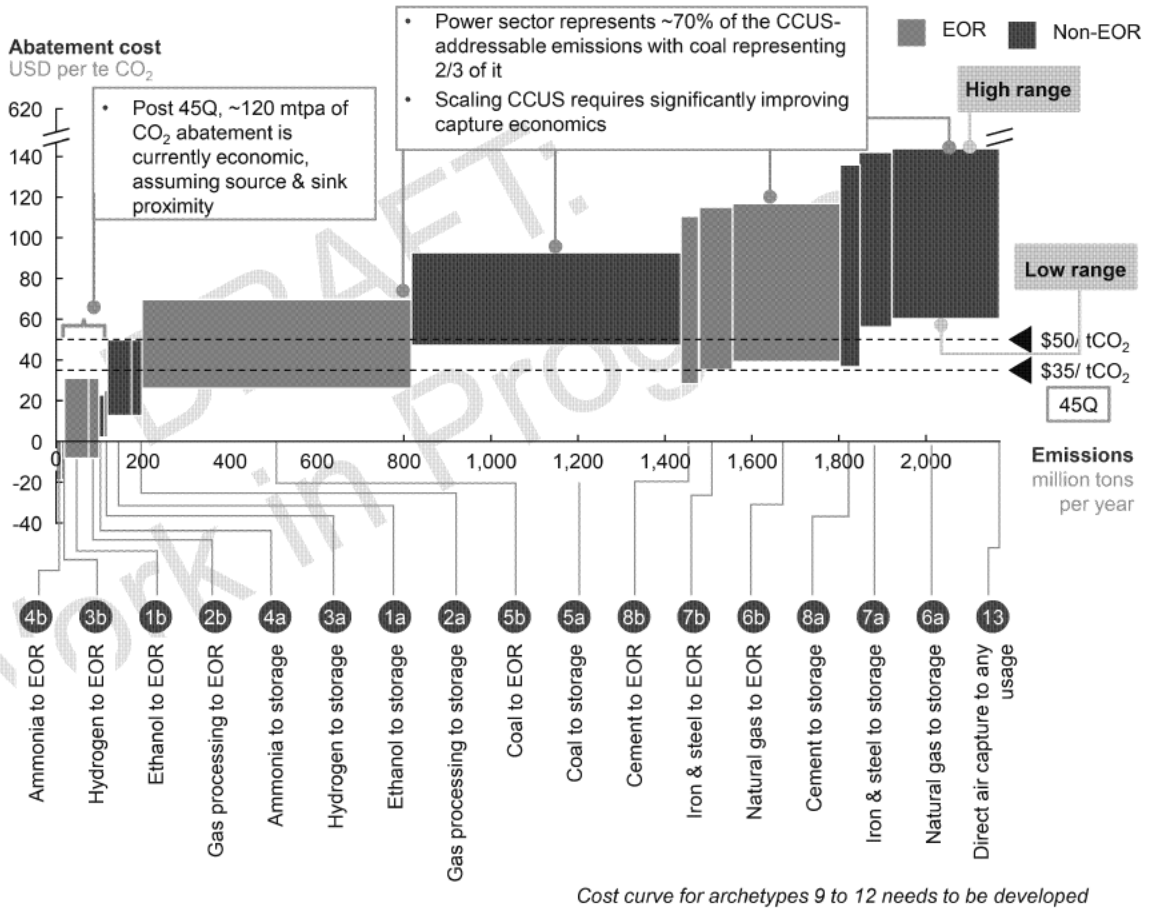
- **Emissions (x-axis)**
  - Volume of CO2 for each source based on EIA and EPA data
  - Volume divided equally between EOR and storage archetypes (e.g., 90 mtpa of CO_2 emissions produced by cement industry divided equally, 45 mtpa, between cement-to-EOR and Cement-to-storage archetype)
- **Abatement cost (y-axis)**

Capture assumptions
  - Assumed amine (only technology commercially deployed at scale), membrane, and Allam cycle capture technologies for power sector; capture costs: **45-120 $/ton**
  - Cost of oxy-combustion for cement plants (technology not yet deployed at commercial-scale): **40-90 $/ton**
  - Cost for iron & steel plans (technology not yet deployed at commercial-scale): **55-110 $/ton**
  - Capture cost for high purity sources (NGP[1], Ethanol): **10-30 $/ton**
  - DAC[2] capture cost: **150-600 $/ton**

Transport assumptions
  - Assumed onshore pipeline length of ~150 miles with 3-30 mtpa pressure range and associated transportation costs of **1-11 $/ton**

End use/ storage assumptions
  - Storage costs: **1-12 $/ton**
  - EOR ability to pay based on typical CO_2 prices: **9-24 $/te**

Cost Curve



Cost curve for archetypes 9 to 12 needs to be developed

DRAFT. Work in Progress

1 Natural gas processing; 2 Direct air capture;
SOURCE: EIA, EPA Global CCS institute, Industry and academic journals, NETL and interviews have been used for the above modeling example

Synthesis of initial findings from seven-week framing effort

DISCLAIMER: The following represents a synthesis of the initial findings from the seven-week framing exercise. This work has been informed by interviews from a broad range of industries, academia, government, non-government organizations (NGOs) as well as multiple industry & government data sources. Information in red italics represents preliminary and/or unknown data needing further analysis from the NPC study team.

INITIAL FINDING 1: CCUS IS REQUIRED TO MEET THE DUAL CHALLENGE OF REDUCING EMISSIONS WHILE SATISFYING ENERGY DEMAND

The world faces a dual challenge: increasing energy production (expected to reach ~660 quad. btu by 2030) to meet global economic growth, while simultaneously reducing carbon emissions (reaching ~36 Billion tonnes per annum by 2030 out of which ~5.4[1] Billion tonnes per annum of is US emissions) to protect the environment.

Large-scale commercialization of Carbon Capture, Use & Storage (CCUS) is critical to address this dual challenge:

- Globally, a range of decarbonization & energy transition scenarios and models suggest that CCUS will need to play a role in abating *10-30%* of emissions by 2050[2].
- In the US, CCUS has the potential to reduce *X-Y %* of CO_2 emissions by 2030.
- In the longer term, CCUS is required for achieving zero net carbon emissions through application of carbon dioxide removal (CDR) techniques such as Bio-Energy with CCS (BECCS) and Direct Air Capture (DAC) or other emerging technologies.

Integrating CCUS into US energy and environmental plans would deliver benefits such as:

- Reduced US carbon emissions well beyond what substitution by other low carbon alternatives alone can achieve.
- Increased usage of existing US fossil fuel resources, protecting state and federal revenue sources and supporting the license to operate.
- Position the US for CCUS technology leadership and associated business opportunities.
- Potentially accelerated economic growth, job creation and exports, and enabling continued usage of existing infrastructure over the long-term.

1 US EIA, Annual Energy Outlook 2018 report specifies 5.2 Billion tonnes per annum of Energy-related carbon dioxide emissions for the US in 2030; projections of process emissions from large industrial point sources in 2030 are about ~0.2 Billion tonnes per annum (derived from emissions specified by EPA)

2 Loftus P. J., et al. WIREs 2015, 6:93–112. doi: 10.1002/wcc.324

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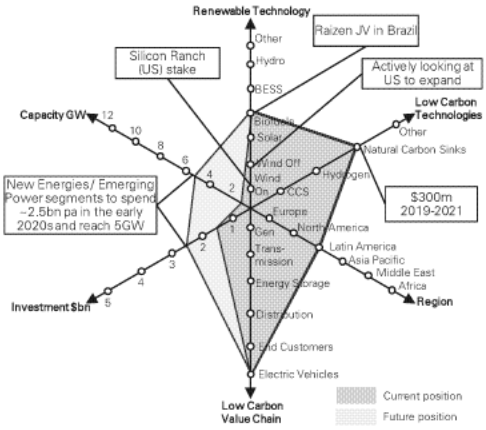
Low Carbon Activity Monitor

COMPETITIVE INTELLIGENCE:

Alternative Energy
Low Carbon

2Q19 Highlights



Low Carbon Position

Shell has a presence in onshore and offshore wind, solar (via stake in Silicon Ranch), biofuels (via Raizen), CCUS, and hydrogen.

