

INTRODUCTION: Cindy: 2 minutes, **BP Strategy and context** as an example of how a corporation is responding to these challenges.

- Thanks, **Ramya** (ra-me-ya), for moderating.
- **Brian and Ben**, I'm admirer of EDF and Semptra's work in this space, and I'm thrilled to join you today.
- It's been a really exciting time for bp! For those of you not familiar with us, for 110 years, we have been an integrated oil and gas company with operations around the world.
- But in February, we announced a new purpose and ambition:
 - Reimagining energy for people and our planet.
 - Becoming net zero by 2050 or sooner and helping the world get to net zero carbon.
 - We gave ourselves 10 aims: five for us, five for the world... don't worry, I won't go through all 10 today!
- That's our "**why**." This month we announced a new strategy to give us our "**how**."
- We're pivoting from being an *international oil company*, producing oil and natural gas resources, to an *integrated energy company*, delivering solutions for customers.
- Within the next 10 years, we aim to:
 - Increase our annual low carbon investment 10-fold to around \$5 billion a year. This will be frontloaded – we'll increase 8-fold by 2025 alone.
 - We're will focus our business on value by reducing oil and gas production by 40% in the next decade with no exploration in new countries.
 - We're also aiming to partner with 10-15 cities and three core industries in decarbonization efforts, and double customer interactions to 20 million per day.
- We'll key in on 3 particular areas: Low carbon electricity and energy, convenience and mobility and resilient and focused hydrocarbons.
- And we're not starting from scratch: this is part of a several decade journey, beginning with our "Beyond Petroleum" strategy in the early part of this century. (*pause*) We were ahead of our time... and the market... in the early 2000's but we did learn a lot of lessons and created some viable renewables business lines.
- Soooo we are going to significantly ramp up our investments and we aim to be a very different kind of energy company by 2030.
- If you'd like to learn more, please join us for bp's virtual Capital Market Days and Annual Energy outlook September 14-16th.

Now, I'd like to turn things over to **Brian** to share his insights on Semptra's journey to decarbonization.

Decarbonizing across the value chain (Upstream, Downstream), include comments on carbon intensity vs absolute emissions and value of integration

- I'd like to cover three points in this question:
 1. Thoughts on decarbonizing a traditional upstream and downstream company
 2. Carbon intensity vs absolute emissions

3. Value of integration

- **First, on decarbonizing upstream and downstream**

- Initially, we're focused on optimizing our existing operations. We are looking at every way to integrate digital and other technologies to improve safety and reduce emissions. These efforts include aerial surveys, drones, and optical gas imaging. We are working toward eliminating flaring and venting and focusing our existing production on resilient assets.
- In downstream, again, huge focus on integrating digital and other technologies into the process to help optimize operations, energy efficiency and integrating renewable energy into our processes.
- And my personal favorite, scaling up CCUS: One of the tools we can utilize today is carbon capture, use and storage.
 - CCUS is important for industrial gasses but it can also play a huge role in decarbonizing those "hard to abate" sectors (steel, cement) and offers the ability to create "negative" emissions.
 - CCUS can also play a role in supporting a hydrogen economy.
- bp is also a founding member of the Oil and Gas Climate Initiative, which has set up a \$1 billion investment fund to address methane emissions and invest in complementary technology, including Carbon Capture, Use and Storage (CCUS).

- **Next: the great debate: Carbon intensity vs absolute emissions.**

- Our response: **YES!** Our strategy provides for both. For example:
 1. Our first aim is to be net zero across our entire operations on an absolute basis by 2050 or sooner. Our second aim is to be net zero on an absolute basis across the carbon in our upstream oil and gas production by 2050 or sooner. Both of these target absolute numbers: ~ 55 MTe for our scope 1 and 2 emissions and ~ 360 MTe CO2 for our scope 3 emissions.
 2. Our third aim is to cut the carbon intensity of the products we sell by 50% by 2050 or sooner and our fourth aim drives direct methane measurement at all of our existing major oil and gas processing sites by 2023, then driving a 50% reduction in methane intensity of our operations.
- We picked what we believe are the most effective, meaningful and impactful measurements to underpin our aims.

- And finally, integration. One of our areas of focus is integrating energy systems. We believe there is huge value in integrated solutions. There is also benefit in transfer of skills and technology across the value chain. For example, we no longer have an Upstream and a Downstream- just "operations." Imagine the innovation and technology transfer as well as career development generated by working across a number of different types of operations: refining, production , wind energy production, biofuels...

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Backup Q&A:

Net Zero Infrastructure in the U.S.

- Princeton University is leading the Net Zero America Project – an initiative to map the technical scenarios that can get the US to net zero.
- They have developed multiple scenarios to net zero utilizing different combinations of and contributions from renewables, oil and gas, CCUS and nuclear.
- The great news: the policy and foundational work over the next 10-15 years is similar so we can move forward now. This includes:
 1. Building societal commitment, investment environment and transition delivery capabilities
 2. Improve end-use energy productivity and efficiency
 3. Electrify! Especially transportation and buildings
 4. Decarbonize and expand electricity
 5. Prepare for transformation and expansion of bioenergy industry
 6. Expand critical network infrastructures: CO2 transport/storage and electricity transition
 7. Enhance land sinks and reduce non-CO2 emissions
 8. Innovate to enlarge the net zero carbon technology toolkit
- There's a real opportunity for companies to learn from this research and create commercial opportunities **from** the challenge of transforming the US to net zero

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Careers in Energy

- As the exciting work in the research space is piloted, scaled up and comes ready for real-world application...
 - It won't be venture capital funds, government administrators or entrepreneurs building and running these projects.
 - Societies are going to turn to engineers, scientists and specialists with practical experience and expertise.
- I think this is helpful for a lot of young people in our industry to hear.
- If you learn your craft now – engineering best practices, fluid flow, working with high pressure materials and systems – you will have a place in this future because you'll build it. That's a message we should all echo.
- *I'll close by saying there's never been a better time to be in energy.*
- *Thanks for having me, and I'm looking forward to today's conversation!*