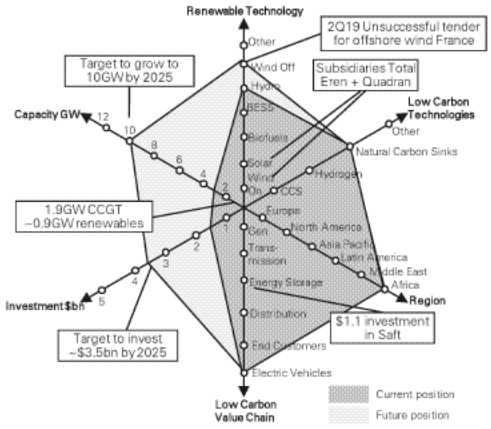
It has ambitions to be one of the world's largest electricity companies.

Through corporate ventures and acquisitions Shell has made investments across the low carbon value chain, in particular in battery storage (sonnen), EV Charging (Greenlots), Demand response & Virtual Power Plant (Linejump) and End Customers (FirstUtility now Shell Energy UK).

Shell intend to match the net carbon footprint of the global energy system by 2050 and have set targets to reduce all CO_2 emissions 20% by 2035, 50% by 2050 (of which 2-3% by 2021).

2Q19 Highlights

- Announced plan in an interview 'to have commercial wind farms' by early 2020s
- It announced a joint development agreement with CoensHexicon to develop, build, and operate a floating wind farm 40km from the South Korean coastline with commissioning 2024
- Work completed on its first solar PV plant (27MW) at its Moerdik chemical facility
- Announced expectations of 12% returns from an integrated offering in its emerging power business at its capital markets day in June
- Provided the first carbon neutral LNG cargoes to Tokyo Gas
- JV with Convergent to install 21MWh of energy storage projects at 2 Shell facilities
- Shell Carbon capture project in Alberta hits milestone of 4 Mte of CO_2 capture
- Announced plans to invest $300m over the next three years in natural ecosystems as part of broad drive to tackle CO_2 emissions



Low Carbon Position

Total has a material low carbon business, present across the entire low carbon value chain. It has a large position in solar and wind generation through its subsidiaries Total Eren and Quadran (ex Direct Energie).

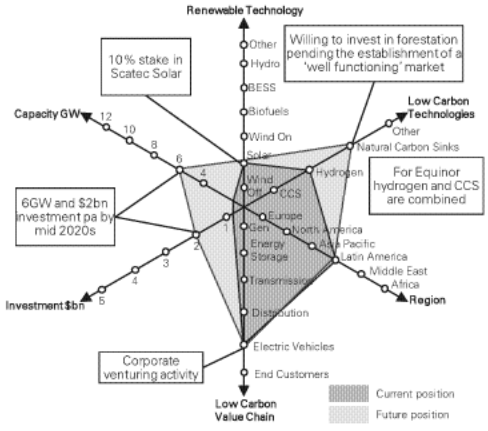
It also made significant investments in solar manufacturer SunPower ($1.4bn 2011) and battery energy storage SAFT ($1.1bn 2016).

The company has a target of 10GW low carbon electricity by 2025 along with investing ~3.5bn per annuum by 2025.

Total plan to reduce GHG emissions by 15% between 2015 and 2030.

2Q19 Highlights

- Victoria's biggest solar farm (256MW), developed by Total Eren, secures finance, and may add huge battery
- Starts up its second solar power plant in Japan – 25MW
- Total Eren acquired 90% stake in Vila Energia's Terra Santa wind complex in Brazil
- Whilst unsuccessfully tendering for offshore wind farm project Dunkirk (France), it shows intent for Total to move into the offshore wind sector
- Merged its Direct Energie and Total Spring retail subsidiaries to become France's biggest alternative electricity supplier
- Saft struck a deal to expand its presence in China
- A consortium of 11 European stakeholders, including Total, launched '3D' project for CCS on an industrial scale



Low Carbon Position

Equinor aim to be the world's most carbon efficient O&G producer and are investing actively in renewables, primarily offshore wind.

It has been a leading O&G company in offshore wind for the last decade, in particular in the UK, but is now scaling up operations in fixed and floating wind technology.

Carbon reductions of 3mtpa CO_2 by 2030. Reduce to below 8kg CO_2 per boe by 2030. Aim for 0.03% methane intensity. End routine flaring by 2030.

Currently has 1.7mtpa CCS capacity.

Pilot projects in hydrogen, primarily on providing CCS capability.

2Q19 Highlights

- Given green light to start construction on a 200MW floating wind farm near the Canary Islands. Commissioning expected in 2024 if Equinor proceed with project
- Equinor and E.ON opened Arkona offshore wind farm (385MW) in the Baltic Sea
- Drax, Equinor and National Grid Ventures have signed an MOU to scope potential for large scale hydrogen production and CCUS in the Humber (UK)
- Sleipner partnership released CO_2 storage data
- Released its Energy Perspectives 2019 report stating that delaying climate action increases the 2 degrees challenge
- Announced new steps of demonstrate its industry leadership on climate change with statement with Climate Action 100+

bp
Group Competitive Intelligence
8 August 2019

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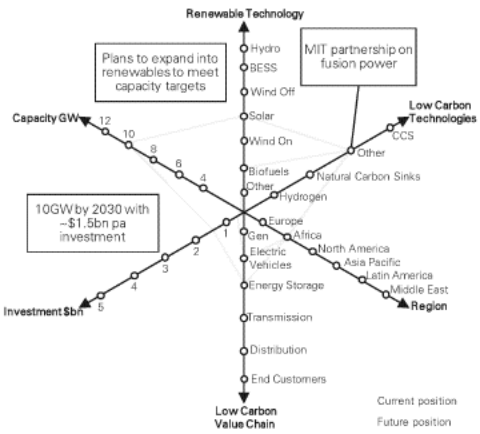


Low Carbon Position

Eni has decarbonisation 'embedded' in its strategy. It wants to achieve net zero emissions in its upstream business by 2030, 43% reduction by 2025.

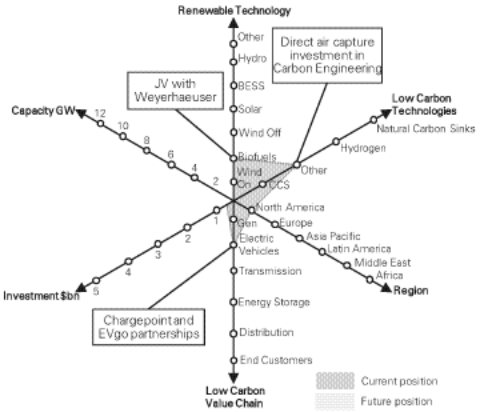
Eni plans to grow its renewables capacity to 5GW by 2025 and 10GW by 2030.

The company is also making investments in natural carbon sinks and circular economy businesses.

It plans to conserve forestation in Africa establishing partnerships to slash more than 20 mtpa of CO_2e by 2030.

2Q19 Highlights

- Eni and Sonangol created a JV targeting 800MW of renewable capacity in Angola by 2025
- Toyota and Eni partnered to expand hydrogen transport
- Eni and Maire Tecnimont to introduce non-recyclable waste into hydrogen and methanol technology
- Eni and Synhelion teamed up to produce low emission fuel using renewable energy
- ENI published its 2018 sustainability report including ENI's "Path to decarbonisation" highlighting the challenges facing the globe. Called out its progress to reach 43% reduction of GHG emissions in 2025 compared to 2014



Low Carbon Position

Chevron has a small onshore wind portfolio, one wind farm in the US.

Outside of CCS, the only other activity is in direct air capture through a partnership with Occidental in Carbon Engineering.

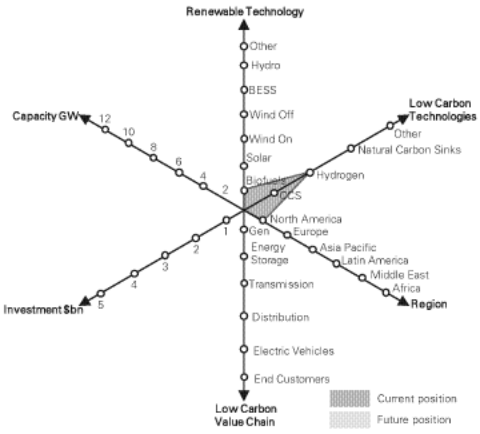
Chevron has no corporate reduction target in carbon emissions but has methane reduction target of 20-25% from 2016-2023 and a flaring reduction target of 25-30% for the same timeframe.

Chevron have stated it plans to reduce overall emissions intensity while improving operations in line with the Paris Agreement.

Capacity position and target undisclosed.

2Q19 Highlights

- ChargePoint and Chevron have partnered on a new corridor of Fast Charging stations in California
- EVgo and Chevron have partnered to bring EV fast charging capability to a select set of Chevron's company-owned and -operated fuelling stations in California



Low Carbon Position

Exxon's focus in low carbon technologies is CCS. However, it does have research and development programs in hydrogen and biofuels.

Exxon has not committed to targets for corporate GHG emissions. It has stated targets for reducing GHG by 10% in its Oil Sands operations, methane reduction of 15% by 2020 and reducing flaring by 25% by 2020.

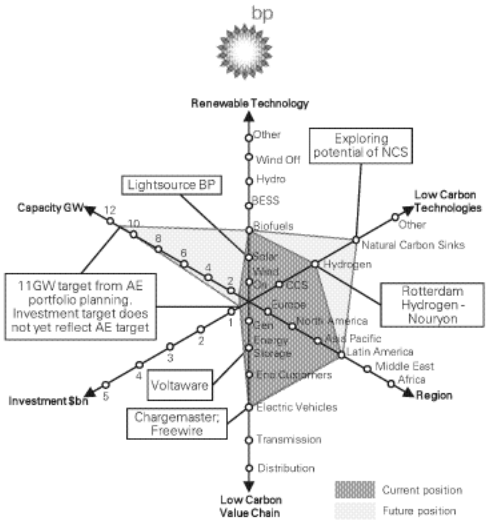
Exxon has also stated it will look to reduce the carbon intensity of its hydrocarbon-based products through lowering the carbon intensity of operations and biofuels.

Whilst no renewable portfolio, Exxon has a long a long term PPA signed for renewable power in the Permian provide by Ørsted.

Capacity and investment position and target undisclosed.

2Q19 Highlights

- FuelCell Energy announced a license agreement with Exxon granting them the right to use its patents, data, and know how to research, develop and commercially exploit fuel cells concentrate CO2
- Announced to Invest Up to $100 Million on Lower-Emissions R&D with U.S. National Lab over ten-year agreement



Low Carbon Position

BP has a target of zero net growth in operational emissions and 3.5mte of sustainable emissions reductions by 2025.

Its strategy is to use its 'reduce, improve, create' framework to focus the company on reducing emissions in its operations, improve its products and create low carbon businesses.

BP has nine onshore wind sites in the US holds an interest in one other US site. The net generating capacity of the wind portfolio is ~1GW.

The company has a 43% share in development, acquisition and long-term management solar company Lightsource BP since 2017.

BP has an extensive biofuels portfolio in Brazil with a sugarcane processing capacity of 10mtpa.

2Q19 Highlights

- BP invested $30m in venture Calysta Inc, an alternative energy protein provider, that will use BP's natural gas to produce protein for fish, livestock and pet feeds
- StoreDot and strategic partner BP presented world-first full charge of an electric vehicle in five minutes
- Lightsource BP made several moves in the UK and North America whilst expanding its presence into Brazil
- BP teamed up with Nouryon looking to create Europe's largest green hydrogen production facility (250MW electrolysis) at a refinery in Rotterdam
- BP joined the Hydrogen Council, an industry initiative that has a long-term ambition for hydrogen to foster the energy transition

Message

From: Stout, Robert [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Sent: 17/02/2017 17:54:01
To: Jefferiss, Paul H. [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Subject: FW: Updated RWD note for BRT

Importance: High

Do you agree with me on this? Have you given this some thought (not doubt you have . . .)

Bob

From: Stout, Robert
Sent: Friday, February 17, 2017 12:52 PM
To: Morrell, Geoff; Bickerton, David
Cc: van Hoogstraten, David Jan; Currie, Duncan
Subject: RE: Updated RWD note for BRT
Importance: High

This looks very good. David and I just spoke with Duncan and he will suggest 1 small edit to the second par. statement about natural gas so it is not characterized as a "bridge" only. For sure the bridge is very long in any event, but it is conceivable that gas could even serve as a destination fuel to back up intermittent renewables (possibly with CCS) in the much longer term. We would not want to spell all this out, but also not implicitly concede the point by referring to it mainly as a "bridge."

Bob Stout
Robert L. Stout, Jr.
Vice President & Head of Regulatory Affairs
BP America Communications & External Affairs

1101 New York Avenue NW
Washington, DC 20005

Office:
Mobile: [redacted]

From: Morrell, Geoff
Sent: Friday, February 17, 2017 12:30 PM
To: Bickerton, David
Cc: Stout, Robert; van Hoogstraten, David Jan
Subject: RE: Updated RWD note for BRT

I am but quickly copying Bob Stout and DVH to make sure we aren't missing any red flags in the environmental space.

From: Bickerton, David
Sent: Friday, February 17, 2017 11:21 AM
To: Morrell, Geoff

Subject: FW: Updated RWD note for BRT
Importance: High

This works for me

You OK with it?

David

From: Currie, Duncan
Sent: 16 February 2017 22:46
To: Morrell, Geoff; Bickerton, David; Jaffer, Ilhaam
Subject: Updated RWD note for BRT
Importance: High

I took out all references to "this report," and got it down to 400 words. Let me know if you have any questions.
Duncan

SUSTAINABILITY REPORT LETTER

Sustainability is at the heart of BP's strategy. Ours is a long-term business, and the only way BP will prosper over the long term is if we operate safely and play a positive role in society. The ongoing global energy transition poses a significant challenge: The world has to meet increasing demand for energy while moving toward a lower-carbon future. Every part of our company has a tremendous amount to bring to this.

Our strategy will allow us to build a safe, strong, successful business while remaining a good citizen and helping address climate change. It reflects a changing global fuel mix in which oil remains important but is used more efficiently; the cleanest traditional fuel, natural gas, provides a bridge to a lower-carbon economy; and renewables grow faster than any other form of energy.

We have four key priorities. First, we want to run a highly competitive Upstream with an expanding gas portfolio. Second, we want to run a market-led Downstream that helps improve fuel efficiency. Third, we want to run a growing renewables business alongside a dynamic venturing arm. Fourth, we want to modernize the company in ways that are good for business and good for the environment.
The environmental dimension of our strategy builds on two decades of action on climate change. In 2016, we made strong progress in our Lower 48 natural gas business—providing a cleaner alternative to coal at scale—while working to reduce our methane emissions. In addition, the industry-backed Oil and Gas Climate Initiative, which I chair, announced a $1 billion investment in low-carbon technologies. BP also continued to have the largest operated

renewables business among our peers, and we continued to support the world-renowned Carbon Mitigation Initiative at Princeton University.

We have done all this while ensuring that safety remains our top priority. In fact, BP is taking new actions to manage risk, such as working more closely with our contractors and using advanced technologies—including sensors and remotely operated vehicles—to detect potential problems and keep our people away from harm.

Our people remain BP's greatest assets. Wherever we operate, they uphold our values of safety, respect, excellence, courage and teamwork. There is still much to do, but if we continue delivering meaningful benefits to our stakeholders while making our company economically and environmentally sound, BP can look forward to a bright future as a sustainable business in a sustainable world.

Proposal for the treatment of offsets in the achievement of BP's Ambition and Aims 1-3

Purpose of this note

This document focuses at a high level on how we propose to treat offsets to support the achievement of BP's Ambition and Aims 1-3.

A follow-up meeting will be scheduled next month to discuss how we should make trade-offs between the use of offsets and other direct abatement levers to deliver the Aims, along with the governance to support decision-making around this.

Description of treatment per Aim

Each Aim will have a specific approach for how offsets might be used and how they could contribute to the achievement of the relevant Aim. This includes views on;

1. the type of offset, is it a removal or a reduction offset, and which one is prioritized;
2. treatment of offsets against the emissions in each Aim, (e.g. how they contribute to the Aim) either as a net or a low carbon product;
3. the accounting approach that will be used to track performance against the Aim (where in the inventory calculations offsets are considered);
4. ownership of the credit, which relates to the contracting and retirement[1] of the offset, and;
5. the main economics regarding cost, revenues and other benefits of the offsets.

Aim 1: Net zero operations (absolute)

Type of offset	Removal offsets are prioritized Reduction offsets[2] as a supplement in the transition to removals until 2035[3]. Offsets used for the achievement of the aims will be done in line with principle 1 from the proposed BP Offset principles[4].

[1] Removing an offset from circulation by retiring it or cancelling it on a registry in order to avoid double counting

[2] Certain reductions will be considered after 2035, for example REDD.

[3] Depending on breakdown of 2050 and interim targets. Could be revised as regulation and market evolves.

[4] a) Using offset standards that are internationally recognized or endorsed and include independent third-party certification to the relevant audit standards. b) Using offset standards that require third party certification of the GHG reductions/removals, in line with stablished procedures as ISO.

BPA_HCOR_00149749

Treatment	Offsets as a balance for emissions that cannot be abated internally
GHG Accounting	Offsets netted off from operational gross emissions
Ownership	Credits retired by BP, where BP holds the necessary contractual rights to use the credit as an offset against its scope 1 and/or 2 emissions.
Economics	Cost of offsets Additional benefits to aim contribution: CSR, reputation, social license, other commercial benefits

Aim 2: Net zero production (absolute)

Type of offset	Removal offsets are prioritized Reduction offsets as a supplement in the transition to removals until 2035. Offsets used for the achievement of the aims will be done in line with principle 1 from the proposed BP Offset principles.
Treatment	a) Offsets as a balance for carbon (and the assumed associated end-use emissions) that cannot be abated by methodology defined levers b) Offsets sold by BP, standalone or bundled with BP products (e.g. natural gas or fuel), are considered a "negative carbon product", and can apply to Aim 3 and the corresponding Aim 2 emissions on a life cycle basis.
GHG Accounting	Offsets netted off from equity gross emissions
Ownership	a) Credits retired by BP, or by a third party, where BP holds the necessary contractual rights to use the credit as an offset against its scope 3 emissions as a producer of oil and gas b) As per Aim 3, offsets sold for intended end use are included. Trading to be excluded (as defined in CI methodology).
Economics	Cost of offsets Revenue from offset sales Additional benefits besides aim contribution: CSR, reputation, social license, market share and customer retention.

Aim 3: 50% reduction carbon intensity (CI) of products

Type of offset	Removal offsets are prioritized

	Reduction offsets as a supplement in the transition to removals until 2035. Offset type may also be defined by client. Offsets used for the achievement of the aims will be done in line with principle 1 from the proposed BP Offset principles.
Treatment	Offsets, standalone or bundled with products, are considered a "negative carbon product", and can apply to Aim 3 and the corresponding Aim 2 emissions on a life cycle basis.
GHG Accounting	Offsets as a BP marketed product with negative GHG emissions in CI calculation and 0 energy.
Ownership	As per Aim 3, offsets sold for intended end use are included. Trading to be excluded (as defined in CI methodology).
Economics	Cost of offsets Revenue from offset sales Additional benefits besides aim contribution: CSR, reputation, social license, market share and client retention.

Next steps on determining our approach to using offsets in the context of other levers

The approach to the use of offsets described above does not consider how we will make choices and trade-offs between the use of offsets and other direct abatement levers to achieve our Aims. The following topics are recommended as next steps in the process of reaching an overall position for BP on how we will use offsets to support our aims:

a) **Target setting, lever use and offset contribution to targets:** The achievement of the Aims will entail the deployment of different levers over time, which will require a deployment of financial resources. This creates the need for a decision framework on how and when to deploy the different levers, including offsets. This framework should consider the pathways of internal abatement needed to reach the Aims by 2050 over time and their costs. One possible approach could be the generation an internal abatement cost curve versus an internal carbon price. An addition to this approach could be the use of a mitigation hierarchy, which informs the costs-based views with qualitative perspectives on climate change mitigation. For example, the prioritization of internal abatement, followed by removal activities leaving offsets as a supplement to these activities only. Within offset use itself, choices could be based on offsets that are a pure cost versus offsets that can cover all their costs or generate a margin, as in the case of "bundled products".
b) **Governance:** Clarity will also be needed around which entities and businesses can decide when to use offsets and what kind in achieving their

Aim related targets. This creates the need for coordination and oversight on certain aspects of the use of offsets, as the type of offsets and the amounts needed, cost allocation, executing entity, etc. which may vary depending on the different Aims. The businesses are likely to be involved in the decision making of using offsets in line with their Aims plans and strategy and a BP entity will need to execute the origination, sourcing and management of the offset flows.

Juan Parreno (on behalf of the Offsets-for-Aims Working Group)

7 May 2020

DRAFT

Message

From: Stout, Robert [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN[redacted]
Sent: 16/10/2016 22:33:13
To: Ellis, Joe [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
CC: Nolan, James [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Subject: Re: Keep it in the Ground

One other thought on the people in the middle under point 1: rather than just referring the methane concerns you could say "climate or methane concerns." I find a surprising number of people in the persuadable middle who are unaware of how much lower emitting gas is when burned versus coal or that US GHG emissions have been going down because of its use. Some of this is pure ignorance and some of it is the result of highly misleading campaign statements by far left green groups that have unfortunately gotten more traction than industry or more moderate groups have in the public debate.

Sent from my iPhone

On Oct 16, 2016, at 6:23 PM, Stout, Robert <[redacted]@bp.com> wrote:

Joe:
Thanks for sharing these materials on NAM's planned work to conduct focus groups and surveys re: respondents' views on natural gas to help develop advocacy strategies in response to various "keep it in the ground" initiatives. I doubt I can join your call with them tomorrow morning but I have read through the proposal and have a couple of thoughts for your consideration:

1. On page 2 they define 3 "coalition groups" for analysis - those who support natural gas development and use, those who oppose the same, and those "in the middle who like natural gas, but also have concerns about fracking." I would not limit the model group to people who "like" natural gas or those whose concerns are focused on fracking alone. Rather, I would define the middle group differently (and more broadly) as something more like those who are open to considering the benefits of natural gas development and use but may have environmental or safety concerns -- e.g. with fracking or methane emissions (latter is also important). I think that better defines the group of potential persuadables that we would want to target.

2. They propose on page 3 to conduct focus groups in 4 cities and suggest cities in IN, MA, MO, OH, PA, and VA. For geographic balance, and considering our own priority states, we might want to ask that they include a western state - perhaps a purple one like CO or NM.

Thanks and I look forward to discussing this further as it goes forward. I have copied Jim as this study could help inform our broader US climate strategy as well.

Best,
Bob

Sent from my iPhone

Begin forwarded message:

From: "Ellis, Joe" [redacted]@bp.com>
Date: October 14, 2016 at 12:20:01 PM EDT

To: "Stout, Robert" [redacted]@bp.com>
Subject: FW: Keep it in the Ground

Can we talk about this today?

From: Ross Eisenberg [redacted]@nam.org]
Sent: Friday, October 14, 2016 12:13 PM
To: Ellis, Joe
Subject: RE: Keep it in the Ground

How do Monday 9-10 am or 3-4 pm work? I can bring you up to speed by phone, although at some point within the next week or two we'll have an in-person kickoff with the consultants and our steering committee of funders. By way of background, we have six steering committee members: BP and two of your industry brethren, plus INGAA, AGA and NAM. We've decided to retain a joint team of Mike Catanzaro with CGCN Group and Liz Harrington and Bill McInturff with Public Opinion Strategies to conduct the message development/message testing exercise.

In the meantime, attached is the rough scope of work. Start thinking about some themes you'd like to have teased out during this project – for instance, environment/climate, terrorism/national security, etc. We plan to get the contracts in place next week and have the consultants in the field in November after the election, with the entire project completed by the end of the year.

From: Ellis, Joe [redacted]@bp.com]
Sent: Thursday, October 13, 2016 3:09 PM
To: Ross Eisenberg [redacted]@nam.org>
Subject: RE: Keep it in the Ground

Hi, Ross. Yes, of course. I can talk tomorrow between 10am and noon. Lots of time first half of next week, too.

Do you want to talk by phone or visit in person?

From: Ross Eisenberg [redacted]@nam.org]
Sent: Thursday, October 13, 2016 3:06 PM
To: Ellis, Joe
Subject: Fw: Keep it in the Ground

Joe - do you have some time tomorrow or early next week to talk about next steps with respect to our messaging project? I want to get you plugged in.

And thanks for being part of this, by the way. It helps a lot.

From: Jeff Pierce [redacted]@nam.org>
Sent: Monday, October 3, 2016 4:57 PM
To: Kolenda, Sally; Ross Eisenberg; Ellis, Joe
Cc: Brittany Seabury; Dempsey, Ray C
Subject: RE: Keep it in the Ground

That's terrific news. Thanks Sally, Ray and Joe! We will be sure to keep you all looped in on next steps very soon – as we're anxious to get the project started quickly. Thanks again. We greatly appreciate BP's support. Best, Jeff

From: Kolenda, Sally [redacted]@bp.com]
Sent: Monday, October 03, 2016 4:55 PM
To: Ross Eisenberg [redacted]@nam.org>; Jeff Pierce <[redacted]@nam.org>; Ellis, Joe <[redacted]@bp.com>
Cc: Brittany Seabury <[redacted]@nam.org>; Dempsey, Ray C <[redacted]@bp.com>
Subject: RE: Keep it in the Ground
Importance: High

Jeff and Ross,

Great news! Thanks to Ray Dempsey and Joe Ellis, we were able to get this contribution approved and submitted for payment. Joe Ellis, our head of state and local affairs and copied here, will be our primary point of contact for this effort. Joe is also a member of the NAM State Government Relations Group.

We're excited to participate in this important work. Please let us know next steps.

Regards,
Sally

Sally Kolenda

BP America Inc. | **Director, External Affairs**

From: Ross Eisenberg [redacted]@nam.org]
Sent: Thursday, September 29, 2016 4:31 PM
To: Kolenda, Sally
Subject: Keep it in the Ground

Sally,

Attached is a short overview of the message development project we plan to begin work on in the next 1-2 weeks. Attached also is the larger campaign plan that the message testing will flow into.

In a nutshell, we view the NAM and our members as key to the ground game that will be necessary to rebut the Keep it in the Ground effort and all of its outgrowths, including regulations, anti-infrastructure campaigns, ballot initiatives, legislation and other threats. Our goal is to build an infrastructure similar to what we did with our successful ozone campaign that can be used to take on each of these different threats from a unified media and advocacy standpoint.

Before we can jump into the states, however, we need answers on what messages work, who we are trying to persuade, who the best messengers are, and how to deliver those messages. I have a good sense of the work that already exists and it's insufficient. We need new data, and we need to ask the hard questions. Not simply questions about jobs and the economy.

We did similar message development work before going into the field for the ozone campaign, and our findings were critical to our ultimate strategy of targeting mayors and other local economic development authorities. In this case, we know our members want to help -- they tell us all the time -- but we need to figure out the best way for them to state their case.

Right now we have secured commitments of $50,000 each from two NAM members, and have two more $50,000 commitments that appear likely to come from two other trade associations (INGAA and AGA). We will

form a rump group from each funder that will be responsible for shaping the project, working with the consultants, and monitoring the focus groups. Once the project is complete we will share the results with the broader NAM membership, but only funding companies of the project can shape it.

Let me know if you have any other questions. I can make myself available anytime.

Many thanks,
Ross

Ross Eisenberg
Vice President, Energy & Resources Policy
National Association of Manufacturers
[redacted]

<NAM Message Testing Proposal - Keep It In The Ground Movement d2a.docx>

Role of Gas

March 2017

BP America Goal

Prevent further erosion of near-term support for gas versus other fuels, protect role of gas as a bridge fuel in the lower-carbon transition, and position gas as a destination fuel for the longer-term.

Priorities

- Counter immediate threat to short-term gas demand from the proliferation of state nuclear subsidies.
- Promote streamlined infrastructure permitting and facilitate industry response to increasingly localized E-NGO opposition.
- Ensure ongoing government commitments to pursue cleaner fossil-fuel technologies.
- Leverage such initiatives to build enhanced E-NGO and academic acceptance of gas, wherever possible.
- Identify and pursue additional thought-leader promotional opportunities on behalf of the gas and gas technology, including established U.S. international programs.

Opportunities/Risks

Opportunities

- Natural gas has an advantaged price and supply position, as well as lower emissions versus coal.
- Natural gas exports promote US and global energy security, e.g. in Europe
- Global efforts to implement carbon reduction goals still favor gas
- Trump administration broadly favors fossil fuel development/deployment.
- BP has credibility as top-tier gas marketer and producer that can be leveraged in its advocacy efforts

Risks

- Numerous states considering command-and-control resource planning that could crowd out gas.
- Growth inhibited by carve-outs/subsidies for zero-emitting renewables/nuclear, some marginal coal plants.
- Increasingly well-funded and locally-active E-NGOs loudly voicing concerns about fracking and methane emissions.
- Administration could prioritize coal over gas.

Plan Framework

Strategy

- Counter erosion of gas demand from state-level subsidies/mandates for renewables, coal or nuclear power.
- Advocate for federal policies that support the role of gas without appearing to campaign against coal.
- Leverage NAGP state regulatory outreach activities and site visits to L48/NAGP for pro-gas advocacy.
- Incorporate pro-gas messages in meetings with federal regulators, e.g. FERC, DOE, EPA.
- Educate key E-NGOs, think tanks and lawmakers on economic and environmental benefits of gas.

Key Messages

- Natural gas is the cleanest fossil fuel, and provides an abundant and reliable source of energy.
- Nuclear power is an established technology that does not require commercialization subsidies, and any such state interventions interfere with federally regulated wholesale power markets.
- Methane emissions from oil and gas developments can be economically and technically controlled to deliver significantly better lifecycle greenhouse gas benefits than coal. We support efficient and consistent methane regulation at the federal level under the EPA.
- Gas is the fastest-growing fuel, at c 1.6% p.a. globally (1.2% in NA) with a growing LNG trade. It is also the most flexible fossil fuel supporting intermittent renewables
- BP has a major and growing natural gas business, with gas production approaching 60% of total production by the next decade. We have all recently acquired two bio-methane processing facilities to help capture landfill emissions to complement our domestic supply offerings.
- Federal and state governments should streamline and speed the permitting of natural gas infrastructure, and support the development of access and markets for domestic gas.
- We support regulation, based on sound science, designed to reduce hydraulic fracturing risks.

Key Players

- FERC (new tbd chair and GOP commissioners, in particular); EPA (Administrator Scott Pruitt); DOE (Secretary-designate Rick Perry, new heads of fossil fuel and technology offices); State environmental regulators and PUCs; State-active ENGOs and think tanks; API, NGSA (CLNG), and EPSA.

Core Team

- Mark Stultz (SPA), Bob Miner, Dawn Constantin, Kathleen Magruder, Suzanne Swink, Brett Clanton

Quarterly Objectives

Q1 Deliverables

1. Identify and prioritize target federal/state policymakers, E-NGOs, think tanks and advocates.
2. Initiate relationships with agency transition staff and new leadership (esp. DOE, EPA).
3. Influence API-led coalition activities opposing nuclear subsidies in target states.

Q2 Deliverables

1. Facilitate executive and SME education meetings with target regulators, key think tanks and receptive ENGOs, including the Environmental Defense Fund (EDF).
    a. To include personal introductions with new FERC chair and commissioners
    b. Initiate/leverage changing relationships at EPA and DOE office of fossil fuels.
    c. Leverage NAGP state capitol outreach visits (at least two).
2. Identify targets and schedule/conduct initial meetings with key Senate and House energy committees.
3. Develop plan to fully leverage 2018 Gas Conference & identify other major target events for 2017-18
4. Develop an internal and external communications plan, including targeted media outreach.
5. Respond as necessary to counter targeted activities of E-NGOs.

Q3 Deliverables

1. Continue to implement planned activities and engagements as identified above, including multiple meetings with policymakers and other federal/state stakeholders.
2. Follow-up executive and SME education meetings with target regulators and receptive ENGOs.
    a. To include personal follow-on meetings with new FERC chair and commissioners
    b. Initiate/leverage changing relationships at EPA and DOE office of fossil fuels.

Q4 Deliverables

1. Develop longer-term (3-5 years) advocacy agenda, including additional coverage and resourcing requirements.
    a. Prepare for 2018 World Gas Conference in D.C.
2. Between 2Q and 4Q 2017, complete at least:
    a. 10 meetings with federal policy-makers focused on gas advocacy
    b. 12 meetings with state policy-makers focused on gas advocacy, including 5 state capital visits
    c. 5 site visits by federal or state policymakers to L48 assets or the NAGP trading floor

Expected Impact on BPA Budget/Resources

- Greater state capital travel or the retention of knowledgeable third-party advocates in key states.
- BP America sponsorship at 2018 World Gas Conference and potentially other events
- Potential funding of third-party sources of credible natural gas education

Message

From: Sykes, Starlee R [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
Sent: 07/09/2017 18:39:51
To: Campbell, Fiona [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/[redacted]
CC: Withers, Greg [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Withg2]; Mortimer, Richard (SUN) [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]
Subject: RE: Angelin Follow Up on N2 Purge and Diesel Generator

Fiona

Nothing to add from me.

Star

---------- Forwarded message ----------
From: **Mortimer, Richard (SUN)** [redacted]
Date: Thu, Sep 7, 2017 at 1:05 PM
Subject: Re: Angelin Follow Up on N2 Purge and Diesel Generator
To: "Campbell, Fiona" [redacted]
Cc: "Withers, Greg" [redacted]

Fiona,

Ref the Angelin vent - what I put in my reply note to Karen stands as the GPO position i.e. the cost to add a nitrogen package to generate the nitrogen to replace the very small methane purge is not justified and we do not intend to add it. Unless something has changed in the assumptions it is not even close to being justified. It also adds operational complexity and goes against the intent to make Angelin as far as possible a NUI. I believe GOO leadership and HSE function agree.

As an outcome of the recent discussions on GHG we have agreed at the concept selection point that we will show any lower carbon intensity alternatives and compare them to the proposed reference case.

For much smaller GHG reduction options - such as this vent - we will continue to evaluate on a life of field emissions basis valuing the carbon emissions at the figure prevailing the the BP guidance at the time - currently $40-80$/the CO2e.

Greg is familiar with our position and can represent us at any meeting on the subject.

Richard

Sent from my iPhone

On 25 Jul 2017, at 16:21, Mortimer, Richard (SUN) [redacted] wrote:

Fiona,

You will have seen the reply to Karen.

I have also followed up with key stakeholders ahead of the 2 meetings later this week (Andre Celestine, Al Vickers, Dave King, Sue Ford). John Eldred and Paul Edwards are following up with their T+T counterparts.

So far no push back on my position.

Regards

Richard Mortimer

VP Engineering
BP Global Projects Organisation

Mobile : [redacted]

From: Campbell, Fiona
Sent: 24 July 2017 20:37
To: Mortimer, Richard (SUN) [redacted]
Cc: Withers, Greg [redacted]
Subject: FW: Angelin Follow Up on N2 Purge and Diesel Generator

Richard - thanks for delving into the N2 purging queries on Angelin, and promptly asserting we are proceeding down the right path. Assuming Dave is ok with it, I am eager to take you up on the offer to formulate a response to Karen/Dave. Aside from the Upstream Carbon Call on Wednesday, we also have the Trinidad RLT SORC on Thursday where this is being tabled for discussion, hence keen to signal we have collectively reviewed and aligned on path forward to avoid heightened noise.

Aside from Angelin, I have asked Starlee for further info on the carbon agenda to assure the teams we are aware on vision/strategy and anything asked of us wrt forthcoming designs.

Thanks again,
Fiona

From: Belabdi, Djaber
Sent: Monday, July 24, 2017 6:32 PM
To: Campbell, Fiona [redacted]
Subject: Fwd: Angelin Follow Up on N2 Purge and Diesel Generator

FYI

Begin forwarded message:

From: "Mortimer, Richard (SUN)" [redacted]
Date: 24 July 2017 at 17:37:15 GMT-5
To: "Withers, Greg" [redacted], "Belabdi, Djaber" [redacted], "Jean-Baptiste, Kevon" [redacted]
Subject: FW: Angelin Follow Up on N2 Purge and Diesel Generator

Fyi

Regards

Richard Mortimer
VP Engineering
BP Global Projects Organisation

Mobile : [redacted]

From: Mortimer, Richard (SUN)
Sent: 24 July 2017 17:36
To: O'Connor, David J [redacted]
Cc: Sykes, Starlee R [redacted]>; Kelly, Rob [redacted]>
Subject: RE: Angelin Follow Up on N2 Purge and Diesel Generator

Dave,

I have discussed with team and I am comfortable the project has progressed the correct design consistent with the agreed project philosophy at the outset and all current BP published guidance on this subject. The small GHG benefit from deleting this purge does not justify the cost to install the nitrogen package nor the visitation and maintenance burden of operating it on a NUI. I agree with the project position that we should not change.

In her analysis Karen has not accounted for the cost implications of installing and maintaining the nitrogen package.

The methane purge on the cold vent is very small at <0.5scfm or 0.00015% of Angelin production. The cost to install a N2 package (membranes, receiver, valves, analyser, control) which would be considered a safety critical system is estimated to be circa $2m. The cost of carbon to justify this would be about $700 /te CO2e. The current guidance for the maximum cost of carbon to use in evaluation of these issues is $80/te.

Unlike the early Trinidad platforms Angelin has an instrument air system for valve actuation rather than methane – this is the big win from a process safety and emissions perspective. It is not worth adding a N2 generation package in addition to this to completely remove all methane venting.

Our practice specifically allows for venting of methane in this case - *" venting is acceptable where permitted by regulation, economic benefits exceed the GHG costs and vent design meets BP engineering standards."*

Also and importantly we have a bias to make Angelin as far as practical a true NUI, competitive and supplier led. Use of this small methane purge is consistent with this. Adding a Nitrogen package for this small purge adds cost, weight, complexity, availability risk, intervention, inspection and maintenance all of which go counter to our NUI philosophy for Angelin.

Even if there were a compelling case to change – which there is not – I would not recommend it now given the stage of the project and the disproportionate disruption and cost of changing at this late stage.

The statement that Angelin was originally N2 and changed to methane is not correct. There has never been a N2 system on Angelin. The first time this issue was raised was by Karen in June 2017 before that there have been no findings, queries or concerns on the fuel gas purge design during PHSSER or ENVIID reviews from any TA or SME.

The removal of methane purges on the hub platforms such as Mahogany A is mainly driven by process safety not emissions reductions. We understand there is currently no plan to convert to N2 on the other NUIs (Cannonball, Mango, Cashima, Savonette, Serrette) mainly as this would require installation of an instrument air compressor and nitrogen package which would be prohibitively expensive.

I can follow up with Karen and Dave King to close out if you wish – let me know how you want to proceed.

The take-away for your Weds meeting is that the benefits of any proposal to adopt a lower GHG option needs to be balanced against the cost to do so – preferably articulated in terms of cost of carbon ($/teCO2e).

Regards

Richard Mortimer

VP Engineering
BP Global Projects Organisation

Mobile : [redacted]

From: Mortimer, Richard (SUN)
Sent: 23 July 2017 17:39
To: O'Connor, David J [redacted]
Cc: Sykes, Starlee R [redacted]
Subject: Re: Angelin Follow Up on N2 Purge and Diesel Generator

Dave,

I will review with team tomorrow and revert.

This is an interesting example of what we discussed at the SORC - we have a duty to reduce reduce GHG emissions but not at any cost. It will be an interesting test case which, once resolved, we can use to illustrate this

evolving BP position to our teams.

Djaber quoting GDP3.6 is not helpful here and I can see might be seen as inflammatory to some as it implies provided we are below the 10,000te/yr emission criteria we have no obligation to minimise GHG emissions. What we should say is that we should minimise where it makes commercial sense, where it is required by code or BP practice or where it fits with a regional strategy to standardise in a particular lower GHG solution to an issue.

This is what I will test tomorrow. It is possible it doesn't make commercial sense and there is no agreed regional strategy on the subject. However if these is a case we should change.

Richard

Sent from my iPhone

On 23 Jul 2017, at 16:02, O'Connor, David J [redacted]> wrote:

Star, Richard,

Were you aware of this one? Sounds a bit strange that we would insist on progressing a CH4 purge solution if the Region is changing out this solution on other Trinidad installations. Do you know how big a deal this would be to change?

Dave

From: King, Dave J
Sent: Sunday, July 23, 2017 4:36 AM
To: O'Connor, David J [redacted]
Subject: FW: Angelin Follow Up on N2 Purge and Diesel Generator

David

I thought it would be helpful for you to see this in the context of what we will be discussing on Wednesday this week at the Upstream Carbon Leadership Day.

Thanks

Dave

From: RagoonananJalim, Karen
Sent: 22 July 2017 21:05
To: Wilford, Sarah [redacted]>; O'Brien, Robert [redacted]

Cc: Ford, Susan J (Sunbury) [redacted]; King, Dave J [redacted]; Brooker, Michelle [redacted]
Subject: FW: Angelin Follow Up on N2 Purge and Diesel Generator

Hi Sarah, Rob,

I hope you are both doing well.

Please see an email below that I sent to our VP GOO in Region, Jean Andre Celestain, where I have raised some concerns over the design of the Angelin platform. This follows an Angelin review meeting in Trinidad in June where the issue of Angelin having a fuel gas (methane) purge vs what was previously communicated to us as a nitrogen purge was raised as a flag by me. I subsequently had a conversation with Djaber Belabdi, Angelin Project Manager, during which he committed to understanding why the switch from N2 to CH4 purge was made. Djaber graciously did follow up with an email (in thread below) and while all his points are valid and true, I continue to push back on this decision, particularly as it seems to be in conflict with the BP Group Agenda for a lower carbon future. My discussions with GOO Engineering Services and S&OR Process Safety Engineers and Operations Authority all seem to indicate that the replacement at this stage is the best, lowest cost option. Retrofitting the facility will require additional approvals from both EMA and Ministry of Energy (the latter before retrofitting works and pre-start up) and of course, additional spend. In fact, the Trinidad Region is removing CH4 purge from our facilities and replacing them with N2 – Amherstia was recently done and Savonette is planned for later on this year.

You may or may not know that GOO has a mandate to achieve 1million tonnes CO2e RSRs by 2025 vs 2016 levels. This has been put forward by Fuzzy and Regions currently measure and report in great detail on a quarterly basis through the Orange Book, key metrics to Fuzzy et al on this matter. Additionally, RC&E in Region has been asked to work with GOO Engineering Services to understand where these RSRs may be realized in works planned and in the hopper at this time.

I tested with Sue whether this message of 1million tonnes CO2e RSRs by 2025 vs 2016 levels was communicated beyond GOO and she confirmed that while the intent is there, it has not yet happened. This, as pointed out by Djaber in his note below, will be a key requirement if GPO is to include this consideration in their project planning and design. The urgency here is that, if all goes well, Angelin's first gas could be as early as 1Q 2019, which will add emissions at a time when we are being asked to reduce. At the June review meeting, we were told that the platform was at 12.5% fabrication.

Sue suggested I reach out to you - I would love to have a call with you next week to discuss further. Essentially, I would like to understand the following:

1. Are other projects in other Regions facing similar issues and if so, how are these being managed?
2. What longer term plans do we have to align the BP Lower Carbon Future goals with project concept design?

Andre has committed to escalating this matter up his line to Fuzzy to at least request expediency in the alignment of the GOO RSR targets with GPO project design requirements and specifically, GDP 3.6-0001.

I look forward to chatting next week. I will propose a meeting time based on calendar availability.

Thanks much and have a safe and enjoyable weekend!

Kind Regards,

Karen

From: RagoonananJalim, Karen
Sent: Tuesday, July 11, 2017 4:13 PM

To: Celestain, Jean Andre
Cc: Brooker, Michelle
Subject: FW: Angelin Follow Up on N2 Purge and Diesel Gen

Good day Andre,

I have been mulling over this in my mind for some time now but have finally decided to escalate to you. The email below from Djaber is a result of a meeting between him and I post the Angelin Review on June 6th. At the meeting on June 6th, I discovered that the original design plan for Angelin that was communicated to us to have a nitrogen (N2) purge was changed to a natural gas (CH4) purge. I was not aware of the change and at the meeting expressed my discomfort with designing a facility in this way, given:

1. BP's commitment to move to a lower carbon business
2. BP's commitment to the Climate Change Agenda and
3. GOO's commitment to reduce carbon emissions by one million tonnes by 2025, per target set by Fuzzy.

Djaber's note below indicates that the project will not consider a N2 purge at this stage since:

1. There is no legal requirement to do so in country
2. GDP 3.6 does not require minimization of routine flaring/venting except if emissions are expected to exceed 10,000tonnes per year of CO2 equivalent. Angelin is designed to emit 288 tonnes per year CO2e.
3. A N2 package will require space that is unavailable on the designed facility (at this time)

Further, Djaber points out that this information of the GOO RSR Target of 1million tonnes CO2e by 2025 has not been shared with other Functions, e.g. through updated GDPs, etc. My checks with the Central Upstream Team (Sue) has confirmed that while this is the plan, the message has in fact not yet been shared with other Functions.

All Djaber's points above are noted and valid. However, I feel it counterintuitive for GOO in Regions to reduce emissions when the facilities are being designed to emit, even if these are small volumes – every small amount counts. Angelin will come online, if all goes according to plan, in 2019 which will add emissions to our portfolio at a time when we will still be looking at our small projects within Engineering Services to reduce emissions. As such, I was wondering about the possibility of the following:

- Can we message to the Upstream that, similar to the commitment made by GOO through an RSR Target towards a lower carbon future, that other Functions should also, sooner rather than later, also make their commitments? This, I imagine, will be a longer term action, with links between the Functions so that the implementation in Region is seamless (as possible).
- Can we as a Region influence the Angelin design at this stage, despite the valid points above, to include a N2 vs CH4 purge? This so that we are not trying to retroactively fit the platform when handed over to GOO to reduce emissions that can be avoided now?

I would love to know your thoughts on this and would be happy to meet to discuss further.

Kind Regards,

Karen

From: Belabdi, Djaber
Sent: Monday, June 19, 2017 8:42 PM
To: RagoonananJalim, Karen
Subject: Angelin Follow Up on N2 Purge and Diesel Gen

Hi Karen – hope this note finds you well.

Purge:

As promised, I followed up with the engineering team on the selection of the natural gas purge for Angelin and asked why we did not use N2 purge.

They explained to me that the design selection process for the purge type is governed by GDP 3.6 -0001 (Environmental and Social Requirements for New Access Projects, Major Projects, International Protected Area Projects and Acquisition Negotiations), section 5.3, which states that '*projects shall be designed to minimise routine flaring and/or venting that exceeds 10,000 tonnes per year of carbon dioxide (CO2) equivalents'.*

The Angelin natural gas purge is in the order of 288 tonnes per year of carbon dioxide (CO2) equivalents. As such the team considers the current design to be fit for purpose and in full compliance with the BP governing GDP (3.6 -0001), and did not feel there was significant business value in justifying the added costs of an N2 purge system, especially when Angelin's contribution to the Region's GHG will be less than 0.09%.

I understand also there are no local regulatory requirements or published regional targets on the subject, so the team considered GDP 3.6 -0001 to be the sole governing factor.

I did test what it would take to include a N2 purge for Angelin however it would be another package (approximately the size of the instrumentation skid) which would not be feasible at this stage due to space constraints on the platform.

So, we will need to stick with the current natural gas purge design on Angelin.

Saying that however, I do understand your aspiration around zero emissions. The best way to ensure project teams work to this aspiration going forward is to change the guidance offered in GDP 3.6-0001. Maybe this is something you can pursue directly with the function that owns the GDP in question.

Please let me know if there is anything else we can do to support you on this topic.

Diesel Generators:

On the question of diesel engines meeting TT APR's I've asked the team to engage again with our suppliers to fully understand and document current industry capability to meet the instantaneous stack limits and what it would take to develop such technology if not already available.

This will take some time and some resources, so before we kick it off I wanted to double check with you on whether you had the chance to obtain further info from BHP on how they are able to demonstrate compliance with stack emissions. Grateful for your input here before we embark on a study on the subject.

Let me know if you would like to discuss further.

Regards

Djaber

bp

Djaber Belabdi, Angelin Project Manager
Trinidad and Tobago, GPO Projects.

200, Wesltake Park Boulevard, 77079 Houston, Texas. USA.
Office: [redacted] Mobile: [redacted] Lync + [redacted]
Email: [redacted]

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Message

From: Dio, Susan W [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]
Sent: 17/07/2018 12:41:42
To: Miner, Robert [/O=MSXBP/OU=EXTernal (FYDIBOHF25SPDLT)/cn=Recipients/cn=3e8fa5d750104e7881660024962924e2]; Streett, Mary [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]]; Ellis, Joe [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN[redacted]Stout, Robert [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=Robert.Stout]
CC: Raftery, Becky [/O=MSXBP/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=[redacted]
Subject: RE:

Mary – I will support your proposed path forward, but please keep me updated.

Confidential

From: Miner, Robert
Sent: Monday, July 16, 2018 1:08 PM
To: Streett, Mary <[redacted]>; Ellis, Joe <[redacted]>; Dio, Susan W <[redacted]>; Stout, Robert <[redacted]>
Cc: Raftery, Becky <[redacted]>
Subject: RE:

Per WSPA, when we pledge specific dollars, it triggers a two-week deadline for reporting. If we submit a donation as opposed to a pledge, it triggers a one-week deadline. If we make an in-kind donation, it triggers a one-week deadline.

Confidential

From: Streett, Mary
Sent: Monday, July 16, 2018 12:55 PM
To: Ellis, Joe <[redacted]>; Dio, Susan W <[redacted]>; Stout, Robert <[redacted]>
Cc: Miner, Robert <[redacted]>; Raftery, Becky <[redacted]>
Subject:

Just to clarify – we Don't need to commit to a number at this time?

If so, I support Bob Miner letting them know we will join the coalition.

Becky/Bob What does this mean in terms of disclosure? Every time we add money will it be disclosed? Is there a 30 day window etc?

Mary

Mary M. Streett

Senior Vice President, U.S. Communications & External Affairs
BP America, Inc.
phone: [redacted] | mobile: [redacted] | e-mail: [redacted]
BP America | 1101 New York Avenue NW, Suite 700 | Washington, DC 20005

From: Ellis, Joe
Sent: Monday, July 16, 2018 1:51 PM
To: Dio, Susan W [redacted]; Streett, Mary [redacted]; Stout, Robert [redacted]
Cc: Miner, Robert [redacted]
Subject: INFO: Washington State Carbon Tax Initiative Campaign

Hi, everyone. Just heard from Bob Miner.

The following companies have committed to the coalition campaign based on the Winner Mandabach proposal:

- P66
- Andeavor (formerly Tesoro, recently purchased by Marathon)
- US Oil

Chevron says it is very close to a decision to join the coalition.

BP has not signaled where we are, but Bob Miner would like to convey to WSPA that we have decided to join the coalition conditioned on Winner Mandabach presenting what we believe to be an effective campaign plan.

We need commit to a specific figure at this time (other companies have not done so), but BP should make its decision known so that we are not the reason for delay in other company decisions or more specific campaign planning.

Any objection to Bob Miner telling WSPA that we are in?

Please note that a two-week reporting period is triggered when we pledge a specific amount. We will need to pledge soon but need not do that until early next week. Even at that time, we need not pledge the full amount that has been approved.

Joe

Joe Ellis

BP America | Vice President and Head of U.S. Government Affairs
1101 New York Avenue, NW, Suite 700 | Washington, DC 20005
[redacted]